ISSN 1441-6891

Volume 8 Number 2 May 2005

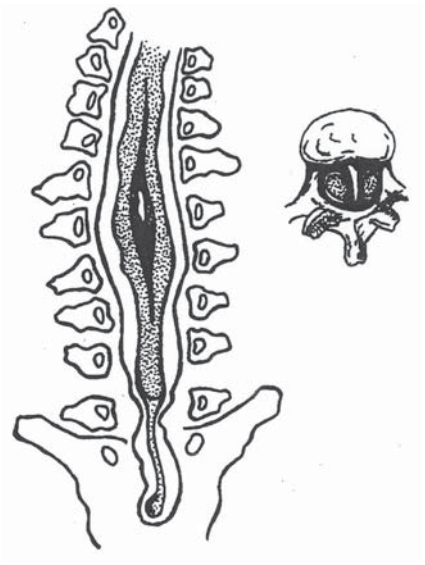
Australasian Society for Ultrasound in Medicine

ULTRASOUND BULLETIN

ASUM New Zealand Branch Annual Meeting 2005
Wellington 28–31 July 2005

ASUM Annual Scientific Meeting
Adelaide 29 September –2 October 2005
Incorporates:
DMU Practical Examiner Accreditation 29 September
Nuchal Translucency Course 29 September
A full program of O&G, General, MSK, Vascular and 3D Ultrasound 30 September –2 October

ASUM Asia Link 2005 Thailand
Bangkok 10–11 November 2005



- Policy Statements
  First trimester ultrasound
  Disinfection of intracavitary transducers
- Transvaginal transducer hygiene
- 3D estimation of fetal renal volumes in the second and third trimesters
- Diastematomyelia
- Umbilical diameter
- Surgeon-performed ultrasound

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Original research, case reports, quiz cases, short articles, meeting reports and calendar information are invited and should be addressed to The Editor and sent to ASUM at the address below

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ULTRASOUND BULLETIN

ASUM Ultrasound Bulletin 2005 May 8: 2

Notes from the Editor

Readers are the lifeblood of every journal, and the ASUM *Ultrasound Bulletin* is no exception. This issue contains some fascinating and some controversial material which the Editorial Committee hopes will be of interest to members and other readers.

We urge all potential authors to consider submitting material for publication as our own members' submissions are frequently of most interest to our readership.

In this issue, Talens *et al.* highlight a number of key issues in their article on FAST ultrasound performed by clinicians in the Emergency Department. They report a 30% sensitivity for FAST detection of significant intraabdominal injuries in the setting of penetrating trauma, with positive identification of traumatic intraperitoneal fluid with an average volume of 450 ml.

They refer to other authors showing up to 100% sensitivity in the detection of significant intraabdominal injury, a stark contrast from their own results. Overall, the large number of patients not proceeding to laparotomy produced overall sensitivity of 46% and not unsurprisingly a specificity of 99.7%. Even if every examination was reported as normal, a sensitivity of over 95% would result.

One of the more challenging tasks in any study dealing with the effect of an imaging examination is to ascertain the change, if any, in overall patient management, patient outcomes and value in terms of health outcomes. Talens *et al.* have submitted an article which makes a valuable first step in this process in relation to FAST ultrasound examination.

Fauchon *et al.* have submitted a superb series of articles relating to foetal ultrasound, the first being published in this issue. Readers are alerted to watch for future articles if this is an area of interest to them.

The protocols and standards regarding disinfection of ultrasound probes also receive attention in this issue – comments from readers regarding their own practices and institutional policies are welcome.

Roger Davies
Editor

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President's message

Dr David Rogers

Greetings.

The month of March saw a great deal of ASUM activity. First, the third Multidisciplinary Workshop (MDW) was held in Melbourne. This meeting continues to go from strength to strength and seems to deliver the style of ultrasound education that people want. The number attending this meeting may soon rival the Annual Scientific Meeting (ASM).

Many thanks to Andrew Ngu and his organising committee who put together an excellent program of local and overseas speakers, including Yves Ville from Paris who gave some very insightful talks in the obstetric program.

Council meeting

At the end of the MDW, a full day ASUM Council meeting was held, with a half-day focus on strategic planning. The purpose of this meeting was to consider the direction of ASUM over the next five years and to decide upon successful strategies to achieve these goals. I shall discuss some of the most important points.

Branch activity

Branch activity has been on the decline in recent years. There are many reasons for this, but lack of time for branch organisation and increased availability of educational meetings have probably contributed. Branch activity ultimately depends on the activity of branch members; however, the central organisation of ASUM can help to stimulate activity. The Education Committee has proposed to increase the number and scope of travelling fellowships to provide high profile speakers not only to country areas, but also regularly to each large centre, once or twice a year. The ASUM office can do most of the organisation and it is hoped that these meetings will form a nidus for branch activity. The fellowships will have titles and will be prestigious for the fellows.

Research Fund

The Research Fund is seen as very important. This fund has been set up to stimulate research. It has a target of $A1 million so as to enable it to become self-supporting. Already, $250,000 has been contributed. Council has resolved to donate all surpluses from the ASM and the MDW to this. So, if there is any surplus from a meeting it will go to a good cause. Members are recommended to consider applying for research funding. ASUM is keen to see some research output for WFUMB 2009 in Sydney.

Membership

Membership figures remain robust and show an increase. Some new strategies will be emerging to encourage more people to become members. These will mainly focus on trainee sonographers and medical registrars. Additionally, an expanded contact database will be developed to take in all sonographers and all medical personnel associated with ultrasound.

ECR and WFUMB 2009 promotion

In Early March, the WFUMB promotion team attended the European Congress of Radiology (ECR). Our mission was to make contact with ECR to help effectively promote WFUMB 2009 in future years, and to study their organisation.

ECR is a huge conference and is held annually in Vienna. This year, 8000 delegates and a similar number

ASUM Council and guests met in Melbourne with VIPs from France Thailand and the Philippines

From left Prof Helen Carty, Dr Glenn McNally, Dr David Rogers and Prof Antonio Chiesa at ECR 2005 in Vienna

Prof Yves Ville, Dr Andew Ngu and Dr David Rogers at MDW 2005 in Melbourne

of trade people were registered.

The organisation has constantly evolved over the last 15 years and has developed some legendary initiatives. Every year, the conference focuses on one or two countries, which showcase their expertise during the event. This has served to increase the profile of these countries, and the profile of ECR within the countries. We may emulate this as part of the Asia Link Program.

Instead of displaying printed posters at the conference, there are EPOS electronic posters and these are available to view at a computer booth. This makes posters easier to produce and, if adopted by ASUM, could leave posters in the correct form for inclusion in the *Ultrasound Bulletin.*

We had the opportunity to meet with the past and current presidents of ECR and have formed an understanding. We will be able to promote WFUMB 2009 from a booth at future ECR conferences.

Vienna is a wonderful city with a vast array of unique and impressive architecture. However, in March, the conditions outside were not ideal for sightseeing with snow falling frequently and night time temperatures well below zero.

Medical Ultrasonic Society of Thailand

During the Melbourne MDW, we had the pleasure of meeting with Dr Dhiraphongs, the current President of the Medical Ultrasonic Society of Thailand and Dr Teera, the current Assistant Secretary. These endearing people are working with ASUM this year to hold a joint meeting in Bangkok on 10–11th November.

After spending some time with them, I am very enthusiastic about the upcoming meeting. I am sure they will make it a unique experience. They point out that the government is helping to discount holiday packages, so, if you have the time in November, I can recommend this meeting and the potential for a very affordable holiday either side of the conference.

NZ joint annual meeting

At the end of July, the New Zealand Branch is holding its annual meeting in Wellington, the capital city, in conjunction with the College of Radiologists. This meeting will have an abdominal imaging focus but the ultrasound program will be more varied. From past experiences this will be a very informative and friendly meeting. It is also a great time to visit New Zealand as it is the heart of the skiing season.

ASM Adelaide

Finally, don't forget the Annual Scientific Meeting in Adelaide. Stephen Bird and Roger Davies have put together an excellent program with an exciting list of speakers. It will be held in the new Convention Centre, a state-of-the-art venue. I look forward to seeing you there

David Rogers
President ASUM

'MUST ATTEND' ASUM MEETINGS

2005

29–31st July ASUM New Zealand Annual Meeting Wellington New Zealand
(joint meeting with RANZCR)

29th September – 2 October 35th Annual Scientific Meeting Adelaide Australia

10–11th November ASUM Asia Link Program Bangkok Thailand
(joint meeting with Medical Ultrasonic Society of Thailand)

2006

22–26th March Multidisciplinary Workshop Gold Coast Australia

14–17th September 36th Annual Scientific Meeting Melbourne Australia

website : www.asum.com.au

Australasian Society for Ultrasound in Medicine

Website: www.asum.com.au

ASUM extends a warm welcome to you

ASUM 2005 Meetings:

29 - 31 July	2005 ASUM New Zealand Annual Meeting (Joint Meeting with RANZCR) Wellington New Zealand
30 Sept - 2 Oct	Annual Scientific Meeting Adelaide Australia
10 - 11 Nov	ASUM Asia Link Program Bangkok Thailand

ASUM 2006 Meetings:

14 - 17 Sept	Annual Scientific Meeting Melbourne Australia
22 - 26 Mar	Multidisciplinary Workshop Gold Coast Australia

WFUMB 2009 World Congress: Sydney

5 - 9 Sept **WFUMB2009 Congress** to be hosted by ASUM

For details, please contact ASUM

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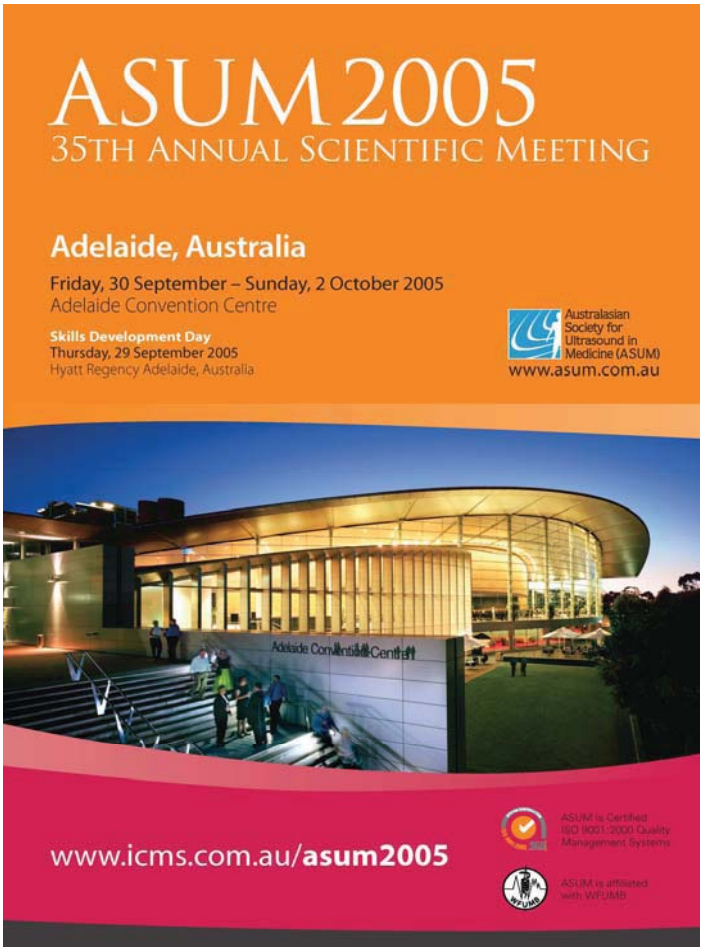

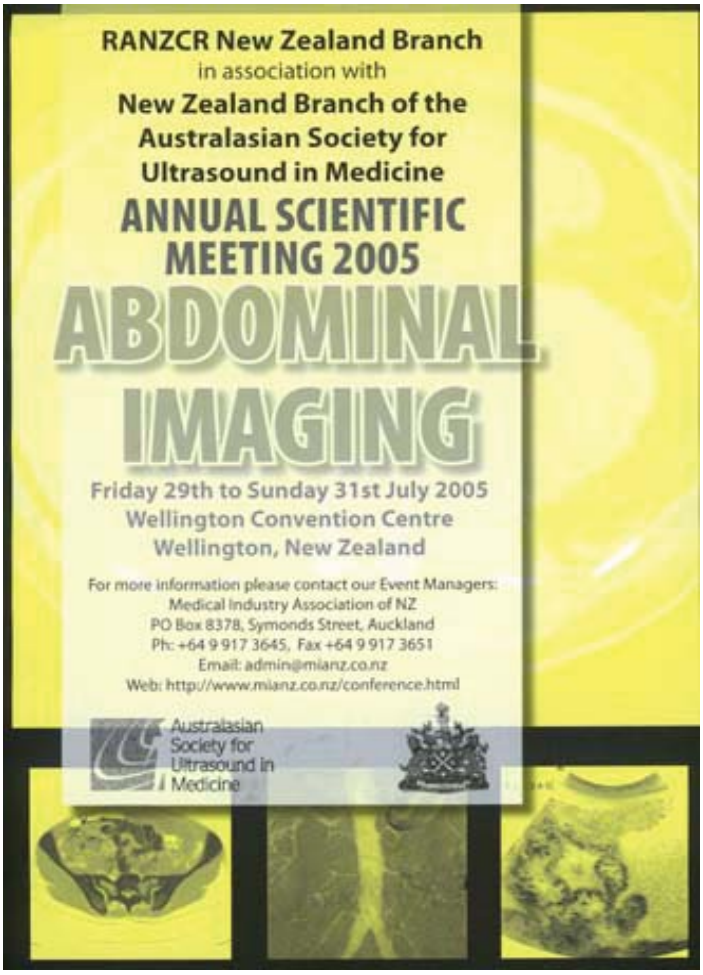

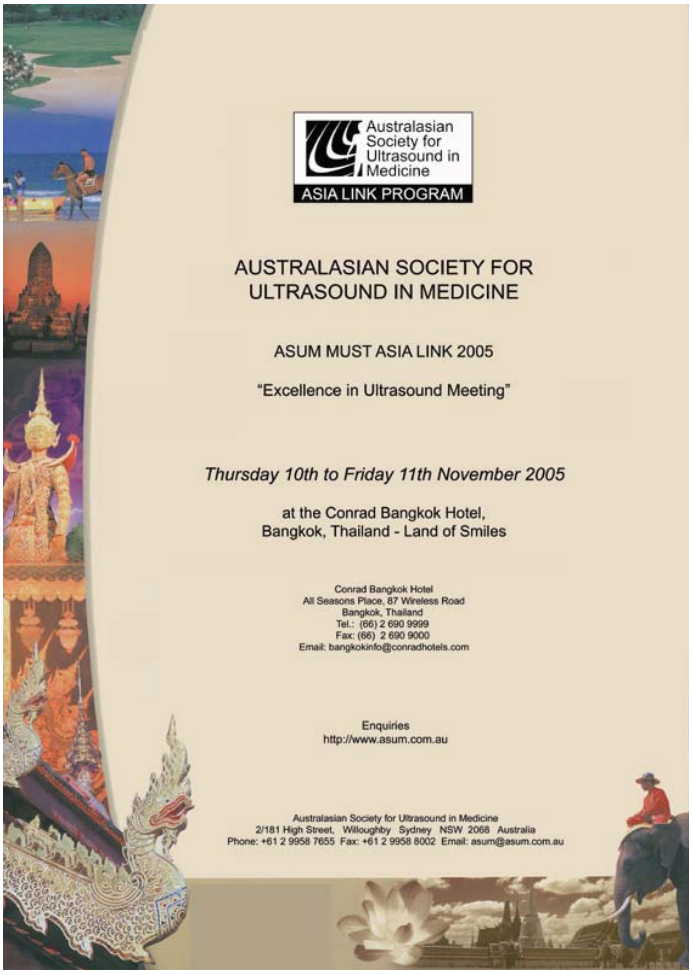

PROMOTING EXCELLENCE IN ULTRASOUND

CEO's message

Dr Caroline Hong

The year so far . . .

The Easter break in March has come and gone. It was an opportunity to recharge our energy levels, to recover from a busy first few months of ASUM educational activities, the Multidisiciplinary Workshop, Strategic Planning and Council meetings.

In the last few months, ASUM has achieved many things and made further progress.

March Council meeting

The ASUM Council met on 20 March 2005 in Melbourne to coincide with the Multidisciplinary Workshop. It is more cost effective to bring the ASUM Council together at each of ASUM's major meetings than it would be to meet separately.

A special welcome was extended to the overseas invited guests from France, Thailand and the Philippines.

A strategic planning session, focussing on the future directions for the Society, was held in the morning, followed by a full Council meeting. These strategies are currently being being translated into a business plan by the Secretariat staff for approval by Council, with the aim of taking the Society forward with focussed priorities and appropriate allocation of resources. This will ultimately benefit members, the ultrasound profession and the community in Australia, New Zealand and worldwide.

MDW attendance keeps growing

If you missed this year's MDW, stay tuned for next year's event which will be held at the Gold Coast in March 2006. Judging from this year's event, we anticipate that all sessions will fill up quickly. We had to close applications for several of the new sessions introduced this year. It was surprising that even the Sunday sessions were fully subscribed and proved popular

Dr Caroline Hong pictured here next to the Malaysian Prime Minister the Hon Abdullah Badawi (4th from left) at a business luncheon in Sydney

with many medical members.

No words can adequately express our thanks to all of the volunteer members who gave so willingly of their expertise and time as speakers and helpers, so as to make this ASUM event such a huge success.

The idea of the Multidisiciplinary Workshop originated from Dr David Rogers only three years ago. It is so pleasing to see how it has progressed, in such a short time from 100 people to a workshop attended by more than 500. Clearly, there is a demand for more of these workshops, which provide valuable opportunities for learning, updating and networking.

Once again, we thank Dr Andrew Ngu for his tireless efforts as the convenor, and all of the speakers, helpers, model patients and corporate sponsors.

The ASUM Secretariat staff, while working very hard, thoroughly enjoyed the opportunity of meeting so many members and being involved in assisting the workshops in action.

We are also grateful to our overseas invited speakers Prof Yves Ville, President of the Ultrasound Society in France, and Dr Eric Talens, President of the Philippines Clinical Society for Ultrasound in Medicine, who presented at this meeting. A separate report and pictorial are featured elsewhere in this issue.

Two valuable new benefits for members

Preferential car rental rates with Hertz Australia

We have recently signed agreements to secure preferential car rental rates with Hertz Australia. ASUM has chosen Hertz as the preferred car rental partner for the member benefit program. We have already received feedback about how easy it is to apply for the free Hertz #1 Club Gold card and that the rental rates are very competitive.

Whether you are travelling for business or leisure, throughout Australia and New Zealand and selected overseas locations, Hertz now offers special discounted rates to ASUM members. These rates are available on the entire fleet of vehicles.

As ASUM's official car rental partner, Hertz will offer you exclusive special member rates and value-added benefits all year round. All you have to do is quote the Customer Discount Programme (CDP) number 1594587 when you make a reservation.

Members are advised to apply for the Hertz #1 Club Gold Card membership, which is free to ASUM members (normal cost $A50). To find out more about these exclusive benefits and to make a booking, contact Hertz on 13 30 39 or visit www.hertz.com.au and quote the ASUM CDP number 1594587.

AMP home loan package

ASUM is also pleased to announce an affinity partnership with AMP Banking, which is offering a special home loan package tailored especially for ASUM members. The AMP Affinity Home Loan Package is suitable for home or investment loans and offers a range of flexible options to make paying off your loan easier.

In addition to this great value package, ASUM members can also benefit from significant interest rate discounts and fee waivers. Not only do members benefit from discounts off the AMP Home Loan, but they also have access to other AMP Banking benefits such as bonus rates on selected AMP term deposits and benefits on the AMP Cash Management Account.

For more information call 1300 360 525 to speak with an Affinity Home Loan Specialist or email affinitybanking@amp.com.au to see how you could benefit.

'Must attend' ASUM meetings

ASUM runs four major meetings each year. Now that the ASUM MDW is over, there are three upcoming meetings that members are advised to include in their diaries as 'Must Attend' events this year.

Look out for the registration brochures in this issue of the *Ultrasound Bulletin* for our upcoming ASUM meetings.

ASUM-RANZCR NZ joint meeting

The ASUM NZ Branch joint meeting with RANZCR NZ Branch will be held from 28–31st July 2005 at the Wellington Convention Centre, Wellington, New Zealand.

All ASUM members and non members are welcome to register for the meeting which has been put together jointly by the local Organising Committee of RANZCR and ASUM NZ Branches.

Registrants are encouraged to bring their families to enjoy the beauty of NZ. Wellington is New Zealand's capital city and is a beautiful urban destination in a stunning natural setting. It is a compact city that is easy to get to and easy to get around. The city is the hometown of many arts and prominent people including the Director of the *Lord of the Rings* trilogy, Peter Jackson.

There are many attractions and a must see is the Te papa Tongarewa. It is also the gateway to the North and South Island by air and by sea.

To register, visit the ASUM website at www.asum.com.au or email the ASUM NZ RANZCR NZ conference managers at admin@mianz.co.nz

ASUM 2005 ASM

The ASUM 2005 Annual Scientific Meeting will be held from 29th September to 2nd October 2005 at the Adelaide Convention Centre, a superior, purpose built convention facility.

The Call for Abstracts was distributed with the February 2005 *Ultrasound Bulletin*. The planning of the program is well advanced and the local Organising Committee promises an exciting scientific and social program for delegates.

Adelaide, the capital of South Australia, balances the new with the old. The city's cultural boulevard, North Terrace, is home to the Art Gallery of South Australia, the Bradman Cricket Museum and the South Australian Museum: home to one of the largest collections of Indigenous Australian artifacts in the world.

Adelaide is also the gateway to a range of regional touring experiences, these include the wine-growing areas of the Barossa, McLaren Vale, Clare Valley and Coonawarra; the adventure of the Outback with the Flinders Ranges and Aboriginal Dreaming; and the unspoilt beauty of Kangaroo Island. For more information see www.icms.com.au/asum2005 or email asum2005@icms.com.au.

For conference travel bookings on Qantas, see www.asum.com.au to link you directly to booking website.

Asia Link 2005 Thailand

The ASUM Asia Link meeting for 2005 is a joint meeting with

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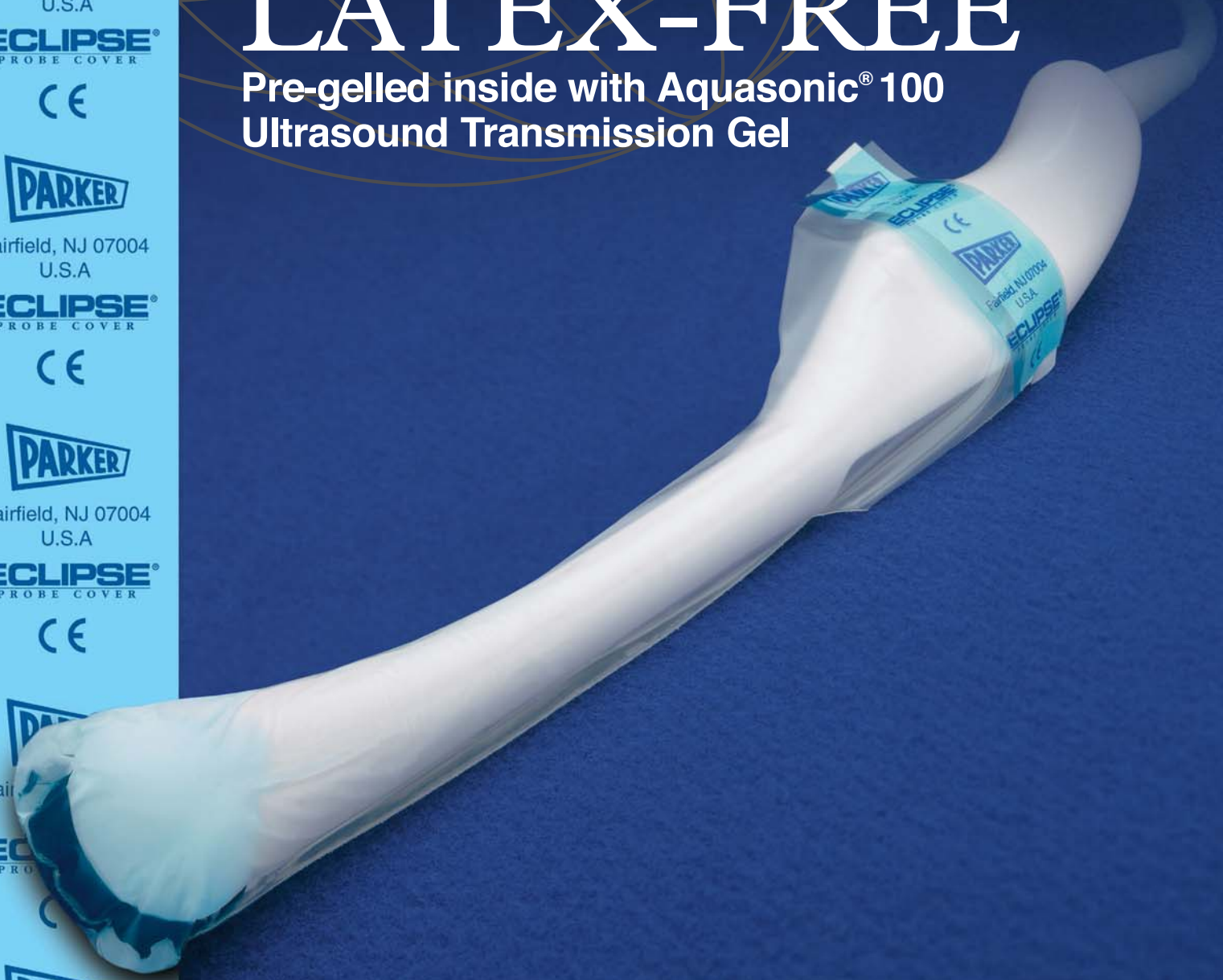

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the Medical Ultrasonic Society for Ultrasound of Thailand (MUST). This ASUM Asia Link Excellence in Ultrasound meeting will be held on 10–11th November 2005 in Bangkok at the Conrad Bangkok Hotel.

The program will focus mainly on general ultrasound and obstetrics and gynaecology ultrasound and is being designed jointly with speakers from Australia, New Zealand and Thailand.

This is a meeting that offers members an opportunity to combine professional development with travel to Asia with learning, professional and cultural exchanges. Delegates who attended the ASUM Asia Link meetings in 2003 and 2004 report that they received excellent value for money and enjoyed the cultural and professional exchanges that arose from their attendance at the meetings.

It is through such activities that the international relationships with ultrasound societies in the region have become closer and stronger. This, in turn, enhances mutual cooperation and advancement for the highest standards of ultrasound practice in the region. For any general enquiries about this meeting, please email me at: carolinehong@asum.com.au

Awards, scholarships and teaching fellowships

Members are again reminded about the long list of annual scholarships offered through and by ASUM, such as the Beresford Buttery Overseas Traineeship, the Giulia Franco Teaching Fellowship, the Chris Kohlenberg Teaching Fellowships, the Best Sonographer Research Awards, the Best Research Presentation Awards and the Best Clinical Presentation Awards.

Members are welcome to apply for grants towards research projects following the criteria set by the Research and Grants Committee as notified on the ASUM website at www.asum.com.au.

Any member or supporter can make voluntary donations specifically to the ASUM Research and Grants fund. All donations will be gratefully acknowledged. The ASUM Research and Grants fund was established in 2002 and now has $250,000 sourced from surpluses of ASUM meetings. ASUM will continue to contribute to this fund from any surpluses which arise from future ASUM meetings, with the aim of building this fund up to $A1million so as to make the program sustainable and viable in the long term.

ASUM and global ultrasound news

WFUMB 2006 World Congress in Seoul

ASUM members are encouraged to attend the 11th World Federation for Ultrasound in Medicine and Biology World Congress to be held in Seoul Korea from 26th May to 1st June 2006.

Speakers from Australia and New Zealand who are included on the WFUMB 2006 World Congress program are Dr Stan Barnett, Dr Jack Jellins, Dr Roger Davies, Dr Glenn McNally, Dr David Rogers, Dr Simon E Meagher and Dr Brian J Trudinger.

Information is constantly being updated on www.wfumb2006.com or you can email the organisers at wfumb2006@radiol.snu.ac.kr for more information. If you intend registering for WFUMB 2006, please email your details to me at carolinehong@asum.com.au so that I can look out for you at the ASUM Booth in Seoul or give you a task to do in helping promote our launch of WFUMB 2009 in Sydney.

European Radiology Congress 2005 in Vienna

Dr Stan Barnett, Dr Glenn McNally, Dr David Rogers and I, as part of the WFUMB 2009 promotion team, attended the ECR 2005 Congress in Vienna in early March.

Successful meetings were held with Prof Helen Carty, Chairman of the ECR Board, and Prof Antonio Chiesa, the ECR 2005 Congress President, concerning opportunities that exist for working with the ECR in mutual cooperation in the promotion of our meetings at opposite ends of the globe.

It was pleasing to see many of our colleagues from RANZCR present at the meeting. ASUM was featured on the first day's issue of *ECR Today News*, promoting ASUM meetings. *ECR Today News* also featured Dr Lawrence Lau, past President of RANZCR, on quality improvement issues.

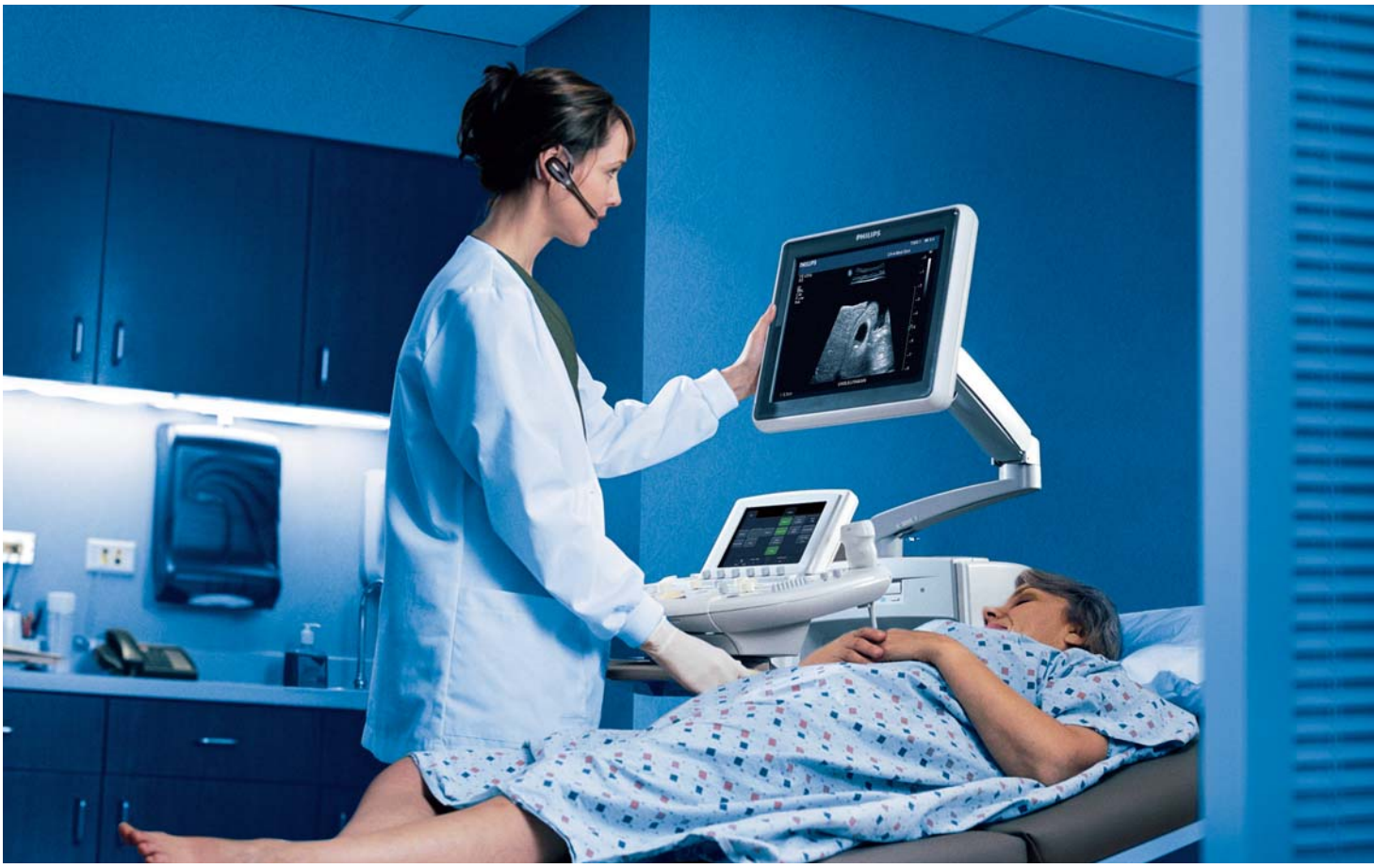
The ASUM team also met with Dr Michael Nielson, Chair of the Education Committee of the Denmark Ultrasound Society, Prof Michel Claudon, Vice President of WFUMB, and Prof Byung Ihn Choi, Convenor of WFUMB 2006 World Congress.

The Vienna Congress was invaluable for establishing new contacts and ideas which, as the President's message in this issue highlights, will certainly benefit us in planning for our ASUM meetings.

Danish Society for Diagnostic Ultrasound (DSDU) Link Program

I am pleased to update members and advise that ASUM has finally signed a Memorandum of Understanding with the Danish Society for Diagnostic Ultrasound (DSDU). The CADUCEUS or Collaborative Australasian Danish Undertaking for Continued Excellence

Alan Williams, sonographer lecturer, promoting the DMU (Asia) in Malaysia



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in UltraSound, is the name of this collaboration. Caduceus is the symbol of healing with the wings and the two serpents.

The primary purpose of the Memorandum of Agreement is to facilitate DSDU and ASUM in promoting a high standard of professional practice in medical ultrasound and also to promote a mutual exchange of information on, or relating to, education and training in medical ultrasound.

BMUS Presidential exchange 13–15th December 2005

ASUM members will be most welcome to attend the 37th British Medical Ultrasound Society BMUS 2005 Annual Scientific Meeting to be held in Manchester ICC from Tuesday 13th to Thursday 15th December 2005.

It is intended that a small delegation from ASUM will travel with the President, Dr David Rogers who is also presenting as one of the keynote speakers. Both societies are working cooperatively to promote our meetings to our respective members to encourage academic exchange and increased awareness of ultrasound meetings at the opposite ends of the globe. For more information see www.bmus/org

Korean Medical Society for Ultrasound Asia Linkage 27–28th May 2005

The ASUM Council has approved Assoc Prof Albert Lam, Honorary Fellow of ASUM, to be the ASUM representative at the annual ASUM–KMSU Annual Scientific Meeting speaker exchange program.

Prof Byung Ihn Choi, Past President of KMSU, Vice President of WFUMB and also Convenor of the WFUMB 2006 World Congress, is an invited speaker at the ASUM 2005 Annual Scientific Meeting to be held in Adelaide this year. Prof Choi has many years of experience as an international speaker, has published widely and is well known for his work in hepatobiliary ultrasound.

Indonesian Society for Ultrasound in Medicine scholarship

As reported in the previous messages, the ASUM Council has allocated funds from the ASUM Asia Link Program for several ultrasound societies in Asia.

We are pleased to have received a formal application from the Indonesian Society for Ultrasound in Medicine (ISUM) and a sum of $A6000 had been approved for one of ISUM's members to be placed in either Sydney or Melbourne to learn about 'Basic & Advanced 3D/4D Ultrasound, particularly for Obstetric-Gynaecology and Fertility Sonography'.

Dr Daniel Makes, President of ISUM has expressed his gratitude and appreciation for this scholarship, which supports our mutual objective of promoting excellence in ultrasound and helping to improve ultrasound practice in the region.

Medical Ultrasound Society of Singapore Meeting 21–23rd May 2005

ASUM members are welcome to register for Medical Ultrasound Society of Singapore (MUSS) meeting to be held in Singapore from 21–23rd May 2005. This meeting is supported by ASUM and is the first step towards linkage between the two societies.

Dr Tony Joseph was nominated as the ASUM representative speaker on Ultrasound in Emergency Medicine at this meeting.

The meeting is the third Annual Seminar of MUSS and the program includes Ultrasound in Organ Transplantation, Emergency Medicine and Contrast-Enhanced Sonography.

For registration, please refer to Ms Phua Chay Sin tel +65 6436 8043, fax +65 6226 5660 or email ddipcs@nccs.com.sg

Medical Ultrasonic Society of Thailand 10–11th November 2005

Assoc Prof Dr Dhiraphongs Charoenvidhya, President and Assoc Prof Dr Teera Wacharaprechanont, Assistant Secretary of the Medical Ultrasonic Society of Thailand were invited guests of ASUM at the recent Multidisciplinary Workshop. A Memorandum of Understanding was signed between the Presidents of MUST and ASUM for the joint meeting to be held in Bangkok on 10–11th November 2005.

Dr Dhiraphongs also made a presentation about the Thailand society to the ASUM Council meeting. He encouraged ASUM members to attend this joint meeting, announcing that the Thai government is offering incentives for visits to Thailand by way of special discounts for 2005.

The relationship between ASUM and MUST is strong and opens up many opportunities for joint cooperation for future meetings.

Luncheon briefing for Malaysian Prime Minister

I was honoured and privileged to be a guest at the recent business luncheon addressed by Prime Minister of Malaysia, the Hon Abdullah Badawi, during his visit to Australia.

This visit was his first since coming to office and also the first by a Malaysian Prime Minister in the last 21 years, indicating the warming of relationships between our two countries.

Education has been identified as one of the main priorities in the proposed free trade agreements between Australia and Malaysia. During the luncheon, I met with members of his Ministry, and in question time I was given an opportunity to inform the Prime Minister about ASUM and its activities, including the advantages of the team approach to provision of ultrasound services in Australia and New Zealand, and the setting up of Vision College in Kuala Lumpur to offer sonography education and the DMU (Asia).

Vision College has received approval from the National Accreditation Board of Malaysia, pending approval from the Minister of Higher Education, to offer sonography education and the DMU (Asia).

Alan Williams, DMU, previously a senior sonographer working in Tasmania, has been recruited through ASUM by Vision College to be the inaugural sonographer lecturer and has already settled well into life in Asia. The publicity about DMU (Asia) has reached countries in many parts of Asia and it is envisaged that the College will become the centre for training of sonographers in Asia for work in Asia after qualifying.

China

At the time of writing, ASUM has finally succeeded in organising a meeting in China with the Chinese Ultrasound Society. This has been the result of nearly two years of negiotiation and preparation.

The President, Dr David Rogers

and the Chair of Asia Link, Dr Glenn McNally and I will attend a meeting with GE Healthcare Technologies in Shanghai and address a group of medical professionals in Beijing, headed by Dr Jiang Yu Xin, the current President of Society of Ultrasound in Medicine, Chinese Medical Association (SUM/CMA). More information about this important and exciting development for ultrasound in the Asia/Pacific will be reported in a future issue of the *Ultrasound Bulletin.*

DDU/DMU Examinations

The DDU Part I Examination and the written portion of DDU Part II will be held on Monday 16th May 2005. The viva for DDU Part II (excluding cardiology) will be held in Sydney on Saturday 18th June 2005. The cardiology candidates for DDU Part II will sit their vivas in Melbourne on Thursday 23rd June 2005.

The DMU Part I and DMU Part II Written Examinations are to be held throughout Australia and New Zealand on Saturday 30th July 2005. The DMU Part II OSCE/Oral Examinations will be held on Saturday 8th October for cardiac and vascular candidates and on Saturday 15th October for the general and obstetric candidates. DMU Practical Examinations are conducted at individual practices from April through October.

Membership renewal

All of our valued members are reminded that, as at the end of financial year, 30th June 2005, all current memberships with ASUM will lapse. The ASUM Secretariat is sending out subscription renewal notices this month.

If you have not notified the office of an address, email or telephone change, please do so in order to receive your ASUM mail. Early bird discounts continue to apply and are advertised in this issue of the *Ultrasound Bulletin*. Should you have any questions or concerns regarding membership, please feel free to contact our office by email to asum@asum.com.au

Keep in contact

Please feel free to contact any member of the ASUM staff or myself, at the ASUM Head Office, if you have any questions or need any assistance. Don't forget to visit the ASUM website at www.asum.com.au for regular updates.

Dr Caroline Hong
Chief Executive Officer
email carolinehong@asum.com.au

DMU EXAMINATIONS

James Hamilton tel +61 2 9958 7655

email dmu@asum.com.au

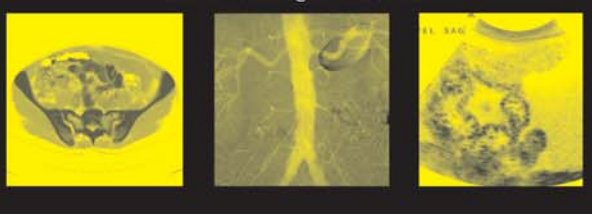
will answer your questions about the DMU

DDU EXAMINATIONS

Marie Cawood

tel +61 2 9958 7655 email ddu@asum.com.au

will answer your questions about the DDU



Provisional Program 35th Ann
Thursday 29th September – Sunday 2nd Octob

Thursday 29th September 2005

Point of Care Limited Ultrasound Course: See www.icms.com.au/asum 2005 for program details

DMU Practical Examiner Accreditation / Training Day – Adelaide Convention Centre

Nuchal Translucency Course: See www.icms.com.au/asum 2005 for program details

9.30 am	**Rhodri Evans** Head and Neck Node Chains with Biopsy Demonstration **Debbie Hardy** Overcoming Difficult Morphology Scans **Rhodri Evans** Salivary Gland Assessment with Biopsy Demonstration	**Jeff Siegmann** Morphology Scans. What Do I Really Need to Know? **Robert Ziegenbein** Exercise Induced Leg Pain/Entrapment and the Thoracic Outlet **Christopher Sykes** Wrist/Hand Ultrasound	**Ros Savage & Peter Esselbach** Safe Scanning and OH&S **Heather Webber** Breast – Combined Mammographic and Ultrasound Assessment **Roger Gent & Lino Piotto** Interesting Paediatric Case Studies	**Sue Farnan** Ankle Ultrasound **Barry Chatterton & Peter Spyropoulos** Eye Ultrasound **Martin Necas** Lower Extremity Arterial Assessment	**Christopher Sykes** Carotids and Discussion on Surgical Followup **Roger Gent** Paediatric Hips **Jane Fonda** TV Scanning
Lunch					
	Nartin Necas Venous Reflux **Sean McPeake** Groin Ultrasound	**Lino Piotto** Paediatric Abdomen – Thinking Outside the Square **Richard Allen** Abdomen Doppler	**Beth Gaskin & Ewa Janicki** Dealing with Patient Grief **Martin Necas** Doppler Observations of Arterial Abnormalities: Fresh Look at Hemodynamics	**Nick Gelekis** The Fetal Heart **Piotr Niznik** The Fetal Heart	**Sean Mcpeake** Sonography of the Buttock and Hamstring **Jeni Kidd** Endoluminal Graft Assessment
4.15 pm	**Drinks**				

Friday 30th September 2005

9:00am

Opening Address

Peter Burns Microbubble Contrast Imaging

Anna Parsons Sonographic Evaluation of Abnormal Bleeding: Uterine Physiology and Sonographic Technique, Including Sonohysterography

Rhodri Evans Staging Head and Neck Cancer with Ultrasound Using FNA and Core Biopsy Techniques

Morning Tea

	O&G **Peter Muller** Uterine Artery Doppler and Biochemical Marker Assessment of Placental Function **Martin Necas** Sonographic Evaluation of Band Like Structures in Obstetrics **Chris Wilkinson** Fetal Doppler Assessment of IUGR	**VASCULAR** **Jo Polak** Ultrasound and Early Atherosclerosis Prevention **Leandro Fernandez** Doppler Ultrasound in Renovascular Hypertension **Robert Ziegenbein** The Dynamics of Veins, Popular Misconceptions	**PROFERRED**

Lunch

	GENERAL **Wes Cormick** Benign Breast Disease **Leandro Fernandez** Advanced Sonography of Near Field Skin and Subcutaneous Structures **Rob Gibson** Gall Stones and Bile Ducts – Making the Most of Ultrasound **Byung Choi** Elastography: Work in Progress	**VASCULAR** **Jo Polak** Carotid Plaque, is Characterisation Useful **Jeni Kidd** The Role of Duplex Ultrasound Following Lower Extremity Endovascular Intervention **Anne Padbury** Ultrasound Assisted Sclerotherapy **Jo Polak** Multimodality imaging of Cerebrovascular Disease, the Role of Ultrasound	**MIXED** **Sue Westerway** Macrosomia, Interventions and Birth Weight Differences in Chinese vs Caucasians and the Importance of the Abdominal Circumference **Rob Cocciolone** First and Second Trimester Serum Screening Analytes and Pregnancy Outcome

ual Scientific Meeting of ASUM
e r 2005 Adelaide Convention Centre, Australia

Friday 30th September 2005

Afternoon Tea

	O&G	GENERAL	3D ULTRASOUND
	Martin Necas Fetal Vascular Anomalies **Peter Muller** The Genetic Sonogram – Can We Adjust Risk? **Anna Parsons** Sonographic Evaluation of Abnormal Bleeding at Any Age: Clinical Practice and Cases	**Rob Gibson** Portal Hypertension and Chronic Liver Disease **Rhodri Evans** Potential Pitfalls in Evaluation of Neck Cysts and Abscesses. **Wes Cormick** US in Breast Cancer – Actually Making a Difference	**Peter Burns** Real Time 3D Ultrasound **Byung Choi** Three Dimensional Ultrasound of Hepatobiliary Diseases **Leandro Fernandez** Doppler and 3D Ultrasound of Carotid Artery

6.00 pm **Welcome Reception in the Trade Area**

Saturday 1st October 2005

7.30 am **Breakfast with the Professors**

8.30 am	O&G	VASC	STANDARDS
	Pippa Kyle Medical Disorders in Pregnancy – Who May Need Ultrasound Investigations **David Fauchon** First Trimester Fetal Anatomy: 'The Quick Once-Over' **Jane Fonda** Sonographic Detection and Assessment of Ectopic Pregnancy **Vanessa Pincham** Update on First Trimester Fetal Profile Assessment Including Fetal Nasal Bone and Maxilla	**Jo Polak** Epidemiology of Cardiovascular Disease, the Role of Ultrasound **Peter Burns** Molecular imaging and gene Therapy Using Bubbles and Ultrasound **Jeni Kidd** Optimising the Duplex Evaluation of Aortic Endografts **Kathryn Busch** Update on Arterial Neovascularity of Thrombus	**Karen Pollard** Everyday Challenges in Being a Safe Practitioner of Obstetric Ultrasound Examinations **Tania Griffiths** How Safe is Ultrasound? **Jenny Parkes** Equity and Reproducibility Issues in Practical Assessment of Student Sonographers **Margo Gill** University Based Education for Sonographers – Issues and Challenges for the Profession

Morning Tea

	O&G	MSK	GENERAL
	Peter Muller The Screening Fetal Echocardiogram, How and for Whom? **Pippa Kyle** Screening/Diagnosis of Congenital Heart Disease in The Fetus **Terry Robertson** The Abnormal Fetal Heart	**Peter Burns** High Frequency Imaging and Doppler in the 20 – 100Mhz Range **Rethy Chhem** Ultrasound Assessment of the Ankle **Anita Lee** Assessment of Musculoskeletal Ultrasound in the Early Diagnosis of Rheumatoid Arthrititis. **Kerry Thoirs** Ultrasound of the Ulnar Nerve	**Barry Chatterton & Grant Raymond** Sound and Light, Ophthalmological Problems from a Clinical and Ultrasound Perspective **Byung Ihn Choi** Ultrasound of Malignant Liver Tumors **Juliet Kaye** MRI as an Adjunct to Ultrasound in Fetal Abnormalities

Lunch

	MSK	O&G	MIXED
	Wes Cormick Ultrasound in Non-rheumatoid Arthropathy **Rethy Chhem** US of Musculoskeletal Infection **Peter Burns** Nonlinear Imaging Methods	**Anna Parsons** Evaluation of Pelvic Pain: The Ultrasound Assisted Pelvic Examination **Chris Wilkinson** Management of Isoimmunization with Middle Cerebral Artery Doppler **Pippa Kyle** Preeclampsia – Screening and Monitoring	**Roger Gent** The Role of Sonography in Paediatric Abdominal Trauma **Lino Piotto** Investigation of Abdominal Pain in Children **Byung Choi** Benign Liver Mass: Ultrasound **Martin Necas** Ultrasound Assessment of Ovarian Veins

Afternoon Tea

	O&G	MSK	GENERAL (ENDOCRINE)
	Charles Lott Male Infertility Evaluation Christine Kirby Ultrasound and Female Infertility **Anna Parsons** Sonographic Evaluation of the Tubes and Extraovarian Adnexal Phenomena **Pippa Kyle** Multiple Pregnancy	**Steve Zadow** Lateral Hip Pain, to Include Hip, Gluteal Ins, T.F.L., Bursitis, Psoas Tendon **Rethy Chhem** US of the Knee **Sean Mc Peake** Sonographic Assessment of Hamstring Pain in Athletes Ultrasound of Footballer's Groin Injuries, with MRI Correlation	**Leandro Fernandez** 3D Ultrasound in Small Parts: Testicle, Thyroid and Parathyroid **Sue Westerway** 3D Assessment of Parathyroid Adenomas

5.00 pm **Poster Defence (Wine and Cheese)** **7.00 pm Gala Dinner**

Sunday 2nd October 2005

7.30 am	**Recovery Breakfast with Professors**		
8.30 am	**MIXED SESSION** **Pippa Kyle** Hydrops Fetalis **Rob Gibson** Pancreatic Ultrasound – is it Still Useful in 2005? **Wes Cormick** Fetal Hearts – Sorting Outlfows Out and How to See That VSD **Jo Polak** Venous Ultrasound, Value in Upper Extremity DVT	**MSK** **Neil Simmons Advanced Foot and Ankle Ultrasound** **Julie Gregg** Plantar Plate Sonographic Technique, Surgery, Foot Function and Post Op Findings **Rethy Chhem** Ultrasound of Arthritis **Stephen Bird T**he Role of Ultrasound in Evaluation of Upper Limb Entrapment Syndromes	
Sunday Brunch			
	Roger Gent Ultrasound of Appendicitis in Children **Denise Roach T**he Use of Ultrasound Imaging in the Diagnosis of Thoracic Outlet Syndrome. **Anna Parsons** The Secret Life of The Ovaries: the Difference Between Neoplasia, Metaplasia and Physiologic Cysts	**Robert Ziegenbein** Exercise Induced Leg Pain, Entrapment and the Thoracic Outlet **Wayne Gibbon** Ultrasound Guided Intervention in Skeletal Disease **Fred Joshua** Validity and Reliability of Power Doppler Sonography of the MCP Joints in Rheumatoid Arthritis	
Tea Break			
	Rob Gibson Work-up of the Jaundiced Patient **Peter Burns** Drug Delivery Using Ultrasound **Rhodri Evans** Salivary Glands and the Larynx **Wes Cormick** Breast Prosthesis and Complications	**Wayne Gibbon** Ultrasound Detection of Mechanisms Underlying Overuse Injuries. The "Cause of the Cause" for Pain **Chris Sykes** Ultrasound Assessment of the Triangular Fibro Cartilage Complex **Wes Cormick** Gas as a Contrast Agent in MSK Ultrasound **Rethy Chhem** US of Non-Rotator-cuff Lesions of the Shoulder	
2.45 pm	**2006 Introduction and Closing Address**		

ASUM
Beresford Buttery Overseas Traineeship

It is with great pride that ASUM and GE have the opportunity to offer an annual traineeship in the field of obstetric and gynaecological ultrasound, in memory of Beresford Buttery FRANZCOG, DDU, COGUS who made an inestimable contribution to his profession.

Since its foundation GE Medical Systems has constantly been at the forefront of research and technical innovation, with GE today being recognised as a world leader in the supply of diagnostic imaging systems.

The award will cover attendance at an appropriate educational program at the Thomas Jefferson Research and Education Institute in Philadelphia and will include tuition fees, economy airfare and accommodation for the duration of the course (usually four days).

The award will be made to applicants who:

1. Seek to further develop their skills and experience in obstetric and gynaecological ultrasound.
2. Have as a minimum qualification Part 1 of the DDU or DMU (or equivalent) and have completed their most recent ultrasound qualification within the last 10 years.
3. Have been a financial member of ASUM for a minimum of two years prior to the closing date. Applications should include:
   - A *curriculum vitae*
   - Details of current and post employment, particularly in the field of obstetrics and gynaecology;
   - Testimonials from two referees in support of the application including contact address and telephone number;
   - An outline of professional goals and objectives;
   - An indication of benefit from award of the Traineeship.

The successful applicant is asked to provide a written report on return from the course.

Applications addressing the criteria should be forwarded by Friday 24 June 2005 to:
GE Beresford Buttery Overseas Traineeship
c/- ASUM 2/181 High Street Willoughby
NSW 2068 Australia

Keynote speakers 2005 ASM

Prof Rethy Chhem

Rethy K Chhem graduated from the University of Paris and has a PhD in Education. He taught radiology at the University of Sherbrooke, McGill University, then at National University of Singapore. He has conducted extensive research on musculoskeletal ultrasound and paleoradiology.

He has published more than 100 papers and book chapters and edited three books on MSK ultrasound. He is a member of the International Skeletal Society and founding Vice President of the Asian Musculoskeletal Society.

He is currently Head of the Department of Radiology at London Health Sciences Centre and Professor of Radiology and Anthropology at the University of Western Ontario.

Prof Joseph Polak

Joseph Polak is a radiologist at the New England Medical Center, Tufts University School of Medicine, Boston, Massachusetts, USA where he is Director of Cardiovascular Imaging. He is also Chief of Radiology at the Lemuel Shattuck Hospital, Boston.

He is a co-investigator in the NIH sponsored Framingham Heart Study, the Cardiovascular Health Study and the Multi-Ethnic Study of Atherosclerosis.

An invited speaker at numerous national and international meetings, he has authored or co-authored over 130 original scientific articles and more than 80 other publications. He is the author of a well recognised book: Peripheral Vascular Ultrasonography: a practical guide.

Dr Polak's research interests include: non-invasive determination of early atherosclerotic changes using high resolution ultrasound and magnetic resonance imaging; the accuracy of color Doppler-assisted ultrasound and magnetic resonance imaging in cardiovascular and venous disease; the evaluation of the cost-effectiveness of non-invasive vascular imaging; and the development and implementation of non-invasive techniques to measure cardiovascular health.

Prof Anna Parsons

Anna Parsons trained at the University of Michigan Medical School where she completed her internship, followed by residency in obstetrics and gynaecology. She completed her reproductive endocrine Fellowship at the University of Illinois at Chicago.

She has held positions as assistant professor at the University of Illinois at Chicago , associate professor at the University of South Florida and is currently working at Yale University

Her clinical and research interests include the use of vaginal ultrasound as the best pelvic examination and a bioassay of reproductive physiology.

Prof Leandro Fernandez

Leandro Fernandez is Director, Laboratory of Advanced Sonography, Instituto Medico La Floresta and the SonoImagen, School of Advanced Sonography affiliated to Jefferson Ultrasound Research and Education Institute, Thomas Jefferson University, Philadelphia, USA.

His is Councillor of the Administrative Board of the World Federation for Ultrasound in Medicine and Biology, a member of the Education Committee and Chairman, Latin American Education Collaboration Group.

He is also a member of the Advisory Board of the International Certification Education and Accreditation Foundation (ICEAF) and Past President of the Latin American Federation of Societies of Ultrasound.

Prof Byung Ihn Choi

Byung Ihn Choi, MD, received his medical and doctorate (PhD) degrees and completed graduate school and his radiology residency at Seoul National University in South Korea.

Upon graduation, Dr Choi served in the Korean Army as radiologist-in-chief, Major, at the Capital Armed Forces Hospital for three years. He then returned to Seoul National University Hospital to begin his more than 20-year professional affiliation, where he has risen through the ranks to become Professor and Chairman of Radiology.

Active in the ultrasound community, Dr Choi has served as President of the Korean Society of Abdominal Radiology, and Chair of the Board of Directors of the Korean Society of Medical Ultrasound, President of the Korean Study Group of Liver Cancer.

He is a Fellow of the Indian College of Medical Ultrasound and is, currently, President of the Asian Federation of Societies for Ultrasound in Medicine and Biology (AFSUMB), Vice President 1 and Chair of the Organising Committee for the 11th Congress of the World Federation for Ultrasound in Medicine and Biology 2006.

He has served on the editorial boards of six journals and has lectured at 125 international and more than 200 domestic congresses, or symposia.

Having authored more than 400 papers and 23 book chapters, Dr Choi is a major contributor to the scientific research community. He has received numerous honours and awards for his contributions to the field of ultrasound.

Mr Martin Necas

Martin Necas completed training in general, obstetric, and vascular ultrasound in Seattle, USA. He relocated to New Zealand in 1997. He is currently the charge sonographer of Waikato Hospital in Hamilton and private vascular laboratory Tristram Vascular Ultrasound.

He is a prolific and passionate speaker, clinical instructor and educator. He is the author of several articles and on-line publications and a member of the ASUM DMU Board of Examiners.

His main clinical areas of interest

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Adelaide Convention Centre

ASUM 2005

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include high risk obstetric ultrasound (structural anomalies, fetal echocardiography and vascular ultrasound.

Dr Rhodri Evans

Rhodi Evans is Clinical Director Radiology, Swansea NHS.

His special interests include head and neck, uro-radiology, musculoskeletal and sports imaging.

He is Course Director – Morriston Head and Neck Ultrasound Workshop, Examiner – Royal College of Surgeons and a member of the BMUS Scientific Committee.

He is author/editor of Practical Head and Neck Ultrasound, Head and Neck Imaging - a Practical Approach (Cambridge University Press)

His sporting interests are Rugby and Triathlon.

Prof Robert Gibson UI/UL Speaker for 2005

Robert Gibson is Professor and Deputy Chairman in the Department of Radiology at The University of Melbourne and Staff Radiologist at The Royal Melbourne Hospital.

His main clinical and research interests are in ultrasound and gastrointestinal and hepatobiliary radiology, both diagnostic and interventional.

His publications include over 100 papers, several chapters and one textbook in these areas.

He has been active in medical education and recently led the development of a new radiology curriculum for medical students at The University of Melbourne, which forms the basis of a CD-ROM Medical Imaging. He has been Chairman of the Education Board and Secretary of ASUM and was Foundation Editor of the Ultrasound Bulletin. He has also served on various committees of ASUM and has been an examiner for DDU and DMU.

Prof Peter Burns

Peter Burns is Professor of Medical Biophysics and Radiology at the University of Toronto and Senior Scientist at Sunnybrook and Women's College Health Sciences Centre in Toronto.

He received first class honours in theoretical physics and trained at the University of Bristol in the United Kingdom. He has held faculty positions at Yale University and Thomas Jefferson University in the United States and has held his position at the University of Toronto for 14 years.

Prof Burns has had more than 120 peer-reviewed scientific publications and patents, including: 1980: Reported first detection of Doppler flow signals from tumours. 1991: Developed and patented first harmonic greyscale and Doppler images, now found on most clinical ultrasound systems. 1994: Showed first harmonic power Doppler images using microbubble detection to demonstrate microvessels. 1999: Developed and patented pulse inversion imaging and Doppler, creating first real time perfusion images of the heart microcirculation with ultrasound.

Prof Burns has received the following awards: Ultrasound in Medicine and Biology Clinical Prize World Federation of Ultrasound in Medicine and Biology Pioneer Award; Bronze medal of the Canadian Association of Radiologists; Ian Donald Gold Medal for Technical Achievement (International Society for Ultrasound) Innovation and Excellence Trophy (Société Canadienne-Francaise de Radiologie)

He is a Fellow of the American Institute for Ultrasound in Medicine, an honorary member of the Italian Radiology Society, the Canadian Association of Radiologists, the Chilean Society of Radiologists and the Society for Vascular Technology; and a proud honorary member of the Australasian Society for Ultrasound in Medicine.

Prof Pippa Kyle

Pippa Kyle was appointed Head of Obstetrics and Gynaecology at the Christchurch School of Medicine and Health Sciences, Otago University in 2003. After initial undergraduate and registrar training in O&G training in New Zealand, she completed her specialist training in the United Kingdom, including a subspeciality training in maternal and fetal medicine.

She was Director of the Regional Unit in Bristol, UK, for seven years.

She completed a Doctor of Medicine thesis in Oxford, investigating preeclampsia.

Prof Kyle has a major clinical and research interest in both fetal complications, and maternal medical disorders in pregnancy and, presently, is establishing a tertiary Fetal Maternal Medicine Unit for the South Island.

NEED ACCOMMODATION IN ADELAIDE?

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Hyatt Regency Adelaide	Guest Room	A$195
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3.5 Star		
Mercure Grosvenor Hotel Adelaide	Single /Double /Twin	A$125

ASUM Ultrasound Bulletin 2005 May; 8 (2): 20–21

Guidelines for the Performance of a First Trimester Ultrasound

May 1995, Revised October 1999, Revised October 2002

Introduction and equipment

Studies should be performed using an abdominal and/or vaginal approach. A high frequency transducer should be used and the equipment should be operated with the lowest ultrasonic exposure settings capable of providing the necessary diagnostic information. A vaginal transducer should always be available and a transvaginal scan should be offered to the patient when it is anticipated that this would result in a more diagnostic study. The patient may choose to accept or refuse this offer and undue persuasion is inappropriate.

Reference should be made to the *Guidelines for the Performance of a Gynaecological Scan* regarding the facilities and preparation for such an examination.

ASUM policy on disinfection of vaginal transducers should be followed.

History

Estimate gestation based on last menstrual period or time of conception. Document symptoms and, if possible, the result and date of any pregnancy test – Human Chorionic Gonadotrophin (HCG).

Gestational sac

The gestation sac should usually be visible from 4.5 to 5 weeks using high frequency transvaginal ultrasound.

When a gestation sac-like structure is seen but no live fetus demonstrated, it is important to attempt to ensure that it is not a 'pseudo gestational sac'. Look for the echogenic trophoblast rim and the yolk sac, and ensure that the fluid in the gestation sac is echo free.

If a gestation sac is not visible in the uterus of a patient believed to be pregnant, the adnexa should be carefully examined looking for evidence suggesting the presence of an ectopic pregnancy – most ectopics can be suspected with high frequency transvaginal ultrasound.

In a patient with a positive pregnant test but either:

- no gestational sac is seen within the uterus or elsewhere in the pelvis
- an apparent sac is seen but no fetal structures (including yolk sac) or heart movements are visible

consider the following:

- pregnancy not as advanced as thought (e.g. delayed ovulation and conception in that cycle)
- ectopic pregnancy
- failed pregnancy including complete miscarriage.

Interpretation of the scan may be more accurate if the result of the quantitative HCG levels is known.

There is more than one accepted laboratory standard for reporting HCG levels. The units for the local service should be taken into account when correlating sac development and HCG level. In general when the level is > 2,000 IU/1 a gestation sac should be seen in the uterus on transvaginal scanning. If no sac is visible an ectopic must be considered.

If the level is < 1,000 IU/1 then further follow up by serial HCG is appropriate and/or a repeat scan if the diagnosis is uncertain.

Gestational age

This is most accurately assessed in the first trimester. The earlier the crown rump length (CRL) is measured, the more accurate is the assessment of gestational age. The CRL can be measured from six weeks gestation. The composite CRL chart in the *ASUM Policies and Statements* folder is recommended. From 11 weeks multiparameter assessment can be used. Biparietal diameter (BPD) is the most often used second measurement.

Fetal heart movements

With a high resolution vaginal transducer, fetal heart movements are often visible from five to six weeks (i.e. CRL = 2 mm), but may not be seen until CRL = 3–4 mm (see paragraph on pregnancy failure).

Fetal number

The diagnosis of a multiple pregnancy requires the visualisation of multiple sacs prior to 6 weeks and subsequently visualisation of multiple embryos.

The first trimester is the optimum time to determine chorionicity of the fetuses. The chorionicity of the fetuses should be stated in the report. The presence of separate sacs and the thickness of the intervening membrane and the shape of its junction with the placenta should be assessed. Be aware that early in the first trimester an intervening amnion may not be visible in diamniotic, monochorionic twins. Later in the first trimester the number of placentas can be evaluated.

Pregnancy failure

An experienced operator using high quality transvaginal equipment may diagnose pregnancy failure under either or both of the following circumstances:

1 When no live fetus is visible in a gestation sac and the mean sac diameter is 2.0 cm or greater
2 When there is a visible fetus with a CRL of 6 mm or more but no fetal heart movements can be demonstrated. The area of the fetal heart should be observed for a prolonged period of at least 30 seconds to ensure that there is no cardiac activity.

In situations where pregnancy failure is suspected by an operator who either does not have extensive experience in making the diagnosis or does not have access to high quality equipment or if there is any doubt about the viability of the fetus, a second opinion or a review scan in one week should

be recommended in the report[1].

Fetal structure

The following list of gestational ages at which various fetal structures may be visualised is not intended to provide a complete list of what should be examined. However, using high resolution equipment (often only with a vaginal transducer) the following structures can commonly be seen:

9 weeks

Head, trunk and limbs.

10 weeks

Some ossification of long bones, jaw and skull.

11 weeks

Stomach, spine, ossified cranium, four chamber heart.

12 weeks

Mid gut herniation no longer present, kidneys, bladder.

Nuchal translucency

The nuchal translucency measurement is a test to assess the risk of chromosomal abnormality, in particular of trisomy 21. The measurement may also be abnormal in other fetal anomalies (e.g. some congenital heart disease).

This study should be performed by adequately trained staff according to strict protocol. The outcomes of the test should be audited regularly. The recommendations of the Royal College of Obstetricians and Gynaecologists should be noted[2].

It may be performed between the gestational ages of 11 weeks and 13 weeks plus 6 days (CRL 45–84 mm). A measurement greater than 2.5–3 mm is usually considered to be abnormal but must be correlated with gestational age. References values have been provided by Nicolaides[3].

The nuchal translucency measurement may be performed at the request of the referring Medical Practitioner. Where it is not specifically requested, it may be measured providing the patient does not specifically reject prenatal testing for potential fetal abnormality. Due consideration should be given as to how and who is going to counsel the patient prior to the performance of a nuchal translucency scan.

Each practice should develop a written protocol on the procedure to be followed when the measurement is abnormal. This protocol should include guidelines for the immediate care of the patient and how the referring doctor will be informed. Usually the referring doctor should be notified so that appropriate counselling may be given and the patient can be referred to a specialised unit where formal risk assessment and counseling process can be undertaken.

Method of measurement

1 The nuchal translucency should be measured on a sagittal midline scan through the fetus.
2 The fetus should be in neutral position and occupy at least 75% of the image.
3 The amnion should be seen separate to the fetal skin line.
4 Calipers should be positioned to measure the maximum diameter of the fluid at the back of the neck.

Ovaries, uterus and adnexa

Each ovary should be examined. The corpus luteum can vary greatly in appearance during the first (and early second) trimesters of pregnancy. Sonographic appearances include a solid, rounded target like lesion or a predominately cystic structure. Peripheral vascularity is usually detectable.

The size of a corpus luteum is also variable, commonly measuring up to 3 cm.

Larger or unusual masses should assessed as in the non pregnant woman.

The uterus should be examined for evidence of a fibroids or uterine developmental defects. The uterine position should also be noted (anteverted, axial, retroverted).

The adnexa should be examined for coexistent ectopics and free fluid.

References

1 Hately, Case and Campbell. Establishing the death of an embryo by ultrasound. *Ultrasound Obstet. Gynecol* 1995; .5: 353-357

2 Screening for Downs Syndrome in the First Trimester. Eds. Grudzinskas and Ward. RCOG Press 1997.

3 From Nicolaides group: Snijders *et al.* Assessment of risk of Trisomy 21 by maternal age and fetal nuchal-translucency thickness.

ASUM Ultrasound Bulletin 2005 May; 8 (2): 22–23

Guidelines for Disinfection of Intracavitary Transducers

Every patient should be regarded as a potential source of infection and appropriate precautions taken to prevent cross-infection between patient and operator. *Universal Precautions* are promoted throughout all health care institutions. Particularly important is the washing of hands both before and after direct patient contact[1]. Other precautions include the use of personal protective equipment (PPE) where appropriate and correct handling and disposal of waste as well as maintenance of a clean working environment.

Potential sources of infection associated with vaginal ultrasound scanning include those organisms transmitted by blood and genital secretions such as Human Immunodeficiency Virus, Hepatitis B Virus, Hepatitis C Virus, *Cytomegalovirus, Neisseria gonorrhoea*, *Chlamydia trachomatis*, *Trichomonas vaginalis*[1] and Human Papilloma Virus. It should be remembered that some organisms, including viruses, can remain infectious for days outside the body, particularly if kept moist in blood or serum.

All sterilisation/disinfection represents a statistical reduction in the number of microbes present on a surface. Meticulous cleaning of the instrument is the essential key to an initial reduction of the microbial/organic load by at least 99%[2].

The following protocol is recommended for the cleaning and preparation of intracavitary transducers between each patient. The protocol applies to transvaginal, transrectal, transoesophageal and endoscopic transducers. The principles are the same for any transducer that may come into contact with body secretions.

1 Cleaning

After removing the cover from the transducer, all gel and any extraneous material should be removed from the transducer preferably under running water. Any gel used can be a potential source of infection. For some procedures the use of sterile gel should be considered. The transducer should then be cleaned with soap and water (dishwashing liquid may be used), rinsed thoroughly and dried with a paper towel.

2 Disinfection

The cleaning of the transducer is the main disinfection process. However, high-level disinfection with a chemical agent is necessary for further statistical reduction in the number of infective agents on the transducer, particularly because of possible rupture of the transducer cover.

It is recommended that the manufacturer of your ultrasound equipment be consulted before using a specific disinfectant on a transducer. Chemical agents that may be used include:

a) *2% Glutaraldehyde*. Soak the transducer in the glutaraldehyde for twenty (20) minutes followed by rinsing under running tap water then drying.
   Note: Buffered glutaraldehyde as a cold disinfectant has a broad spectrum of activity with rapid microbiocidal action. It is non-corrosive to most materials, including metals and rubber. 'Aidal Plus' is a satisfactory glutaraldehyde preparation and is available from Whiteley Industries Pty Ltd, PO Box 785, Rosebery, NSW 2018 (tel +61 2 9700 9799). Because of potential irritant effects of glutaraldehyde extreme care must be taken with its use, and manufacturers' instructions on usage should be followed strictly. Spent glutaraldehyde solutions disposed of to the sewer should be flushed with copious amounts of water[3].
b) *Sodium hypochlorite* diluted to 500 ppm. Soak the transducer in the sodium hypochlorite for two (2) minutes followed by rinsing under running tap water and drying.
   Note: Hypochlorite solution requires changing daily as it deteriorates rapidly. It can be made up with 50 ml of 'Milton' solution (1% sodium hypochlorite) in one litre of tap water. Hypochlorites have bactericidal, fungicidal and virucidal activity. Their decomposition is accelerated by the presence of metals, sunlight and heat. Some water supplies, particularly in remote areas, may contain oxidisable (e.g. organic) materials that could reduce the amount of free chlorine available. If the quality of the water supply is uncertain, the free chlorine should be measured with a high range test kit such as those manufactured by Hach, Lovibond or Palm, or deionised water should be used. The use of sodium hypochlorite is not recognised by the National Health and Medical Research Council (NHMRC).
c) *Ortho-phthalaldehyde 0.55%*. Soak the transducer in the solution for a minimum of ten (10) minutes at twenty degrees Celsius (20° C), or higher, followed by rinsing under running tap water then drying. Ortho-phthalaldehyde has a broad spectrum of activity with rapid microbiocidal effects, with the exception of some bacterial endospores; it is non-corrosive to most materials including metals and rubber. Cidex OPA is a satisfactory preparation available from Johnson and Johnson Medical Pty Limited, 1–5 Khartoum Road, North Ryde NSW 2113, Australia. Usual precautions must be taken with its use with regard to protection from irritant effects. Regular testing needs to be performed to ensure a minimal effective concentration with the use of test strips. Spent solutions disposed of to the sewer should be flushed with copious amounts of water.

Other products that may become available following TGA approval may be used for high-level disinfection.

3 Transducer covers

The transducer should be covered before intracavitary insertion with an appropriate barrier where thickness is at least 38 microns. This may include plastic surgical drapes, other purpose specific probe covers or surgical gloves. Prior to the use of a transducer cover, specific enquiry should be direct-

ed towards latex sensitivity. Covering the transducer without prior cleaning and disinfecting is inadequate because there is an incidence of perforation of any transducer cover.

4 Appropriate technique

The operator must wear a disposable (non-sterile) glove on the hand used during passage of the transducer. Care must be taken to ensure that contaminated gloves do not contact the ultrasound machine's control panel or exposed transducer cable. The transducer cover should be removed and disposed of carefully to prevent contamination of surroundings by bodily fluids/secretions. At the completion of the procedure, gloves should be removed and hands washed thoroughly with soap and water.

Important note

Compliance with the National Guidelines on Disinfecting and Sterilising Pre-useable Medical and Surgical Instruments – Australian Standard (AS) 4187 – is recommended. The ASUM guidelines should be read in conjunction with that Standard, which is available from Standards Australia.

Infection control guidelines will only be useful if they are followed and form part of an overall approach to Universal Precautions in minimising infection risk. The ASUM guidelines are provided as a mechanism to assist you in the development of appropriate risk management compliance processes.

The use of sodium hypochlorite is not recognised by the NHMRC.

References

1 Garland SM and de Crespigny L. Prevention of infection in obstetric and gynaecological ultrasound practice. *Ultrasound Obstet Gynecol* 1996; 7: 1–4.

2 American Institute of Ultrasound in Medicine. Report for Cleaning and Preparing Endocavity Ultrasound Transducers Between Patients *AIUM Reporte*r 1995; 11: 7.

3 National Industrial Chemicals Notification and Assessment Scheme (1994). *Priority Existing Chemical No.3 glutaraldehyde. Full Public Repor*t. ISBN 0 644 34875 1. Australian Government Publishing Service, Canberra.

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Transvaginal transducer hygiene – what is the big deal?

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Introduction

Appropriate ultrasound transducer disinfection has been an ongoing and vexed question. The Australasian Society for Ultrasound in Medicine (ASUM) guidelines have been revamped to reflect the current consensus on high-level disinfection options. This paper addresses some of the principles and issues that apply to the use of medical ultrasound transducers that come into contact with more than one patient.

With the exception of a few single use devices, the cost of transducers precludes a one use only strategy, as is the case for endoscopes and other multiple use devices. A mandatory cleaning strategy is therefore required to ensure adequate transducer hygiene.

Risk stratification

The intimacy of patient contact and the degree of risk of cross infection can be used to divide transducer applications into three levels:

- Low risk procedures involving contact with intact skin such as abdominal, breast and small part imaging;
- Medium risk procedures involving contact with mucous membranes including the eye, oesophagus, vagina, rectum and perineum; and
- High-risk procedures involving direct contact with blood products, such as intraoperative and intravascular applications.

Low risk procedures

Cross contamination by bacterial agents such as MRSA are arguably as important as the viral agents – including human immunodeficiency virus, herpes simplex virus and hepatitis virus. Correct handling, cleaning and disinfection routines as well as avoidance of cross-contamination of disinfected devices are essential. Cleaning of all macroscopic contaminants is a mandatory first step in all procedures resulting in transducer patient contact. In addition, a disinfectant wipe or spray should be applied after each use[1]. Manufacturers' instructions must be followed in relation to compatible cleaning agents.

Medium risk procedures

Where there is a medium risk of cross infection (for example in transvaginal imaging) additional measures are required. Typically, the transducer head is protected with a latex protective device. Disposal of the cover is followed by cleansing and disinfection using a virucidal agent compatible with the transducer. The most commonly recommended agents – glutaraldehyde, aldehydes and quaternary agents, are used because of transducer surface compatibility rather than the effectiveness of these agents' disinfecting properties.

Known allergy to latex products must be sought from the patient and any available medical records. A non-latex cover is required in these instances.

High risk procedures

In case of rupture of the protecting cover during the examination, the transducer must be considered to be contaminated with blood products. An initial thorough cleaning with removal of all macroscopic debris including any crusted secretions is followed by disinfection, with ample contact time with the disinfecting agent. Coarse contamination of the transducer should be removed with a disposable tissue. The manufacturer's care instructions, including formulated instructions for cleaning and disinfection must be followed for the particular transducer.

Probe cover breakdown recommendations

Typically, the recommendation following a breach or rupture of the cover is to increase disinfectant measures to the same standard as for high-risk procedures. Removal of all macroscopic blood product contaminants is absolutely essential prior to final disinfection.

Risk of probe cover breakdown

One issue that requires further clarification is the nature and risk of a breach or breakdown of the transducer cover.

A number of authors have reported the results of in vivo and in vitro studies seeking to establish the risks and effectiveness of current standards.

Amis *et al.*[2] reported their assessment of the use of latex condoms as probe covers for transvaginal sonography. Probe head contamination was assessed by periodic swab sampling and culturing for bacteria and herpes simplex virus (a procedure not routinely adopted in clinical practice). Samples of the sonographic gel also were tested for bacterial contamination regularly. There was a 1% breakage rate during initial application of the condom and 0.9% of condoms were found to be perforated. They concluded that:

> '*Condoms used to cover transvaginal probes showed a low rate of perforation. Disinfection of the probe with isopropyl alcohol wipes further reduced the risk of contamination.*'

Milki and Fisch[3] reported a 2% condom leakage rate out of 840 condoms examined. They concluded:

> *'This study underscores the need for routine probe disinfection between examinations.'*

Storment *et al.*[4] reported somewhat more disappointing results for the protection provided by condoms. In a study of

173 transvaginal studies performed in an Emergency Room setting, they found evidence of contamination in eight (5%) of examinations, with only three of these eight being apparent on visual inspection.

They concluded that:

'Latex condoms are ineffective in preventing contamination of the trans-vaginal ultrasound transducer head. Visual inspection of the transducer head often fails to identify the presence of blood or body fluids. This suggests that additional measures should be taken to prevent transmission of blood-borne pathogens.'

Even more concerning, Rooks *et al.*[5] reported an 8.3% leakage rate for a commercially available probe cover, using only a simple water leakage test. This compared with a 1.7% leakage rate for the condoms they used. Assuming that a more sensitive test for leakage would show the 5% condom leakage rate reported by Milki and Fisch, the commercial probe cover leakage rate could have been as high as 20%. They concluded that the condoms they used were less expensive and superior to the commercially available probe covers (available to them) for covering the ultrasound probe during endovaginal examinations. A leakage rate of 20% would mandate a complete disinfection routine for potential blood contamination after each use. Many patients would arguably seek a cross contamination risk in the order of < 0. 001%.

Unprotected transducer contamination

Muradali *et al.*[6] examined the possible transmission of bacterial agents when examining patients with open skin wounds. Reassuringly, they found that there was no discernible contribution to nosocomial infection rates if the transducer head was adequately cleaned of macroscopic contaminants.

Gel contamination

Little attention has been paid to the handling of acoustic gel as an alternate source of cross-infection.

Muradali *et al.*[6] confirmed that the acoustic gel could act as a culture medium that permitted bacterial growth and did not show any evidence of bacteriocidal or bacteriostatic properties.

They recommended:

'After the final procedure of the day, probes should be cleaned with a liquid cleaning solution such as 0.05% chlorhexidine weight/volume to remove all traces of coupling gel, which could support the overnight growth of bacteria. This would decontaminate the probes and prevent the overnight growth of bacteria. This method would be both a cost-effective and time-efficient protocol for controlling infection.'

In vitro viral leakage

The results published for in vitro leakage of viral particles through commercially available condoms are far less reassuring. Lytle *et al.*[7] tested for leakage of small and large viral particles and found around 50% of condoms allowed passage of small viral particles, with a considerable variation (up to 100 fold) in the leakage rate from one condom to the next. The tested condoms also showed a 4% leakage rate for a larger human viral pathogen, herpes simplex.

Even more concerning, Voeller *et al.*[8] tested large numbers of seven brands of commercially available condoms for leakage of viral particles. They found that the percent of leakage ranged from 0.9 to 22.8%; except in one brand where 100% of the specimens of one 'profoundly flawed' brand leaked. In a further experiment, they found two widely sold brands showed 11.8% leakage rate for one brand, and 25.7% leakage rate for the other. From this paper, it would seem that the more sensitive the test for condom leakage, the higher the percentage of leaks found. Some brands of condom may be entirely ineffective in preventing contamination.

Use of the 'lowest cost' condom available might result in negligible protection being offered by the condom.

'Medium' versus 'high' risk procedures

The worst reported results[9] in this literature review were for commercial probe covers used during endovaginal oocyte retrieval. Leak testing was by simple water filling of the cover post oocyte retrieval, as an indication to undertake vaginal transducer disinfection by soaking for 20 minutes in 2% glutaraldehyde. One brand showed 75% leak rate and another 81% leakage. A re-designed cover still showed a 25% leakage rate. Unused covers showed leakage rates of 25–65%.

These results suggest that all 'medium risk' procedures conducted with an endoluminal probe should be considered at 'high risk' for significant contamination by body fluids. An appropriate disinfection routine after every probe use appears mandatory.

Since a contaminated probe must be fully disinfected before further use, and inspection of the probe fails to demonstrate contamination in the majority of cases, the distinction of medium risk and high risk applications may be arbitrary for the purposes of determining the method and rigour of probe cleansing required.

Latex allergy

Known allergy to latex products must be sought from the patient and any available medical chart. A non-latex cover is required in these instances. Patients with a history of latex allergy where a non-latex condom is used may also be at increased risk of probe cover breakdown. Walsh *et al.*[10] found the breakage rate for the non-latex condoms was about eight times that of latex condoms. While the pregnancy rate for couples using non-latex condoms was 10.8%, (around 2% per cycle), 6% of couples using a latex condom became pregnant in the six-month period. These results confirm a significant failure rate for condoms in their original intended use. Transmission of infected fluids can be assumed to be at least in the same order of magnitude as leakage of seminal fluid.

References

1 Merz E. Transducer hygiene – an underrated topic? *Ultraschall Med.* 2005 Feb; 26 (1): 7–8.

2 Amis S, Ruddy M, Kibbler CC, Economides DL, MacLean AB. Assessment of condoms as probe covers for transvaginal sonography. *J Clin Ultrasound*. 2000 Jul–Aug; 28 (6): 295–298.

3 Milki AA, Fisch JD. Vaginal ultrasound probe cover leakage: implications for patient care. *Fertil Steril.* 1998 Mar; 69 (3): 409–411.

4 Storment JM, Monga M, Blanco JD. Ineffectiveness of latex condoms in preventing contamination of the transvaginal ultrasound transducer head. *South Med J*. 1997 Feb; 90 (2): 206–208.

5 Rooks VJ, Yancey MK, Elg SA, Brueske L. Comparison of probe sheaths for endovaginal sonography. *Obstet Gynecol.* 1996 Jan; 87 (1): 27–29.

6 Muradali D, Gold WL, Phillips A, Wilson S. Can ultrasound probes and coupling gel be a source of nosocomial infection in patients undergoing sonography? An in vivo and in vitro study. *AJR Am J Roentgenol.* 1995 Jun; 164 (6): 1521–1524.

7 Lytle CD, Carney PG, Vohra S, Cyr WH, Bockstahler LE. Virus leakage through natural membrane condoms. *Sex Transm Dis.* 1990 Apr–Jun; 17 (2): 58–62.

8 Voeller B, Nelson J, Day C. Viral leakage risk differences in latex condoms. *AIDS Res Hum Retroviruses*. 1994 Jun; 10 (6): 701–710.

9 Hignett M, Claman P. High rates of perforation are found in endo-vaginal ultrasound probe covers before and after oocyte retrieval for in vitro fertilization-embryo transfer. *J Assist Reprod Genet*. 1995 Oct; 12 (9): 606–609.

10 Walsh TL, Frezieres RG, Peacock K, Nelson AL, Clark VA, Bernstein L. Evaluation of the efficacy of a non-latex condom: results from a randomized, controlled clinical trial. *Perspect Sex Reprod Healt*h. 2003 Mar-Apr; 35 (2): 79–86.

Three-dimensional ultrasound estimation of fetal renal volumes in the second and third trimesters

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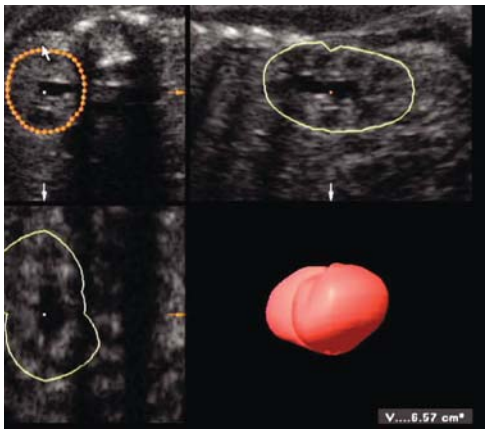

Figure 1 Data set of renal volume

Introduction

Analysis of kidney volume growth in the fetal period in humans was described by Sampaio in 1992[1]. He studied 145 fresh postmortem fetuses of gestational age 13 to 36 weeks gestation and measured renal volumes in both kidneys. His nomogram provides the anatomical basis for further study in the live fetus.

In a second paper[2] Sampaio, using the same fetuses, discussed the theoretical kidney volume versus the renal kidney volume. He found that assessment of fetal renal volumes using the ellipsoid formula: volume = width x length x thickness x 0.5236 was well correlated with the true kidney volume.

Hsieh *et al*.[3] from Taiwan in 2003 used three-dimensional ultrasonography in 112 fetuses and established a fetal renal volume formula. This was: renal volume = constant x largest anteroposterior diameter x largest transverse diameter x largest longitudinal diameter. They concluded that their formula made it possible to make accurate measurements of fetal renal volume by two-dimensional ultrasonography. They stated their opinion that three-dimensional ultrasound was the best method for fetal renal volume assessment.

In a further report of 152 fetuses Yu *et al*.[4] also from Taiwan, studied fetal renal volumes from 20–40 weeks gestation using three-dimensional ultrasound. They found that renal volumes are highly correlated with fetal age and they established normal growth centiles of both kidneys based on their equations.

Aims

We aimed to measure fetal renal volumes in singleton pregnancies in healthy women at different gestational ages from 17–41 weeks and produce a nomogram of renal volumes for each kidney. Our project, which had Nepean Hospital Ethics Committee approval, hypothesised that fetal renal volume increases with gestational age.

Methods

Subjects with singleton fetuses between 17 and 41 weeks gestation were randomly selected for this study. Gestational age was estimated from the first trimester fetal crown rump length. It was calculated from the last normal menstrual period where no first trimester scan had been done.

The three-dimensional volume sweep was performed using the VOCAL mode on the 3Dimensional Ultrasound Voluson 730 Expert (GE Medical Systems) machine in our Department. When both fetal kidneys including the renal pelves were visualised in the transverse plane, a single sweep was taken. This volume scan lasted 3–4 seconds.

The dataset was stored and volume analysis performed when the routine ultrasound examination was completed. The image undergoes a series of rotations of 30 degrees so six image calculations are made by tracing the contour of the kidney in each plane. The reference image selected is automatically rotated and, after each contour is stored, the

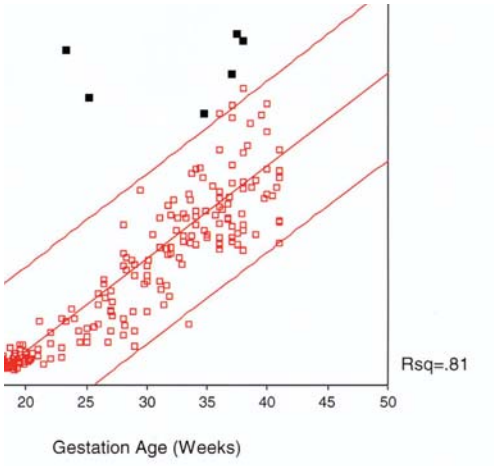

Figure 2 Right renal volume with abnormal kidneys highlighted

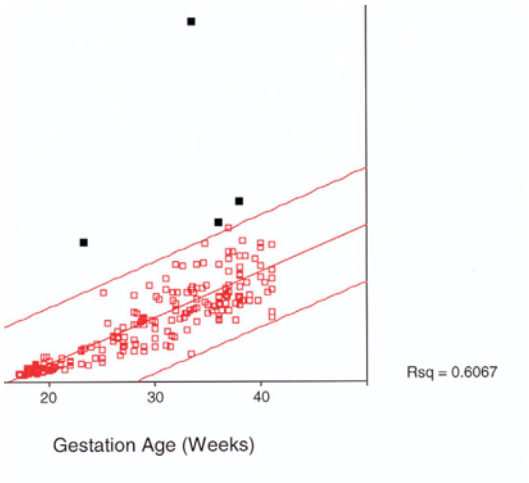

Figure 3 Left renal volume with abnormal kidneys highlighted

volume of the kidney is calculated by the machine.

From the single sweep, each fetal kidney was measured three times by two separate investigators who were blinded to the results of the other. Figure 1 illustrates the volume calculated after the VOCAL mode analysis taken from the data set obtained.

In the first 40 cases, the inter-observer reliability was tested using Cronbach's alpha, which is a coefficient of reliability and was measured at 0.922, indicating that the inter-observer reliability was high. A reliability coefficient of 0.80 or higher is considered as 'acceptable' in most research applications[3].

Results

A total of 207 healthy singleton fetuses were included in the study. The right and left kidney volumes and their association with gestational age were analysed and reported separately. All three sets of data were examined for normality of distribution and were found to be non-normal. Consequently all analyses done incorporate statistical procedures which do not require the assumption of normal distribution to be met[4,5].

The mean gestational age was 28.9 weeks. The nomograms of the right and left fetal renal volumes are provided (Figures 2, 3). A positive and strong association was revealed in both instances. The 5th and 95th centiles of the right kidney volume were 1.21 cc and 19.27 cc respectively. For the left kidney these figures were 1.38 cc and 18.91 cc respectively.

The Spearman rho correlation coefficient between the right kidney and gestational age was 0.90 with a coefficient of determination of 0.81. For the left kidney the figure was 0.88 with a coefficient of determination of 0.78. The results of χ^2 analyses of the right/left kidney and gestational age indicated a statistically significant and strong association between right/left kidney and gestational age. ($\chi^2 = 218.37$, $p = 0.000$, Cramer's $V = 0.726$). This confirms the findings of Yu and his colleagues[3] that renal volumes are highly correlated with fetal age.

Discussion

This project has allowed us to produce separate nomograms of fetal renal volumes for the left and right kidneys. Seven abnormal kidneys were found and their results are highlighted in the nomograms in Figures 2 and 3. These include four cases of pelvicalyceal dilatation, one duplex kidney, one multicystic kidney and one case of polycystic kidneys.

The advantage of 3D ultrasound in assessing renal volume is that the dataset can be stored at the time of the examination and analysed later to calculate volume. However, not only can the volumes be measured with the VOCAL package, but the dataset can be manipulated later to view the kidneys in the coronal and sagittal planes, additional to the transverse plane in which the sweep was obtained.

Conclusion

Our results provide a reference for the assessment of normal fetal renal volumes between 17 and 41 weeks gestation and may have the potential to identify abnormal fetal kidneys.

Acknowledgement

We would like to acknowledge Mani Viswasam for collating the results of the project.

References

1 Sampaio FJ Analysis of kidney volume growth during the fetal period in humans. *Urol Res* 1992; 20 (4):271–274.

2 Sampaio FJ. Theoretical kidney volume versus real kidney volume: comparative evaluation in fetuses. *Surg Radiol Anat* 1995; 17 (1): 71–75.

3 Hsieh Y.Y., Chang C.C., Lee C.C. Tsai H.D. Fetal renal volume assessment by three-dimensional ultrasonography. *Am Journal Obstet Gynaecol* 2000*;* 182 (2):377–379.

4 Yu C, Chang C, Chang F, Ko H, Chen H. Fetal renal volume in normal gestation: a three-dimensional ultrasound study. *Ultrasound Med. Biol* 2000; 26 (8): 1253–1256.

5 Altman DG and Bland JM. Statistical Notes: "Cronbach's Alpha". *British Medical Journal* 1997; 314: 572.

6 Yu C, Cheng C, Chang F, Ko H and Chen H. Fetal renal volume in normal gestation: a three-dimensional ultrasound study. *Ultrasound Med Biol* 2000; 26 (8): 1253–1256.

7 Altman DG and Bland JM. Statistical Notes: "The normal distribution". *BMJ* 1995; 310: 298.

8 Bland JM and Altman DG. Statistical Notes: "Correlation, regression and repeated data" *BMJ 1994;* 308: 896.

Measurement of the diameter of the umbilical cord at 11 weeks 1 day to 13 weeks 6 days gestation

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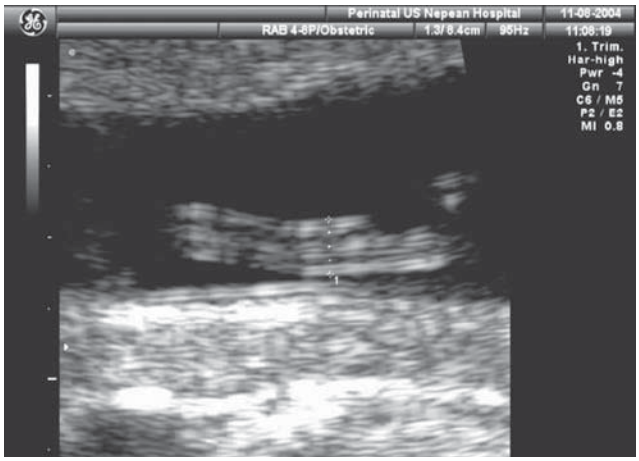

Figure 1 A free loop of the umbilical cord in the long axis demonstrating six parallel lines

Abstract

Objective To establish a potential relationship between the diameter of the umbilical cord (DUC) and the fetal crown rump length (CRL), nuchal translucency (NT), serum is βhCG and PAPP-A in chromosomally normal fetuses using an Australian population.

Methods The DUC was measured in 752 patients who presented for routine nuchal translucency screening, PAPP-A and βhCG. The inclusion criteria for this study were a CRL of 45–84 mm corresponding to 11weeks 1day to 13 weeks 6 days in women 18 years of age or older with a single live gestation. Of the 752 patients scanned, 49 were excluded because the measurements were not taken appropriately or were suboptimal due to maternal body habitus.

Results The DUC was measured successfully in 703 cases of which 697 had a normal karyotype. The DUC was found to increase with increasing CRL and with increasing NT in all cases of chromosomally normal fetuses. However no relationship could be established between the DUC and serum βhCG and PAPP-A.

Conclusion A relationship has been established between the DUC and the CRL and NT in chromosomally normal fetuses using an Australian population.

Introduction

It is known that there is an association between the measurement of the nuchal translucency (NT) and the maternal blood tests βhCG and PAPP-A as a risk assessment for aneuploidy as established by the Fetal Medicine Foundation[1]. There are two previous studies[2,3] that demonstrate an increase in the measurement of the diameter of the umbilical cord (DUC) with increasing crown rump length (CRL). The aim of this study is to investigate any potential relationship between the DUC and CRL, NT, βhCG, and PAPP-A in chromosomally normal fetuses using an Australian population.

Materials and methods

Informed consent was obtained from 752 patients who presented to the Christopher Kohlenberg Department of Perinatal Ultrasound for routine nuchal translucency measurement, βhCG and PAPP-A as a screening test for Down Syndrome. The inclusion criteria for this study were a CRL of 45–84mm corresponding to 11 weeks 1 day to 13 weeks 6 days in women 18 years of age or older with a single live gestation. Of the 752 patients scanned, 49 were excluded because the measurements were not taken appropriately or were suboptimal due to maternal body habitus.

The research proposal was approved by the Ethics Committee of our hospital. Nine sonographers were involved in the study. Prior to the study a decision was made to image a free loop of the umbilical cord in the long axis demonstrating six parallel lines (Figure 1). The outer two lines are the cord margins including Wharton's jelly and the inner lines represent two of the vessels of the cord. The calipers were placed outer to outer so that all six lines were included in the measurement.

All scans were performed transabdominally on one of the four ultrasound machines in use in our department (Sequoia 512, Acuson, Voluson 730 Expert, GE, HDI Ultramark 9 and HDI 3000, ATL) using 3.5–5.0 MHz transducers.

Results

The DUC was measured successfully in 703 patients. Of these 697 had a normal karyotype and there were six cases of fetal aneuploidy. These six included four cases of Trisomy 21, one case of Klinefelter syndrome and one case of mosaic Trisomy 9.

This small number of cases of aneuploidy was considered too low to be of significant value. However the DUC measurements in all six cases were in the normal range.

Both the DUC and the CRL are normally distributed. The DUC increased with increasing CRL in all of the cases with normal chromosomes showing a significant correlation between the umbilical cord diameter and increasing gestation (Figure 2).

This is in agreement with the previous studies[2,3]. However

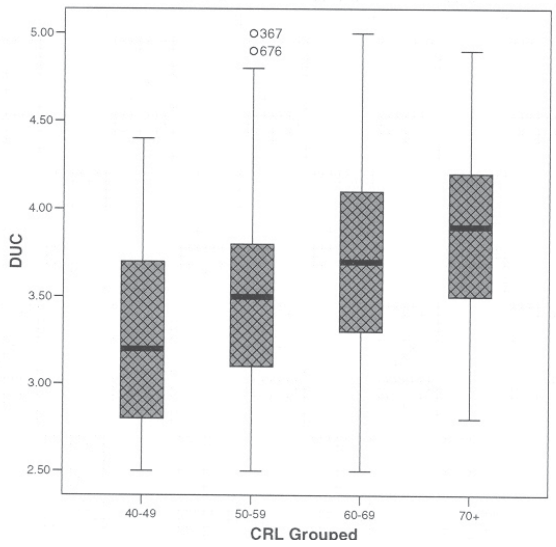

Figure 2 The DUC increased with increasing CRL in all of the cases with normal chromosomes showing a significant correlation between the umbilical cord diameter and increasing gestation

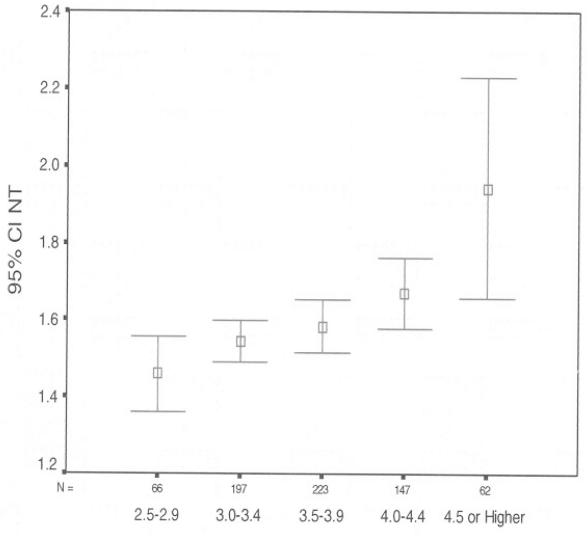

Figure 3 The mean value of the NT increased as the DUC increased

although Pearson's Correlation Coefficient[4,5,6] between these two variables was found to be statistically significant ($r = 0.31$, $p < 0.001$) the strength of the association was found to be weak. Therefore no attempt was made to explore predictive potential.

The relationship between the DUC and the NT also showed that these two variables are dependent. The results of the χ^2 analyses indicate a statistically significant but weak association between DUC and NT ($\chi^2 = 31.33$, $p = 0.0001$, Cramer's $V = 0.15$). However in our data the evidence shows that the mean value of the NT increased as the DUC increased (Figure 3). The correlation coefficient between the two was statistically significant although the measure of association was weak. Therefore they too were not used to try to predict each other.

When the relationship between the DUC and the βhCGand PAPP-A was examined it was found that the βhCG and the PAPP-A were not normally distributed. A χ^2 test between the DUC and βhCG and PAPP-A showed that there was no significant association.

Discussion

This study confirms the previous findings regarding the association between the increasing diameter of the umbilical cord with increasing CRL.[2,3]. However, the results show that the relationship between the CRL and the DUC is too weak for one to predict the other.

We are also able to show a weak association between the DUC and the NT since as the DUC increased the NT also increased.

However, the results of this study show that there does not appear to be a statistically significant association between the DUC and the maternal blood tests of βhCG and PAPP-A.

Our results also show that the relationship between all the variables is too weak for the DUC to predict aneuploidy.

Conclusion

We have established a relationship between the DUC and the CRL and between the DUC and the NT in chromosomally normal fetuses using an Australian population.

However, no relationship between the DUC and the βhCG and PAPP-A could be established in this study.

Acknowledgements

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References

1 Nicolaides KH, Sebire NJ, Snijders RJM. (eds). The 11–14 week scan The diagnosis of fetal abnormalities.The Parthenon Publishing Group 1999.

2 Ghezzi F, Raio L, Di Naro E, Franchi M, Buttarelli M, Schneider H. First-trimester umbilical cord diameter: a novel marker of fetal aneuploidy. *Ultrasound Obstet Gynecol* 2002; 19: 235–239.

3 Rembouskos G, Cicero S, Papadopoulos V, Tripsanas C, Nicolaides KH. Umbilical cord diameter at 11–14 weeks of gestation: relation to chromosomal defects. *Ultrasound Obstet Gynecol* 2004; 23: 237–239.

4 Altman Douglas G. Practical Statistics for Medical Research. London, Chapman & Hall/CRC 1999.

5 Bland Martin. An Introduction to Medical Statistics. Oxford: Oxford University Press 1995.

6 Norusis Marija. SPSS 12.0: Statistical Procedures Companion. New Jersey, Prentice Hall 2003.

CASE REPORT

Gestational trophoblastic neoplasia in a twin pregnancy: a case report

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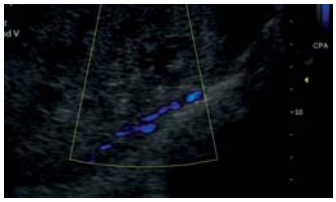

Figure 1a Molar tissue with peripheral vascularity shows the typical appearance of anechoic spaces of varying size interspersed with echogenic molar tissue

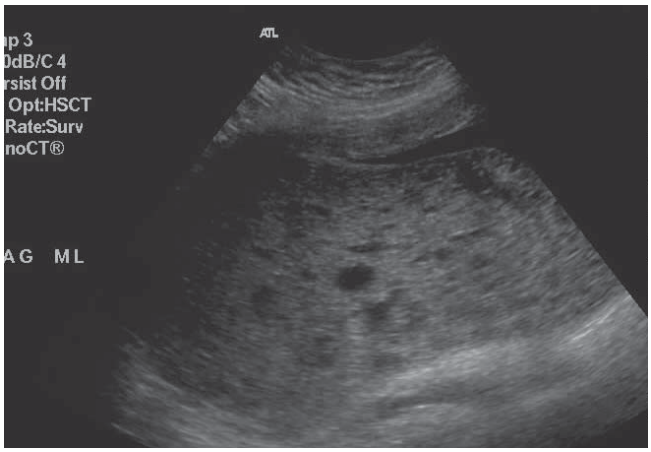

Figure 1b Molar tissue is readily differentiated from retro-chorionic haemorrhage by the presence of regular anechoic spaces and the absence of whorled or heterogeneous echoes in the intervening areas. This appearance was preserved from one examination to the next

Introduction

Gestational trophoblastic neoplasia (GTN) can be histologically classified into a hydatidiform mole, an invasive mole (chorioadenoma destruens), choriocarcinoma, and a placental site trophoblastic tumour. Most complete hydatidiform moles are 46,XX and all the chromosomes come from the male gamete. Partial moles are 69,XXY and two sets of chromosomes are of paternal origin.

Hydatidiform mole is the most common form of GTN with an incidence varying from 1/2000 deliveries in the USA to 1/120 deliveries in Taiwan[1]. Hydatidiform moles are more frequent in teenagers and in women older than 40 years. The most frequent presenting symptom is abnormal uterine bleeding, however, symptoms of preeclampsia or prolonged hyperemesis gravidarum occur in up to one-third of patients. Thyrotoxicosis is the presenting symptom in around 3% of patients with an hydatidiform mole due to the production of human molar thyrotropin by the molar tissue and the similarities between βhCG and thyroid-stimulating hormone (TSH).

Hydatidiform moles may be benign or malignant. Poor prognostic factors include: extension beyond the uterus at the time of diagnosis, age over 40, carriage to full term, delayed administration of chemotherapy after delivery, serum βhCG level over 100,000 mIU/ml, tumour size over 5 cm, and the number and size of metastases other than to the lung. The clinical course is defined by the patient's serum human chorionic gonadotropin (βhCG) curve after evacuation of the mole. In 80% of patients with a benign hydatidiform mole, serum βhCG titres return to normal within 8–12 weeks after evacuation of the molar pregnancy. In the other 20% of patients with a malignant hydatidiform mole the serum βhCG titres either rise or plateau[1].

The ultrasound appearances of a molar pregnancy include:

- The identification of hydatid vesicles in the vagina;
- Fluid-filled vesicles within the uterine cavity;
- The characteristic sonographic snowstorm pattern appearance; and
- Enlarged ovaries secondary to theca lutein cysts (found in up to 20% of patients with hydatidiform mole).

The combination of a normal and a molar twin pregnancy raises a number of obstetric management issues. Outcome for both mother and the normal gestation are variable. Early identification aids appropriate intervention. The following case report describes a twin pregnancy where the molar twin was originally interpreted as haemorrhage, resulting in a delay in correct diagnosis.

Case Report

A 28-year-old female (G3P2) presented to the Emergency Department at 16 weeks 5 days gestation with per vaginal bleeding and suspected threatened miscarriage. An ultrasound performed elsewhere at 12 weeks 1 day gestation showed a nuchal translucency of 3.2 mm. Combined with biochemistry the estimated risk for Trisomy 21 was given as 1:8. At this time βhCG levels were 20.27 multiples of the median (MoM) for gestational age (normal βhCG range 0.3 to 3) and normal pregnancy associated plasma protein A (PAPP-A) of 1.12 MoM.

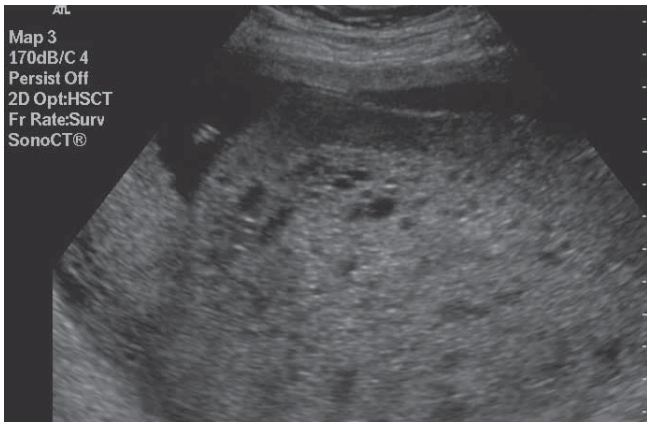

Figure 2 The molar tissue on the right is readily distinguished from the adjacent normal placenta amniotic fluid and fetal parts with a boundary layer visible between the two

Figure 3 Echogenic bowel is visualised as an ellipsoid structure deep to the abdominal wall, showing similar echogenicity to the iliac bone

An ultrasound performed elsewhere at 15 weeks 4 days gestation showed a solid mass with cystic spaces occupying the left portion of the uterus and was reported as being consistent with a haematoma. The patient was subsequently referred to a tertiary centre for amniocentesis; the procedure was not performed due to restricted access and a lack of liquor around the fetus. The tertiary centre noted the mass and recommended correlation with quantitative βhCG to distinguish between haematoma and gestational trophoblastic disease.

An ultrasound at 16 weeks 5 days gestation showed an enlarged uterus to be predominantly filled by a relatively hypovascular area of solid material with cystic spaces in keeping with a molar pregnancy (Figures 1a and 1b). A live fetus was noted in the inferior right quadrant of the uterus with a normal appearing placenta lying posteriorly (Figure 2) separated from the molar mass by a thick membrane indicating a twin gestation. The fetal bowel appeared echogenic (Figure 3). There was no other morphological defect on ultrasound examination. Views of the fetus at this stage and in later scans were limited due to low liquor levels and the mass effect from the left side of the uterus.

The diagnosis of a twin pregnancy including an hydatidiform mole was made, rather than the previously reported retro-chorionic haemorrhage and singleton gestation. βhCG levels were re-assayed at 3,503,219 mIU/ml confirming this diagnosis and suggesting a cause for the patient's recently diagnosed hyperthyroidism.

The patient was referred to another tertiary referral hospital where amniocentesis was performed at 17 weeks and 6 days of gestation. Brown stained amniotic fluid was collected consistent with blood in the liquor, explaining the finding of echogenic bowel on the basis of fetal ingestion of blood stained amniotic fluid. A normal female karyotype was obtained and the mother decided to continue the pregnancy. Fortnightly ultrasounds were arranged to follow fetal well-being, with an early delivery planned at 28 weeks gestation.

Until 23 weeks there was a normally growing fetus and a rapidly growing molar twin. At 23 weeks and 4 days the patient presented to the maternity ward reporting no fetal movements and ultrasound confirmed fetal death in utero.

A transvaginal study was performed to assess the presenting part, for a planned vaginal delivery. This revealed a long and closed cervix with a fetal presenting part (Figure 4). A stillborn female, placenta and a mole (Figure 5) were delivered vaginally. Pathological examination revealed a 1210 g complete hydatidiform mole with no cord, fetal parts or membranes. Three weeks postpartum maternal βhCG has fallen to 904 mIU/ml. Continued surveillance of βhCG is planned for at least 12 months or until levels fall to zero. If levels plateau or rise, oncological intervention is indicated.

Discussion

Serial ultrasound examination of retrochorionic haemorrhage reveals a changing pattern of echo-texture with clot organisation and resolution. Areas of clot will initially be hypoechoic, then progress to a more echogenic appearance before again becoming hypoechoic. During this process, old haemorrhage will decrease in size and show structureless heterogeneous echotexture. Haemorrhage will not be associated with higher than normal βhCG levels.

The natural history of a twin with molar pregnancy was described in eight cases by Steller *et al.*[2]. They found five of the eight patients developed persistent gestational trophoblastic neoplasia requiring chemotherapy. Three of these five patients developed metastases requiring multi-agent chemotherapy to achieve remission. The presenting clinical symptoms of twin pregnancy with complete hydatidiform mole and coexisting fetus were similar to those in patients with a singleton complete mole. However, compared to singleton complete molar gestation, a twin pregnancy with complete mole and coexisting fetus was typically diagnosed at a later gestational age, had higher pre-evacuation βhCG levels, and had a greater propensity to develop persistent gestational trophoblastic tumour. Kwon *et al.*[3] discussed a case of twin molar pregnancy following IVF therapy, and concluded that for a twin pregnancy with complete hydatidiform mole and a coexisting fetus after in vitro fertilization and embryo transfer (IVF-ET) the incidence is not greater than that of the general population.

Fishman *et al.*[4] looked at the management of twin pregnancies that included a complete hydatidiform mole. They described seven women, four women required uterine evacuation before 20 weeks gestation because of vaginal bleeding or medical complications, one woman required an emergency hysterotomy because of haemorrhage at 24 weeks, and two women delivered normal, viable infants at 26 and 34 weeks. The pathologic diagnosis of complete

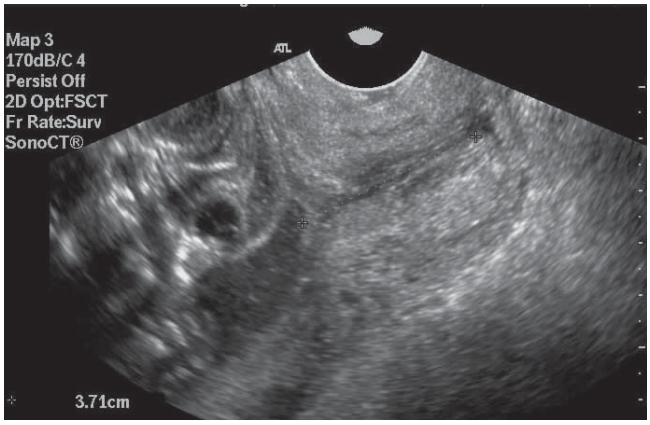

Figure 4 Transvaginal imaging shows the cervical length of 3.7 cm and relationship of the presenting fetal part to the internal os

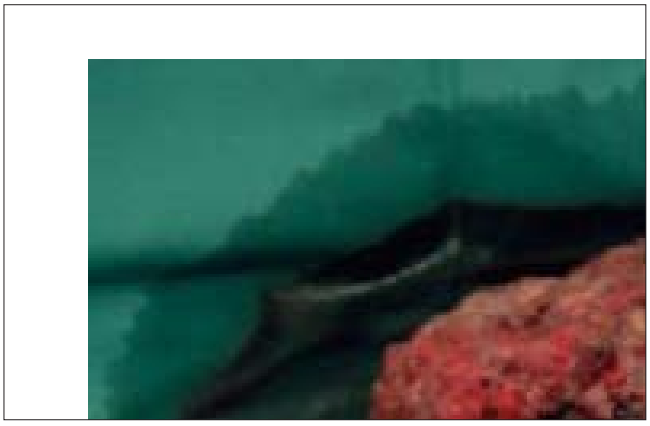

Figure 5 Molar tissue following delivery shows the typical appearance of a "bunch of grapes" corresponding to the cystic spaces seen on ultrasound

hydatidiform mole was confirmed in each case and the chromosome complement was 46,XX in all molar gestations. Four of seven women required chemotherapy for treatment of non-metastatic gestational trophoblastic tumours, including both women who delivered viable infants and two of the five women whose pregnancies were evacuated before 24 weeks gestation. They concluded that patients with a twin pregnancy consisting of a complete mole and a normal fetus are at increased risk for haemorrhage and medical complications, as well as the development of persistent gestational trophoblastic tumour.

Addressing the question of whether to continue with such a pregnancy Bruchim *et al.*[5] in a review of 15 cases found persistent GTN developed in eight patients (53.3%) and four patients (27.7%) developed metastatic disease. They concluded complete hydatidiform mole and coexistent fetus is a rare occurrence and is associated with an increased risk of persistent gestational trophoblastic neoplasm. Based on currently available information, they proposed that in the presence of a stable pregnancy, normal karyotype, and a normal 19-week morphology ultrasound, it was reasonable to allow the pregnancy to continue.

Bristow *et al.*[6] reviewed the outcome of the co-existent twin. Comparing non-viable and viable groups, the viable group where the twin survived to delivery, they found the non-viable and viable groups did not differ with respect to mean age, gravidity, parity, presenting symptoms, accuracy of sonographic diagnosis in identifying the molar component, uterine size at evacuation, or the presence of preeclampsia and theca lutein cysts. There was a significant difference in serum βhCG levels (1,078,416 versus 167,883 mIU/litre). They concluded that in patients with complete hydatidiform mole and a coexistent fetus, fetal survival is associated with clinical characteristics suggestive of less exuberant molar growth. Continuing with the gestation to produce a viable, surviving fetus is not an independent risk factor for the development of persistent gestational trophoblastic neoplasm. Sebire *et al.*[7] agreed, finding that complete hydatidiform mole and healthy co-twin pregnancies have a high risk of spontaneous abortion, but about 40% result in live births, without significantly increasing the risk of persistent gestational trophoblastic disease.

Conclusion

Concurrent normal and molar twin gestations are a rare finding and meticulous scanning is required to establish an early diagnosis. First trimester βhCG results should be reviewed in relation to normal ranges and high levels correlated with the ultrasonic appearances to exclude twin or molar pregnancy. A concurrent normal and molar twin gestation can be carried to successful delivery, although there is increased morbidity and mortality of the normal twin and an increased risk of persisting gestational trophoblastic neoplasia.

References

1 http://www.emedicine.com/med/topic866.htm, Accessed 1/4/05.

2 Steller MA, Genest DR, Bernstein MR *et al.* Natural history of twin pregnancy with complete hydatidiform mole and coexisting fetus. *Obstet Gynecol* 1994; 83 (1): 35–42.

3 Kwon HE, Park EJ, Kim SH, Chae HD, Won HS, Kim CH, Kang BM. A case of twin pregnancy with complete hydatidiform mole and coexisting fetus following IVF-ET. *J Assist Reprod Genet* 2002; 19 (3): 144–148.

4 Fishman DA, Padilla LA, Keh P, Cohen L, Frederiksen M, Lurain JR. Management of twin pregnancies consisting of a complete hydatidiform mole and normal fetus. *Obstet Gynecol* 1998; 91 (4): 546–550.

5 Bruchim I, Kidron D, Amiel A, Altaras M, Fejgin MD. Complete hydatidiform mole and a coexistent viable fetus: report of two cases and review of the literature. *Gynecol Oncol* 2000; 79 (3): 524–525.

6 Bristow RE, Shumway JB, Khouzami AN, Witter FR. Complete hydatidiform mole and surviving coexistent twin. *Obstet Gynecol Surv* 1996; 51 (12): 705–709.

7 Sebire NJ, Foskett M, Paradinas FJ, Fisher RA, Francis RJ, Short D, Newlands ES, Seckl MJ. Outcome of twin pregnancies with complete hydatidiform mole and healthy co-twin. *Lancet* 2002; 359 (9324): 2165–2166.

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Accuracy of surgeon-performed ultrasound in the assessment of the injured abdomen – a prospective study

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Abstract

Background

The use of ultrasound in the assessment of the injured patient has recently been adapted by several centres for trauma care. Its accuracy in the Philippine setting had not been reported.

Methods

In a prospective study, the Division of Trauma of the Philippine General Hospital evaluated Focused Assessment for the Sonographic Examination of the Trauma Patient (FAST) in trauma patients without overt indications for laparotomy, using intraoperative findings and results of a two-week post discharge follow-up as gold standard. FAST was performed by consultants, surgical residents and the Trauma Fellow.

Results

216 patients were included in the study. Sixty-four per cent were blunt trauma patients. Mean time for FAST examination was three minutes. Twenty-six patients underwent laparotomy. Overall sensitivity and specificity were 46% and 99.7% respectively. The positive predictive value was 95.5% and the negative predictive value was 94%. Sensitivity was better for blunt trauma patients compared to those sustaining penetrating injuries. Specificity was high for both blunt and penetrating abdominal injuries.

Conclusion

FAST is a good screening test for patients with either blunt or penetrating injuries. Due to its low sensitivity, in this setting, FAST should be used in conjunction with other diagnostic tests for better management. Increase in experience is needed to improve the sensitivity of this test.

Introduction

The trauma surgeon, in his continuous quest for the accurate assessment of the injured patient, now more than ever, relies on various diagnostic modalities to determine the need for operative intervention. Diagnostic peritoneal lavage (DPL) and contrast enhanced computed tomography (CT) for both blunt and penetrating abdominal injuries have been evaluated in several studies and have been widely accepted, with good accuracy in detecting hemoperitoneum, in most trauma centers[1–15].

With the introduction of Focused Assessment for the Sonographic Examination of the Trauma Patient (FAST), experienced surgeon sonographers could now detect pericardial effusion or hemoperitoneum in injured patients and utilise the data to determine the need for surgery[16]. Many authors have reported the accuracy of FAST to detect presence of hemoperitoneum/pericardial effusion and hence significant intraabdominal injuries[17–22]. In 2003, the Division of Trauma of the Philippine General Hospital, a tertiary care hospital, incorporated the use of surgeon-performed ultrasonography in the routine evaluation of trauma patients with injuries to the torso.

The objective of this study is to determine the accuracy of surgeon-performed FAST in patients with no initial indication for operative intervention, in determining the need for surgery.

Materials and methods

This prospective study was conducted from October 2003 to October 2004 at the Philippine General Hospital to evaluate the use of ultrasound in the assessment of trauma patients. All patients with penetrating and blunt injuries to the torso with no immediate indication for surgery were included in the study. Patients with signs of peritoneal irritation were excluded. Patients who were hemodynamically unstable, necessitating immediate operative intervention,

Table 1 Overall accuracy of FAST in trauma

Overall		Significant Intraabdominal Injuries	
		Positive	Negative
FAST result	Positive	10	0
	Negative	12	194
Sensitivity		0.457 (95% CI: 0.274, 0,650)	
Specificity		0.997 (95% CI: 0.976, 1)	
Positive Pred. Value		0.955 (95% CI: 0.679, o.995)	
Negative Pred. Value		0.94 (95% CI: 0.898, 0.965)	
Likelihood Ratio Positive		178.043 (95% CI: 10.784, 2939.557)	
Likelihood Ratio Negative		0.545 (95% CI: 0.375, 0.793)	

Table 2 Accuracy of FAST in blunt trauma

Blunt Trauma		Significant Intraabdominal Injuries	
		Positive	Negative
FAST result	Positive	6	0
	Negative	2	130
Sensitivity		0.722 (95% CI: 0.402, 0.910)	
Specificity		0.996 (95% CI: 0.964, 1)	
Positive Pred. Value		0.929 (95% CI: 0.561, 0.992)	
Negative Pred. Value		0.981 (95% CI: 0.941, 0994)	
Likelihood Ratio Positive		189.222 (95% CI: 11.552, 3099.509)	
Likelihood Ratio Negative		0.279 (95% CI: 0.097, 0.800)	

were excluded from the study. Demographic data were collected for each patient.

The patients were initially assessed and resuscitated by the trauma team on duty, and FAST was then performed by the most senior member of the team available at that time. The standard preparation and technique described by Rozycki was used[16]. A Siemens Sonoline Adara ultrasound imaging system with a variable 3.5 to 5 MHz transducer was used in all of the studies. The members of the trauma team had previously undergone a short lecture and hands-on workshop conducted by the consultants of the Division of Trauma of the Department of Surgery of the Philippine General Hospital. Only those consultants are credentialed by the Philippine Society for Ultrasound in Clinical Medicine Inc. (PSUCMI).

The time for each FAST procedure was recorded. Those patients who developed clinical indications for surgery were immediately brought to the operating room for management.

For patients with penetrating injuries without overt indications for surgery, the mere presence of fluid on FAST indicated laparotomy. DPL was only done on patients with penetrating injuries to the abdomen and presenting with equivocal abdominal findings. Patients with negative abdominal findings were monitored with serial abdominal examinations. The institutional criterion of ≥ 5000 RBC/ mm^3 was used an indication for laparotomy[42].

For patients with blunt injuries to the abdomen without overt indications for laparotomy, the presence of fluid in the abdomen indicated either triple-contrast CT or DPL. Laparotomy was then done if either the CT or the DPL results would indicate it, or when these patients develop clinical indications.

On laparotomy, the intraoperative findings were then assessed by the authors as either with or without significant intraabdominal injuries. Intraoperative findings which necessitate surgical intervention are deemed as significant intraabdominal injuries. For those who were not operated on, results of the two-week follow-up were used to determine if the intraabdominal injuries were significant.

Two-by-two tables were constructed using intraoperative findings or results of out patient follow-up as the gold standard. Sensitivity, specificity, predictive values and likelihood ratios were calculated. Untoward and unexpected events were recorded and reported.

All patients were followed up at the out patient department each week for two successive weeks. Patients who failed to come back for the follow-up visit were contacted and requested to come back for examination.

Results

During the period between October 1st 2003 and October 30th 2004, 216 patients were included in the study. There were 202 males and 14 females. The mean age of the patients was 29 years. Of the patients, 138 (64%) had blunt torso injuries while 78 (36 %) had penetrating injuries.

The average time for FAST was three minutes. FAST was performed at an average time of 7.5 hours post injury in patients with blunt injuries and 9.48 hours post injury in those who suffered penetrating injuries. No repeat FAST was done in any of the patients.

Only 26 patients underwent laparotomy. Ten were for blunt trauma, while 16 were for penetrating injuries. The sole indication for the laparotomies for those who suffered blunt trauma was the physical finding of diffuse peritoneal irritation. On the other hand, the indications for abdominal exploration in those with penetrating trauma were findings of free fluid on FAST in four patients, positive findings on DPL in two patients and findings of diffuse peritoneal irritation in 10 patients.

For blunt abdominal trauma, laparotomy was done on the average of 19.5 hours post-injury. This was not surprising since the mean time of arrival of these patients in the emergency room was 17.8 hours post injury. Delay from FAST to laparotomy was 1.35 hours. The average time of arrival of the patients who suffered penetrating injuries was, on the other hand, 3.6 hours post injury. The mean time for laparotomy in these patients was 4.13 hours post injury. The time delay from FAST to laparotomy in these patients was 30 minutes.

Table 1 shows the overall FAST results against the gold standard. Overall sensitivity was low at 46 %, while overall specificity was high 99.7 %. The positive and predictive values were outstanding at 95.5 % and 94 % respectively. Both blunt and penetrating patients contributed to the high false negative value. There were no false positive FAST results.

Only 75% of the patients (162/216) were followed up for two weeks. No problems were detected in any of those who were seen at the OPD clinic. Those who did not follow-up were assumed to have no significant intraabdominal injuries. The lone mortality recoded was a blunt trauma victim of a motor vehicle crash with negative findings on FAST but who died of brain herniation a few hours after admission to the emergency room.

Blunt trauma

An average amount of 450 cc. of hemoperitoneum was

seen in those patients with blunt abdominal trauma whose FAST was positive for free fluid and were operated on. Four patients underwent CT at the request of their attending physicians and all had negative results consistent with the FAST findings. DPL were done in three patients despite the negative FAST, but the results were also negative.

Table 2 shows the two-by-two table of the FAST findings against the presence of significant intraabdominal injuries based on both the intraoperative findings and two-week out patient follow-up results. A low sensitivity of 72.2% was calculated. Specificity was high at 99.6%. The negative predictive value was outstanding at 98.1% while the positive predictive value was a low 92.9%.

Two patients had false negative FAST findings. One patient had a perforated jejunum. The other patient sustained a Grade 3 renal injury and a splenic laceration. Findings in both patients were assessed as significant injuries. Table 3 enumerates the injuries of the blunt trauma patients who underwent laparotomy. There were no false positive FAST results.

Table 3 Organs injured in the eight blunt trauma patients who underwent laparotomy

1 Kidney, spleen	5 Kidney
2 Jejunum	6 Kidney, spleen
3 Kidney, spleen diaphragm	7 Kidney, spleen
4 Kidney, spleen	8 Kidney, spleen

Table 4 Accuracy of FAST in penetrating trauma

Penetrating Trauma		**Significant Intraabdominal Injuries**	
		Positive	**Negative**
FAST result	Positive	4	0
	Negative	10	64
Sensitivity		0.3 (95% CI: 0.130, 0.552)	
Specificity		0.992 (95% CI: 0.930, 0.999)	
Positive Pred. Value		0.9 (95% CI: 0.463, 0.989)	
Negative Pred. Value		0.860 (95% CI: 0.764, 0.921)	
Likelihood Ratio Positive		39 (95% CI: 2.217, 686.022)	
Likelihood Ratio Negative		0.705 (95% CI: 0.506, 0.983)	

Table 5 Organs injured in the 14 penetrating trauma patients who underwent laparotomy

1 Jejunum	7 Rectum
2 Diaphragm, liver, colon, duodenum	8 Kidney, diaphragm, liver
	9 Diaphragm, liver, colon
3 Kidney, diaphragm, liver	10 Jejunum
4 Rectum	11 Diaphragm, liver, stomach
5 Kidney	12 Diaphragm
6 Kidney	13 Jejunum

Penetrating trauma

About the same amount of hemoperitoneum (450 cc.) was also seen in those patients sustaining penetrating trauma whose FAST were positive for free fluid and were operated on.

Table 4 is the two-by-two table of the FAST results against the gold standard. The sensitivity was even lower than that in blunt trauma at 30 %. The specificity remained high at 99.2 %. The positive and negative predictive values were high at 90 % and 86 % respectively.

Ten patients had false negative scans on FAST. These patients had various combination of injuries to the kidneys, diaphragm, liver, duodenum, jejunum, colon and rectum. Table 4 lists the injuries of these patients. Table 5 lists the injuries found in these patients.

There were no false positive FAST results.

Discussion

Ultrasonography had been in use in various institutions in Europe since the late1970s. Several studies had been published in Germany and in the United States as early as 1988 exploring the idea of utilising ultrasound in the evaluation of the trauma patient[23–26,36]. With the introduction of FAST, the Division of Trauma of the Department of Surgery of the Philippine General Hospital, has found a less costly adjuvant diagnostic modality to substitute for computed tomography and the very invasive diagnostic peritoneal lavage[24, 25]. With the acquisition of an ultrasound system dedicated to the emergency room and for the trauma patients, together with the ultrasonographic skill acquired by some consultants of the division, the routine use of the modality was encouraged despite the lack of adequate evaluation of the screening/diagnostic test in the Philippine setting.

The limited patient follow-up is the potential weakness of this study. Only 75% were followed up to two weeks post discharge. With the characteristics of the patients referred to our institution, it would be very difficult to achieve a better follow-up rate.

The mean time of presentation of our patients were 7.5 hours and 9.5 hours after injury for blunt and penetrating injuries, respectively. In no instance was there a need to repeat the test. Although the optimal time for a repeat ultrasound scan is not known, Rothlin *et al.* have recommended follow-up examinations every one to two hours for the first six hours after admission and then every 12 hours for 48 hours[22]. With these repeated scans, their results, however, did not differ significantly from the overall specificity presented in our study, because the findings on repeated physical examinations and the evaluation of the entire clinical picture was use for critical clinical decisions rather than the results of the ultrasound examination[22]. Repeated FAST was not routinely recommended by most authors, who also reported similar values for specificity (95.6–99.7) for trauma patients[16,17,28,29]. Intuitively, repeated follow-up FAST examinations may lower the false negative rate. Nevertheless, the high specificity, in the overall, suggests that FAST is a good screening test for trauma patients due to its outstanding ability to rule-in significant intraabdominal injuries.

Overall sensitivity in our setting was very disappointing at 46%. This is significantly lower in those sensitivities reported in the past (79–88.2%)[16,17,28,29]. One study from Thailand, however, presented with an overall sensitivity values lower than our study. The authors reported an overall sensitivity of only[47]17% with third year residents performing the FAST[46]. Although in our study the sensitivity value (72%) calculated for the blunt trauma group was not very far from that reported by others, the overall value was greatly affected by the very high number of false negatives in the penetrating injury group which gave a sensitivity of only 30% (Table 4). This only emphasises the need for further training, practice and eventual credentialing of all members of the trauma team in the PGH Division of Trauma who

may be requested to perform FAST on these acutely injured patients. What is particularly encouraging is that the learning curve reported by other institutions, particularly for the detection only of free fluid, even for non-radiologists, surgical interns and residents, had been brief[17,29,33,37–39]. High specificity in FAST as being easily achievable was reported by Sriussadaporn *et al.* in Thailand46.

As in the findings of Rozycki *et al.* and similar other reports in the past, most of the patients in this study were true negatives (89.8%)[16,17,20,21,26]. Although the patient populations described in these manuscripts may not be exactly the same as our trauma patient sample, the similarity in true negative rates may indicate that, as in our patient population, in the least most of the patients similarly presented without overt indications for laparotomy. The validity of the results of these studies are thereby enhanced since the screening/diagnostic test, FAST, was tested on the population where the test is anticipated to be of the most use, meaning those patients who are suspected to have intraabdominal injuries but do not initially present with overt indications for laparotomy.

The mean duration of the FAST in this study was three minutes. It is interesting to note that almost all of these ultrasound scans were performed by the residents and the lone Trauma Fellow of the trauma team, all of whom underwent only a short lecture and then a few hands-on practice sessions with the division consultants. Other papers report variable durations for the procedure (2.7 to 17.3 minutes)[17,28,29]. The average time for the procedure was not, surprisingly, longer in the study presented by Healy *et al.* (17.3 minutes), since aside from the four areas usually scanned, both costo-phrenic sulci were also evaluated for effusion in his described technique[28].

The mean amount of hemoperitoneum detected in this study is 450 cc. The actual amount should be lower if we assume that bleeding is continuous and the delay from FAST to laparotomy is about 1.35 hours and 0.5 hours in the blunt and penetrating injury groups respectively. This amount is much larger than the minimum of 100 cc. reported by Von Kuenssberg *et al.* in a recent paper[43]. His group reported this high sensitivity in the pelvic views of the FAST examination. In our study, free fluid was only detected either at Morison's pouch and/or the spleno-renal space. Obviously, the experience of the FAST performers in our study were much less than Von Kuenssberg *et al*.

Blunt trauma

There were 138 blunt trauma patients included in the study, 100 of which sustained their injuries secondary to vehicular crashes. FAST was done on the average of 7.5 hours post injury. With the high specificity and acceptable sensitivity reported in this study for blunt trauma patients, the PGH Division of Trauma has already adapted FAST as a screening test for further studies (DPL or CT). In this study 130 (94.2%) of the blunt trauma patients were managed non-operatively. Several authors have also recommended this[17,20,29]. It should be emphasised that the fluid detected by FAST, could in no way be identified as blood, bile, urine, succus entericus, nor simply ascites. Further diagnostic test should be employed to help the attending trauma surgeon to make critical decisions.

The most common organs injured were the kidney and spleen. This is not the same as the results previously presented in the same institution in a previous paper by Dominguez and Talens, which identified the ileum as the most commonly injured organ in blunt trauma[30]. This could be explained by the fact that most of the patients reported in this study (80%) were blunt abdominal trauma secondary to mauling and only less than 20% were secondary to vehicular crashes.

Sensitivity of ultrasound in blunt trauma in the United States ranged from 42% to 100% while specificity ranged from 97.7% to 100%[17,18,29,36,44,47]. The use of ultrasound in blunt trauma had also been evaluated in other institutions outside the United States. Kimura and Otsuka of Japan reported 72 blunt trauma patients evaluated with ultrasonography with a sensitivity of 82% and a specificity of 100%[31]. Hoffmann *et al*. in Germany presented 291 blunt trauma patients examined with ultrasound with sensitivity and specificity of 87% and 97% respectively[32]. Clearly, sensitivity values had been more variable compared to specificity. Specificity had been consistently high in all the cited institutions similar to that reported in this study. This makes FAST an ideal screening test to determine which patient would need other examinations. Miller *et al*. recently warned of the limitation of ultrasound as a diagnostic test[47]. In that paper, Miller reported a sensitivity of only 42% in the assessment of blunt trauma patients, and concluded that FAST when used in the hemodynamically stable patient results in underdiagnosis of intra-abdominal injury[47].

Like any other tests, the variability of the characteristics of the sample population, like the incidence of true positives, affect the predictive values of the use of ultrasound in determining significant intraabdominal injuries. In this study, only 4% of blunt trauma patients had positive results but the predictive values were high at 92.8% and 98.1% for positive and negative predictive values respectively. In current literature, the ultrasound evaluations had been positive from 10% to as high as 50% of the time in blunt trauma patients[29,33,34]. These data also yielded positive and negative predictive values of great variability[29,33,34]. Nevertheless, the use of ultrasound is still affirmed as a good screening test for blunt trauma patients.

How a positive ultrasound result would help management in a blunt trauma patient had also been variable. As discussed earlier, our institution had taken the stand similar to that reported by McKenney, of Jackson Memorial Hospital that of utilising the results of FAST to select which patients would or would not need further work-up[29]. Hwang, of Taiwan, had suggested a simple scoring system to help determine which patients would need a laparotomy, scanning 6 are assigning 1 or 2 points per area depending on the amount of fluid[35]. The basic algorhythm described in the methodology portion had been well accepted by the members of our trauma teams.

Penetrating trauma

Seventy-eight patients sustaining penetrating injuries were included in the study. Consistently as in other studies specificity had been very good at 99.2%. For penetrating injuries, reported specificity ranged from 86% to 100%[16,17,28,29,44,45]. This may be understandable because presence of free fluid (usually hemoperitoneum) large enough to be detectable on FAST, in a patient with a penetrating injury, intuitively would have a

higher chance that there would be significant intraabdominal injury which would need surgical intervention compared to that when the etiology is blunt trauma. In our institution, mere presence of free fluid is an indication for laparotomy.

However, the sensitivity of FAST in evaluating patients with penetrating trauma had been frustratingly low. Ten patients with various injuries to the jejunum, colon, rectum, liver, kidney, and diaphragm had been missed. Fortunately, these patients eventually manifested signs of peritoneal irritation which indicated the surgical intervention. Four patients who had various injuries to the stomach, duodenum, jejunum, liver, kidney and diaphragm had been the few true positives. This could be explained by the fact that the surgical residents still need more experience with this new modality. This could also mean that hemoperitoneum may be too small in amount (in cases where bleeding had not yet been significant) or have not gravitated to the areas being scanned and therefore have yielded false negative results. Brooks *et al*. reported a similar frustration in penetrating trauma at the Queens Medical Center in the United Kingdom[44]. His group reported a sensitivity of 33% and a specificity of 86%, which was very similar to our data.[44] Likewise, Udobi *et al.* from Kansas reporting their experience in penetrating trauma, presented a sensitivity of 46% and a specificity of 94%[48]. It seems that other centres also have the same limitations as in our setting. Repeat examination should probably be adapted to possibly increase the sensitivity of this test.

These findings on FAST in penetrating abdominal injuries complement the previously accepted use of DPL in our institution[42]. DPL remains as the other adjuvant modality for the evaluation of penetrating abdominal injuries, used in our institution for patients with equivocal findings on physical examination. The only parameter the institution had been using is a count of ≥ 5000 RBC/ mm^3 as an indication for laparotomy, with a sensitivity 93.2% (95% CI: 87.2%, 96.7%) and a specificity of 87.5% (95% CI: 77.8%, 93.5%)[42]. The high specificity of FAST as an initial screening test complements the high sensitivity of DPL as a diagnostic test in penetrating abdominal trauma.

Conclusions

Surgeon-performed FAST as an adjuvant modality for the assessment of the injured patient is acceptable in the local setting. With a high overall specificity, it is a good screening test for patients without overt indications for surgery. The overall sensitivity needs to be increased and probably repeating the ultrasound scanning would be beneficial as well as increasing the experience of the performers of FAST.

FAST has an acceptable sensitivity and a high specificity in determining significant intra-abdominal injuries in blunt abdominal trauma. The high specificity and low sensitivity of FAST in determining significant intra-abdominal injuries in patients with penetrating abdominal injuries makes the test a good screening tool for such patients. These characteristics should complement the currently used DPL criteria, previously proven with high sensitivity and specificity, for penetrating abdominal trauma in our setting.

References

1 Buntain WL, Gould HR, Maull KI. Predictability of splenic salvage by computed tomography. *J Trauma* 1988; 28: 24.

2 Davis RA, Shayne JP, Max MH *et al*. The use of computerized axial tomography versus peritoneal lavage in the evaluation of blunt abdominal trauma: a prospective study. *Surgery* 1985; 98: 845.

3 Engrav LH, Benjamin CI, Strate RG *et al*. Diagnostic peritoneal lavage in blunt abdominal trauma. *J Trauma* 1975; 15: 854.

4 Fabian TC, Mangiante EC, White TJ *et al*. A prospective study of 91 patients undergoing both computed tomography and peritoneal lavage following blunt abdominal trauma. *J Trauma* 1986; 26: 602.

5 Fischer RP, Beverlin BC, Engrav LH *et al*. Diagnostic peritoneal lavage: Fourteen years and 2,586 patients later. *Am J Surg* 1978; 136: 701.

6 Freeman T, Fischer RP. The inadequacy of peritoneal lavage in diagnosing acute diaphragmatic rupture. *J Trauma* 1976; 16: 538.

7 Goldstein AS, Sclafani SJA, Kupferstein NH *et al*. The diagnostic superiority of computed tomography. *J Trauma* 1985; 25: 938.

8 Kearney PA Jr, Vahey T, Burney RE *at al.* Computed tomography and diagnostic peritoneal lavage in blunt abdominal trauma: The combined role. *Arch Surg* 1989; 124: 344.

9 Meyer DM, Thal ER, Weiglet JA *et al*. The role of abdominal CT in the evaluation of stab wounds to the back. *J Trauma* 1989; 29: 1226.

10 Olsen WR, Hildreth DH. Abdominal paracentesis and peritoneal lavage in blunt abdominal trauma. *J Trauma* 1971; 11: 824.

11 Petzman AB, Makaroun MS, Slasky BS *et al*. Prospective study of computed tomography in initial management of blunt abdominal trauma. *J Trauma* 1986; 26: 585.

12 Philips T, Scalfani SJA, Goldstein A *et al*. Use of the contrast-enhanced CT enema in the management of penetrating trauma to the flank and back. *J Trauma* 1986; 26: 593.

13 Powell DC, Bivins BA, Bell RM. Diagnostic peritoneal lavage. *Surg Gynecol Obstet* 1982; 155: 256.

14 Root HD, Keiser PJ, Perry JF Jr. Peritoneal trauma: Experimental and clinical studies. Surgery 1967; 62: 679.

15 Thal ER, May RA, Beesinger D. Peritoneal lavage: Its unreliability in gunshot wounds of the lower chest and abdomen. *Arch Surg* 1980; 115: 430.

16 Rozycki GS, Ochsner MG, Jaffin JH *et al*. Prospective evaluation of surgeons' use of ultrasound in the evaluation of trauma patients. *J Trauma* 1993; 34: 516.

17 Rozycki GS, Ochsner MG, Schmidt JA, *et al*. A prospective study of surgeon performed ultrasound as the primary adjuvant modality for injured patient assessment. *J Trauma* 1985; 39: 3.

18 Healy MA, Simons RK, Winchell RA, *et al*. A prospective evaluation of abdominal ultrasound in blunt trauma: is it useful? *J Trauma* 1996; 40: 6.

19 Tso P, Rodriguez A, Cooper C, *et al*. Sonography in blunt abdominal trauma: A preliminary progress report. *J Trauma* 1992; 33: 39.

20 Bode PJ, Niezen RA, VanVugt AB *et al* Abdominal ultrasound as areliable indicator for conclusive laparotomy in blunt abdominal trauma. *J Trauma* 1993; 34: 27.

21 Golletti O, Ghiselli G, Lippolis PV, *et al*. The role of ultrasonography in blunt abdominal trauma: Results of 250 consecutive cases. *J Trauma* 1994; 36: 178.

22 Rothlin MA, Naf R, Angwerd M *et al*. Ultrasound in blunt abdominal and thoracic trauma. *J Trauma* 1993; 34: 488.

23 Chambers JA, Pilbrow WJ. Ultrasound in abdominal trauma: an alternative to peritoneal lavage. *Arch Emerg Med* 1988 5: 26.

24 Forster R, Pillasch J, Zielke A *et al*. Ultrasonography in blunt abdominal trauma: Influence of the investigators' experience. *J Trauma* 1992; 34: 264.

25 Ruf W, Friedl W, Weber, G *et al*. Stellt der sonographische Nachweis von Blut im Abdomen nach stumfem Bauchtrauma in jedem Fall eine Operationsindikation dar? *Unfallchirurg* 1990; 93: 132.

26 Hoffman R, Pohlemann T, Wipperman B *et al*. Management der Sonographie bei stumpfen Bauchtrauma. *Unfallchirurg* 1989; 92: 471.

27 Sarkisian AE, Khondkarian RA, Amerbekian NM *et al*. Songraphic screening of mass casualtiesof abdominal and renal injuries following the

1988 Armenian earthquake. *J Trauma* 1991; 31: 247.

28 Healey MA, Simmons RK, Winchell RJ *et al*. A prospective evaluation of abdominal ultrasound in blunt trauma: is it useful? *J Trauma* 1996; 40: 6.

29 McKenney MG, Martin L, Lentz K *et al*. 1000 consecutive ultrsounds for blunt abdominal trauma. *J Trauma* 1996; 40: 4.

30 Dominguez L and Talens E. Blunt abdominal trauma in a tertiary hospital. *Philippine Journal of Trauma* 1998; 3: 1.

31 Kimura A and Otsuka T. Emergency center ultrasonography in the evaluation of hemoperitoneum: a prospective study. *J Trauma* 1991; 31: 20.

32 Hoffmann R, Nerlich M, Muggia-Sulliam M *et al*. Blunt abdominal trauma cases of multiple trauma evaluated by ultrasonography: a prospective analysis of 291 patients. *J Trauma* 1992; 32: 452.

33 Tso P, Rodriguez A, Cooper C *et al* Tomography in blunt abdominal trauma: a preliminary progress report. *J Trauma* 1992; 33: 39.

34 Gruessner R, Mentges B, Duber C *et al* Sonography versus peritoneal lavage in blunt abdominal trauma. J Trauma 1989; 29: 242.

35 Huang M, Liu M, Wu J *et al*. Ultrasonography for the evaluation of hemoperitoneum during resuscitation: a simple scoring system. *J Trauma* 1994; 36: 173.

36 Jarowenko DG, Hess RM, Herr MS *et al*. The use of ultrasonography in the evaluation of blunt abdominal trauma. Presented at the 49th Annual Session of the AAST. Chicago, October 1989.

37 Frezza EE, Solis R, Silich R *et al*. Competency-based instruction to improve the surgical resident technique and accuracy of the trauma ultrasound. *American Surgeon* 1999; 65: 9.

38 Han D, Rozycki G, Schmidt J, *et al*. Ultrasound training during ATLS: an early start for surgical interns. *J Trauma* 1996; 41: 2.

39 Shackford S, Rogers F, Osler T *et al*. Focused abdominal sonogram for trauma: the learning curve of nonradiologist clinicians in detecting hemoperitoneum. *J Trauma* 1999. 46: 4.

40 Ma O, Mateer J, Ofata M *et al*. Prospective analysis of a rapid trauma ultrasound examination performed by emergency physicians. *J Trauma* 1995; 38: 879.

41 Jehle D, Guarino J, Karamanoukian H. Emergensy department ultrasound in the evaluation of blunt abdominal trauma. *Am J Emerg Med* 1993; 11: 343.

42 Talens E. The accuracy of diagnostic peritoneal lavage indetermining significant intra-abdominal injuries in penetrating abdominal trauma. Thesis approved by the National Graduate School for the Health Sciences of the University of the Philippines Manila for the Degree of Master of Science in Epidemiology (Clinical Epidemiology). May 22, 2001.

43 Von Kuenssberg D, Stiller G, Wagner D. Sensitivity in detecting intraperitonel fluid with the pelvic views of the FAST exam. *Am J Emerg Med* 2003; 21: 6.

44 Brooks A, Davies B, Smethhurst M, *et al*. Prospective evaluation of non-radiologist performed emergency abdominal ultrasound for hemoperitoneum, *Emerg Med J* 2004; 21: 5.

45 Kirkpatrick A, Sirois M, Ball C, *et al*. The hand-held ultrasound examination for penetrating abdominal trauma. *Am J Surg* 2004; 167: 5.

46 Sruissadaporn P, Sruissadaporn S, Vajrabukka T. The results of focused assessment with sonography for trauma performed by third year residents: a prospective study. *J Med Assoc Thai* 2003; 86 Suppl 2: S344–349,

47 Miller M, Pasquale M, Bromberg W *et al*. Not so FAST. *J Trauma* 2003; 54: 1.

48 Udobi K, Rodriguez A, Chiu W *et al*. Role of ultrasonography in penetrating abdominal trauma: a prospective clinical study. *J Trauma* 2001; 50: 3.

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Diastematomyelia – a case review

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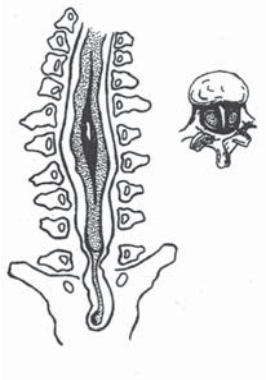


Figure 1 Diastematomyelia resulting in two hemicords

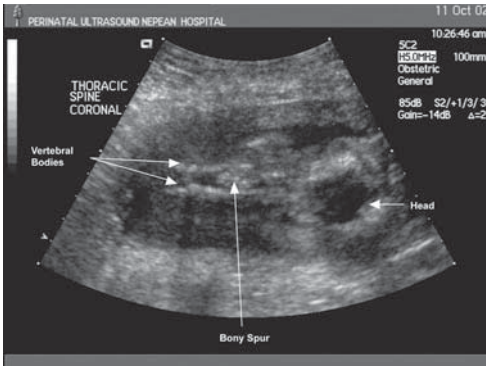


Figure 2 Disruption of the vertebrae in the mid thoracic region with a bony spur centrally

Introduction

Diastematomyelia is a congenital defect of the spinal cord. It is a rare form of occult spinal dysraphism. In this condition, the defect occurs when there is a longitudinal cleft in the spinal cord. The result of the clefting is two hemicords. The hemicords may or may not be divided by an osseous or fibrocartilaginous septum (Figure 1)[1]. Sonographically, a fibrocartilaginous septum is demonstrated as a bony spur between the posterior ossification centres when scanning the spine coronally. There is also a widening of the ossification centres at the level of the spur. Diastematomyelia occurs between the 15th and 18th days of intrauterine life because of abnormal development of the notochord[2].

Associated findings

Diastematomyelia in some cases is an isolated finding. However, it may be associated with the following groups of abnormalities:

1 Other dysraphisms – meningocele, myelomeningocele, spinal lipoma, neuroenteric cyst, or dermal sinus.
2 Other segmental anomalies of the vertebral bodies – hemivertebrae with kyphosis or scoliosis.
3 Visceral malformations – kidneys, rectum, uterus.

The prognosis for Diastematomyelia as an isolated finding is favourable[1].

Case review

A 36 year old woman, g5.t5.p0.a0.l4

First pregnancy	Dichorionic/diamniotic twins with one of the twins only surviving to five months of age. Delivered by caesarean section.
Second pregnancy	Singleton with a normal vaginal delivery.
Third pregnancy	Singleton with a forceps delivery and episiotomy.
Fourth Pregnancy	Singleton with a normal vaginal delivery.
Fifth pregnancy:	(Case review) IVF pregnancy. LMP: 2nd June 2002 EDC: 10 March 2003

A first trimester ultrasound, on 30th August 2002, was referred by the Geneticists due to advanced maternal age and the IVF pregnancy. This was requested as a nuchal translucency examination with serum screening. On this occasion the patient was 12 weeks 3 days gestation, which was in agreement with the EDC established through the IVF procedure. The examination returned a low risk for T21, T13 and T18. An interesting finding was the appearance of what seemed to be either a second sac adjacent to the viable pregnancy without a fetal pole or yolk sac. This was thought to be either a second, anembryonic sac, or a synechia. No other abnormalities were detected on this examination.

A second trimester ultrasound was performed on 11th October 2002 at 18 weeks 2 days gestation. Images of the spine showed a disruption of the vertebrae in the mid thoracic region with a bony spur centrally (Figure 2). These findings are suggestive of diastematomyelia and were reported as such. The intracranial contents were normal, and all other findings of the morphology scan were normal apart from a two-vessel umbilical cord. The second sac seen on the first trimester ultrasound appeared to have resolved.

An amniocentesis was performed on 17th October 2002, which returned a normal karyotype.

Follow-up ultrasounds on 14th November 2002 and 5th December 2002 showed normal growth. The diastematomyelia was again noted with normal movement of both legs and feet.

The patient was referred for an MRI on 5th December 2002 at the New Children's Hospital, Westmead which was performed on 19th January 2003. This confirmed the diastematomyelia in the mid thoracic region with the single cord

Figure 3 The single cord splitting into two hemicords and then becoming one again distally

Figure 4 Disruption of the vertebrae with the centrally located bony spur

splitting into two hemicords, and then becoming one again distally. (See Figure 3).

The patient presented to Nepean Hospital on 22nd January 2003 with a question of premature rupture of membranes at 33 weeks 2 days gestation. A third trimester ultrasound was performed that demonstrated normal growth, flows and amniotic fluid. A three-dimensional ultrasound was performed at this stage, which demonstrated the disruption of the vertebrae with the centrally located bony spur (See Figure 4). The ultrasound images are compromised by maternal body habitus.

A final third trimester ultrasound was performed on 3rd February 2003, which again showed normal growth, flows and amniotic fluid. Normal leg movements were also observed on this examination.

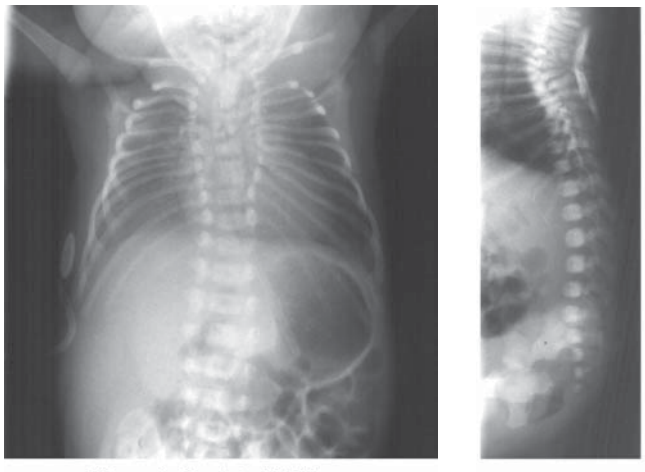
Delivery

A live female infant was delivered on 21st February 2003 at 08.37 hours by planned caesarean section at Nepean Hospital following a gestation of 38 weeks and 2 days:

Birthweight = 2910 g
Length = 44.5 cm
Head circ = 33.5 cm
Apgar at 1 min = 5
Apgar at 5 min = 9

Postnatal X-rays

Postnatal X-rays for skeletal survey were performed on 24/02/2003. The report on the spine was as follows:



Figures 5 & 6 Widening of the vertebral bodies and the bony spur

> *"In the thoracic spine, there is gross disorganisation of segmentation with multiple ossification centres noted for many of the vertebral bodies and extreme widening of the interpedicular distances. These changes extend from the lower cervical region to approximately the T9/10 region*."

The X-rays (Figures 5 & 6) show the widening of the vertebral bodies and the bony spur.

The baby was discharged home, from the Nepean Hospital on 26th February 2003, with her parents for neurological follow-up. No further information is available on her progress at this stage.

Discussion

Widening of the vertebral bodies with a centrally located bony spur is a typical sonographic feature of diastematomyelia. The bony spur is a helpful marker for making the diagnosis, although it is noted that a diastematomyelia can exist without the fibrocartilaginous septum.

This case serves as a good reminder that the ultrasound finding of normal intracranial contents with a normal shaped skull does not exclude all neural tube defects. Careful surveillance of the fetal spine in transverse, coronal and sagittal sections throughout its entire length is an important aspect of the fetal morphology ultrasound at 18-20 weeks gestation.

Acknowledgement

We would like to acknowledge Prof. Albert Lam of the Children's Hospital at Westmead for providing the MRI images in this case presentation.

References

1 Allen LM, Silverman RK. Prenatal Ultrasound Evaluation of Fetal Diastematomyelia: two cases of type I Split Cord Malformation. *Ultrasound in Obstetrics and Gynecology* 2000; 15: 78–82.

2 Sonigo-Cohen P, Schmit P, Zerah M, Chat L, Simon I, Aubry MC, Gonzales M, Pierre-Kahn, Brunelle F. Prenatal Diagnosis of Diastematomyelia. *Child's Nervous System* 2003; 19: 555–560.

3 Platypus (1999) TKI Medcon, Canada.

4 Caspi B, Gorbacz S, Appelman Z, Elchalal U. Antenatal Diagnosis of Diastematomyelia. *Journal of Clinical Ultrasound* 1990; 18: 721–725.

Book and CD reviews

Atlas of Endoanal and Endorectal Ultrasonography

Authors GA Santoro, G Di Falco
Publisher Springer 2004
Cost $A330.00

The title of this book is a little misleading in that it is not an atlas in the truest sense and less than half the book is dedicated to endoanal/rectal ultrasound. The book contains 290 pages.

The first three sections cover ultrasound basics and endoanal/rectal ultrasound techniques and basic anatomy. The following four sections cover endoluminal staging of rectal cancer preoperatively, following preoperative chemoradiotherapy, postoperative follow-up and staging of anal cancer. The last three sections cover surgical treatment options for rectal cancer, combined modality therapy for rectal cancer and treatment options for anal cancer.

Endorectal ultrasound is very topical, with surgical and adjuvant therapy for rectal cancer undergoing dramatic changes that demand accurate preoperative local staging. The Italian authors are recognised experts and write all chapters apart from some chapters relating to surgical techniques and adjuvant therapy.

Each chapter finishes with an invited commentary from other acknowledged experts in their respective fields. In some instances, an alternate view and perspective is given. This is a refreshing approach and one that those attempting to tackle a new area will appreciate, as a more balanced understanding of a topic ensues.

The text content represents a concise and current review of the literature with some emphasis on areas that the authors favour (including 3D ultrasound). The image quality is excellent as are the many illustrations.

The book is clearly geared towards surgeons (who perform the bulk of endorectal ultrasound) with an interest in endoluminal ultrasound. I believe it has limited interest for sonographers and radiologists outside those with a specific interest in rectal cancer.

Since the text can hardly be described as an atlas and it does not cover perirectal inflammatory diseases and sphincter integrity, other books covering these areas might be of more interest.

Damien Stella FRANZCR
Royal Melbourne Hospital

Color Atlas of Ultrasound Anatomy

Editor Berthold Block
Publisher Thieme 2004
ISBN 3-13-139051-4
Cost $A81.40

Color Atlas of Ultrasound Anatomy is meant to be a pocket guide to ultrasound anatomy in the abdomen, including the bladder, prostate, uterus and, curiously, the thyroid gland and surrounding anatomy. It is probably a little large for most sonographers' pockets, but would be useful for student sonographers to have on the bookshelf of the scanning room and for use in preparing for film-reading examinations.

The text includes 244 images and matching, labelled, coloured line drawings. However, the labelling is by numbers and the number legends are on separate pages, which I found a bit distracting.

Each image is accompanied by a diagram showing the plane of scan and approximate location of the transducer on the patient. Inside the front and back covers are diagrams and normal size ranges for the abdominal organs. This is a useful feature and makes for quick and easy reference.

The images and labelling of the liver are good, particularly with labelling of the functional segments. This is something that is not available in many texts and again would be very useful for those students confused by the functional segmentation system.

My main criticism of the book is the stated implication in the preface that 'the basis for interpreting the examination is the individual sectional image'. I would hope anyone using the book would appreciate that the real-time, thorough and complete examination of the organ is the basis for interpreting the examination and that the documented images are a representation of the examination.

In summary, this would be a useful book for beginning sonographers, those preparing for examinations and those involved in teaching student sonographers in the area of abdominal sonography.

Margo Gill

Diagnostic Ultrasound 3rd Edition

Editors CM Rumack, SR Wilson, JW Charboneau
Publisher Mosby 2004
Cost approx $A547.00

This is, quite simply, the standout general reference in ultrasound currently available. In this third edition of what has become a standard and authoritative reference book, the editors have been highly successful in incorporating advances in technology and imaging capabilities, as well as improving the overall layout and quality of production.

Approximately 100 authors, all recognised experts in their respective fields of ultrasound, predominantly but not exclusively from North America, have contributed to this two-volume text.

It comprises over 1800 pages and over 5000 illustrations, the text being well laid out with useful highlighted box sections and the illustrations being of generally superb quality.

The two volumes are divided into four sections in volume 1 as follows: physics; abdominal pelvic and thoracic sonography; intraoperative sonography; small parts, carotid artery and peripheral vessel sonography. In volume 2 there are two large sections: obstetric and fetal sonography; and paediatric sonography.

The 62 chapters follow a generally consistent style with brief coverage of normal anatomy and relevant embryology, sonographic technique, sonographic anatomy and pathology and, where appropriate, interventional ultrasound techniques. The illustrations have been substantially updated, are of very high quality, and are supplemented by schematic diagrams. The text is clearly laid out and well organised and is embellished with tables and coloured 'key point' sections.

The overall size of the two vol-

umes has been increased, with most of the extra allocation being to obstetrics and gynaecology.

This text can quite rightly be considered the definitive general reference on adult and paediatric ultrasonography. This is a text that should reside in all departments and practices that have what is loosely referred to as a 'general ultrasound' practice. It should be a bench top ready reference which practising sonologists, sonographers and trainees in these fields will find immensely helpful on a day-to-day basis.

The only slight reservation, considering the Australian and New Zealand style of general ultrasound practice, is the relatively small allocation to musculoskeletal ultrasound, and leg vein Doppler ultrasound.

For individuals or departments contemplating purchasing a new text in the field of general ultrasound at present this is the most definitive available.

Robert N Gibson

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will answer your questions about the DMU

ASUM Giulia Franco Teaching Fellowships 2005 Sponsored by Toshiba Ultrasound

The Giulia Franco Teaching Fellowship was established by ASUM in association with Toshiba Medical to provide educational opportunities for sonographers in all parts of Australia and New Zealand.

The fellowships increase the opportunity for members outside the main centres to have access to quality educational opportunities.

It is named to commemorate Giulia Franco whose passion for ultrasound education took her to all parts of Australia and New Zealand, and continued as she moved into a business career with Toshiba. Its first award, in 2004, provided educational programs in Western Australia.

Further details are on the ASUM website at www.asum.com.au

Branches wishing to propose programs for the 2005 Teaching Fellowships should contact:

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Willoughby 2068 NSW Australia

TOSHIBA

ASUM Chris Kohlenberg Teaching Fellowships 2005 Sponsored by GE Medical Systems Ultrasound

The Chris Kohlenberg Teaching Fellowship was established by ASUM in association with GE Medical Systems Ultrasound to increase the opportunity for members outside the main centres to have access to quality educational opportunities.

It has been awarded annually since 1998, providing educational programs in provide educational opportunities for members in New Zealand, Queensland, New South Wales, Northern Territory, Western Australia, Victoria, South Australia and Tasmania.

It is named to commemorate Dr Chris Kohlenberg, who died while travelling to educate sonographers.

Further details are on the ASUM website www.asum.com.au Branches wishing to propose programs for the 2005 Teaching Fellowships should, in the first instance, contact:

Keith Henderson
tel +61 2 9958 6200 fax +61 2 9958 8002
email khenderson@asum.com.au

Send nominations and proposals to:
The Education Manager
ASUM 2/181 High St
Willoughby 2068 NSW Australia

GE Medical Systems
Ultrasound

ASUM Multidisciplinary Workshop Melbourne 17–20th March 2005

Council welcomes presidents of ultrasound societies of France, Thailand and the Philippines

I was indeed privileged to be the Convenor of the Melbourne Multidisciplinary Workshop in March 2005 and I have great pleasure in providing a summary of the workshop.

The workshop was very successful and exceeded expectations with more than 500 delegates attending. As its name suggests, the Multidisciplinary Workshop covered many areas of ultrasound and it provided an opportunity for networking within the ultrasound fraternity. I certainly enjoyed networking with practitioners in other areas of ultrasound such as MSK, cardiac, vascular, breast and emergency medicine. From my perspective, it was gratifying to see the degree of enthusiasm and professionalism all the speakers and presenters brought to the meeting and, equally encouraging, to witness the keenness displayed by the participants as they acquired new knowledge and scanning skills. We were particularly fortunate to have Professor Yves Ville from Paris who is a world expert on twin-to-twin transfusion in twin pregnancy. He gave a total of six lectures and they were thoroughly enjoyed, not only because of the content, but also because of his very attractive accent!

It was a huge job to organise such a workshop and I could not have done it alone. In addition to the General and Paediatric programs, I would particularly like to thank my co-convenors who organised the Vascular (Dr John Donlan & Dr John Vrazas), Musculoskeletal (Mr Stephen Bird), Echocardiography (Ms Di Jackson) and Breast (Dr Alexandria Taylor) sections of the program. I would also like to thank all those who were involved in organising the DMU/DDU Prep Course (Mrs Margaret Condon) and also the Nuchal Translucency Course (Ms Ann Robertson) during the Multidisciplinary Workshop.

In this year's program we introduced two workshops, the Point of Care for the Emergency in Medicine Practitioners and also for Obstetricians. These Point of Care Workshops proved to be very successful and I am sure they will be a continuing part of future workshops. I would also like to thank the Education Manager, Keith Henderson, and all the ASUM office team who worked tirelessly to make the workshop happen.

Lastly, I would like to thank Dr Caroline Hong and the ASUM Executive for giving me the opportunity to convene such an exciting workshop. I strongly urge other potential convenors, who may be contemplating taking up the challenge, to do so without hesitation! It is a personally and professionally rewarding experience and provides a great arena for networking with other practitioners in the field of ultrasound.

Dr Andrew Ngu
Convenor


ASUM
Australasia
Ultrasoun
ASUM

Examination dates for 2005

DMU examination dates and venues

DMU Examinations

Written

Part I and II Written Examinations - Saturday 30th July 2005

Oral Examination & OSCE

Cardiac

- Date – Saturday 8th October 2005
- Time – 08.00 to 16.00
- Venue – Brisbane
  (Qld, NT, New Zealand & selected NSW Candidates)
- Venue – Melbourne
  (SA, VIC, WA & selected NSW Candidates)

General

- Date – Saturday 15th October 2005
- Time – 08.00 to 16.00
- Venue – Auckland
  (All New Zealand Candidates)
- Venue – Sydney
  (All Australian Candidates)

Obstetric

- Date – Saturday 15th October 2005
- Time – 08.00 to 16.00
- Venue – Auckland
  (All New Zealand Candidates)
- Venue – Sydney
  (All Australian Candidates)

Vascular

- Date – Saturday 8th October 2005
- Time – 08.00 to 16.00
- Venue – Brisbane
  (All Candidates)

*The DMU Board of Examiners determined the final locations for the OSCEs after final candidate numbers, venue availability and Examiner requirements were known. Candidates are again reminded that while the dates for OSCEs are fixed, all modalities are not necessarily examined at every centre. All candidates will be advised in writing of the specific location and time of their OSCE/Oral Examination session approximately six (6) weeks prior to the scheduled date.

Practical Examinations

- Practical Examination are conducted at the candidate's clinical practice, where possible, by arrangement between the ASUM DMU Board of Examiners, the candidate and the Practice Managers between April and November.

DMU Practical Examiner Accreditation and Training Days

- Wellington – Thursday 28th July 2005 (NZ Branch Meeting)
- Adelaide – Thursday 29th September 2005 (Annual Scientific Meeting)
- Gold Coast Thursday 23rd March 2006 (Multidisciplinary Workshop)

DMU Prep Course

- Gold Coast – Wednesday 22nd March - Sunday 26th March 2006

Miscellaneous DMU fees

Exemption and waiver application fees – Part I and Part II

- $A150.00 +GST = $A165.00 (Australia) non refundable
- $A150.00 (New Zealand and elsewhere) non refundable

Deferral application fees – Part I and II

- $A150.00+GST = $A165.00 (Australia) non refundable
- $A150.00 (New Zealand and elsewhere) non refundable

Request for essay remark – Part II

- $A50.00 + GST* = $A55.00 (Australia) per question
- $A50.00 (New Zealand and elsewhere) per question

Application for appeal – Part II

- $A150.00 + GST* = $A165.00 (Australia) non refundable
- $A150.00 (New Zealand and elsewhere) non refundable

*GST applies to Australian Residents only

DDU examination dates

Information pertaining to the remaining examinations for 2005

2005 Part II

The Oral Examination for Part II will be held on Saturday 18th June 2005 in Sydney. The Oral Exam for Cardiology candidates will be in Melbourne on Thursday 23rd June 2005.

Results

Examination results will be mailed to candidates in early July, following the DDU Board of Examiners' meeting.

The ASUM *Ultrasound Bulletin* publishes information relating to changes in fees, examination dates, regulations, etc. Members are kept up to date with this and other related information by automatically receiving the *Ultrasound Bulletin*.

Your ASUM Examinations questions answered

James Hamilton DMU tel +61 2 9958 0317

email dmu@asum.com.au

Marie Cawood DDU tel +61 2 9958 7655

email ddu @asum.com.au

ASUM Victorian Branch
Ultrasound Lectures for 2005

The lecture series has been prepared to assist ultrasound trainees with the ASUM DMU, for registrars in training and for those who would like a broad update in a particular area of ultrasound.

21 July	**Paediatric ultrasound with an MRI correlation** Dr Andrew Dobrotiwir and Sheryl Rogerson This lecture will cover both in utero and paediatric ultrasound. It is a combined lecture with the ANZ College of Radiologists and will be broadcast
1 September	**Soft Markers** Michael Bethune
20 October	**Speaker(s) and Topic TBA** This is another combined meeting and will also be broadcast
22 November	**Interesting cases** Combined meeting with ASA

All lectures will be held at the Latrobe Lecture Theatre at Royal Melbourne Hospital and will begin with light refreshments at 6.30 pm followed by the lecture at 7.00 pm

Contact Monica Pahuja on email mpahuja@mercy.com.au for further information

The tsunami in the Maldives and Aceh: from relief to reconstruction

Remains of the waterfront area of Banda Aceh

I was fortunate enough to participate in the initial emergency relief mission to the Maldives post-tsunami and later, in an assessment of the assistance needs in the health sector in Aceh, three months post the event. What was it that impressed me during these two visits and how did they compare ?

One strong impression is of the resilience of the people both in the Maldives and in Aceh and their ability to pick up and go on with life, even after such an extraordinary event. This leaves one with the paradoxical impression that nothing has happened, that everything is back to normal; until you visit the devastated areas. Little can prepare you for the miles of razed buildings, the eerie silence, the few ghostly skeletal structures still standing, in the ruins of Banda Aceh. The fury and ferocity of what must have happened is hard to comprehend.

But outside these areas, the city is bustling, full of life, with only the few remaining encampments and newly constructed barracks to show for the thousands of people now displaced. In both the Maldives and in Aceh, however, the vast majority are living with relatives and friends, absorbed and supported, no doubt with considerable difficulty, by the community at large.

The result though, is that the affected communities are fragmented and dispersed, with many members mourning the loss of loved ones, and still traumatised by memories of the tsunami. How to rebuild these communities and how to deal with these losses, are some of the challenges facing the move to the reconstruction period.

In both Aceh and the Maldives, relief activities, with the support of the international community and the Indonesian and Maldivian governments and people, have largely been successful in providing care for the survivors, and protecting them from further risk and ill-health. Particularly in Aceh, the number, range and variety of international and national relief organisations, is amazing, from the rubbish collectors provided by the city of Istanbul, to the enthusiastic yellow T-shirted scientology volunteers providing massage therapy.

However, the move from relief to reconstruction brings new challenges. In the Maldives, the government was able to establish control and coordination within days of the event and move early towards reconstruction planning. But in Aceh, it's only now that the period of informal coordination and networking among donor agencies and relief organisations is being replaced by more formal coordination and control by Government and the development of reconstruction plans.

But as we move to reconstruction, its clear in both countries, that there are major underlying unresolved issues that impact on reconstruction. In the Maldives, there is the underlying ecological fragility of populations living on small coral islands and how best to distribute populations among the hundreds of inhabited islands. In Aceh, there is the legacy of years of conflict and a public health service, which has received little attention and insufficient funding for years and is not focussed on the needs of the communities it serves. In fact, many Acehnese preferred private providers and services.

The key question then becomes: Is reconstruction just about rebuilding what was, or is it an opportunity to address some of these unresolved underlying issues? This is a question for the communities and governments of the Maldives and Indonesia.

For the donors, the key question is: How to help? This is perhaps particularly so in Aceh. In a situation where there are unprecedented amounts of money to help, there is a temptation to take over and 'fix' everything. Some NGOs who arrived early after the tsunami have now developed strong attachments to the communities and facilities they have been working with and want to continue to work with them and improve them.

But we need to remember the lessons of decades of development assistance and be prepared to work truly in partnership with the governments and communities we wish to help. We need to support and enable the governments and communities to make their own decisions, prepare their own plans and then work together to implement them. We need to facilitate dialogue between communities and governments and create the 'space' for them to work on resolving longer term issues, rather than rush into rebuilding.

The reconstruction phase will test whether the international goodwill and

sympathy generated by the tsunami can be channeled into long term and sustainable development assistance. In the meantime, despite the enormous amount of assistance available, there are some areas which miss out. In particular, assistance for the re-establishment of private practice. The senior obstetrician in Banda Aceh is looking for help to replace the ultrasound machine used in his private practice, destroyed by the tsunami. He doesn't really need to work – he's in his 60's – but wants to keep serving his community. The tsunami didn't distinguish between private and public health services, but donors do. If you're interested in helping or would like to know more, please contact me on email

Krishna Hort
Public Health Physician
Member of Team Charlie
Emergency Relief team to the Maldives

Member of the AusAID Health Sector Assessment team in Aceh

Change of address?

Remember to email your new contact details to asum@asum.com.au

Expression of Interest DMU Practical Examiners

As part of the DMU's successful ASAR re-accreditation, it is now a requirement for DMU Practical Examiners to be trained and accredited. It is ASUM's intention to provide a wide cross-section of qualified DMU Practical Examiners who, having undergone a standardised training program, will ensure the consistent, high standards of the Practical Examinations into the future. Consequently, limited opportunities exist for selection as a DMU Practical Examiner in 2005.

Expressions of Interest are now being sought from experienced and qualified sonographers for consideration for selection and training as DMU Practical Examiners.

Potential Practical Examiners must be respected in the profession, of superior technical and professional ability and prepared to volunteer three years' commitment to examining.

In addition all interested applicants will need to:

- Be ASAR accredited
- Attend ASUM DMU Practical Examiner Training/Accreditation days
- Be Financial ASUM members
- Be prepared to travel throughout Australia and New Zealand
- Commit to examine at least five candidates annually for three years
- Provide a full Curriculum Vitae
- Provide professional references

Please apply in writing with attachments (noted above) to:
Chairperson
ASUM DMU Board of Examiners
2/181 High St Willoughby
Sydney NSW 2068 Australia

DMU Practical Examiner Training and Accreditation Days

ASUM Council has appointed the Australian Institute of Ultrasound to provide two courses per year for three years to train and accredit DMU Practical Examiners. These courses will be held in conjunction with the Multidisciplinary Workshops and the ASUM Scientific Meetings.

Numbers are strictly limited for each DMU Practical Examiner Training and Accreditation Day. Initially, the DMU Board of Examiners will offer places for the training program on the basis of immediate DMU Practical Examination requirements.

Diary date: 29th September ASM 2005 Melbourne

New members February – March 2005

February 2005

Full members

John Eather NSW
Merryn Fairweather NZ
Erica Hansen NZ
Leanne Hawking Vic
Meera Joshi Vic
Joanne Kelly NZ
Luke McGuinn NSW
Jules Miller NSW
Wendy Nicol Vic
Margaret Orchard NZ
Sadie Perks NZ
Jayshree Ramkrishna Vic
Karen WallisNZ
Phillipa Wills Vic
Mark Yuile Qld

Associate members

Rima Al-Odeh NZ
Linda Brehaut Vic
Nirmela Bulchand ACT
Kristy Dawson SA
Jason Gibson Qld
Kerren Glasson-Boutcher NZ
Thomas Hewitt Qld
Kate Loveday WA
Jamie Maunder Qld
Kyra McInerney NSW
Tina Molony NZ
Elissa Morton WA
Pegah Norouzi Vic
Gary O'Connor NSW
Tracie Phillips NZ
Karen Pollard NSW
Christopher Powers WA
Emilie Rasheed SA
Shyama Sadanandan WA
Patricia Simpson NZ
Ariana Sorensen NZ
Peter Westaway NSW
Lixin Yang NZ

Trainee members

Wendell Neilson NSW
Frank O'Keefe Tas
Deirdre Percy NSW
Joanne Said Vic

March 2005

Full members

Leanne Bardwell NZ
Peter Buchanan NSW
Tracey Cadogan NZ
York Cheung Vic
Victoria Grigor NSW
Paul Hilton NSW
StephenJoseph Vic
Andrew Milne NZ
Debbie Nguyen Qld
Mark Page Vic
Melinda Seymour Vic

Associate members

Mia Arnott WA
Nadia Barkla SA
Raymond Beh NSW
Winnie Chiu NSW
Kylie Coleman WA
Lisa Courtney NSW
Stuart Cox Vic
Nicola Craven NZ
Becky Cusack NSW
Caroline Dahlitz WA
Wayne Doble Vic
Susan Donald NZ
Chantel Goonan NSW
Rebecca Haupt SA
Justin Holdsworth WA
Sarah Lynch NSW
Donna McDonald Qld
Lisa McLaggan NZ
Franklin Payumo FIJI
Gabrielle Pitt WA
Lauren Pratt NSW
Ebenezer Rajadass NZ
Jade Rosen VIC
Kate Stevely NZ
Michael Stringfellow NT
Jennifer Tolmie NSW
Bianca Tucker-Bohlin SA
Catherine Wilson NSW
Emily Yong SA
Mark Zylan Vic

Trainee members

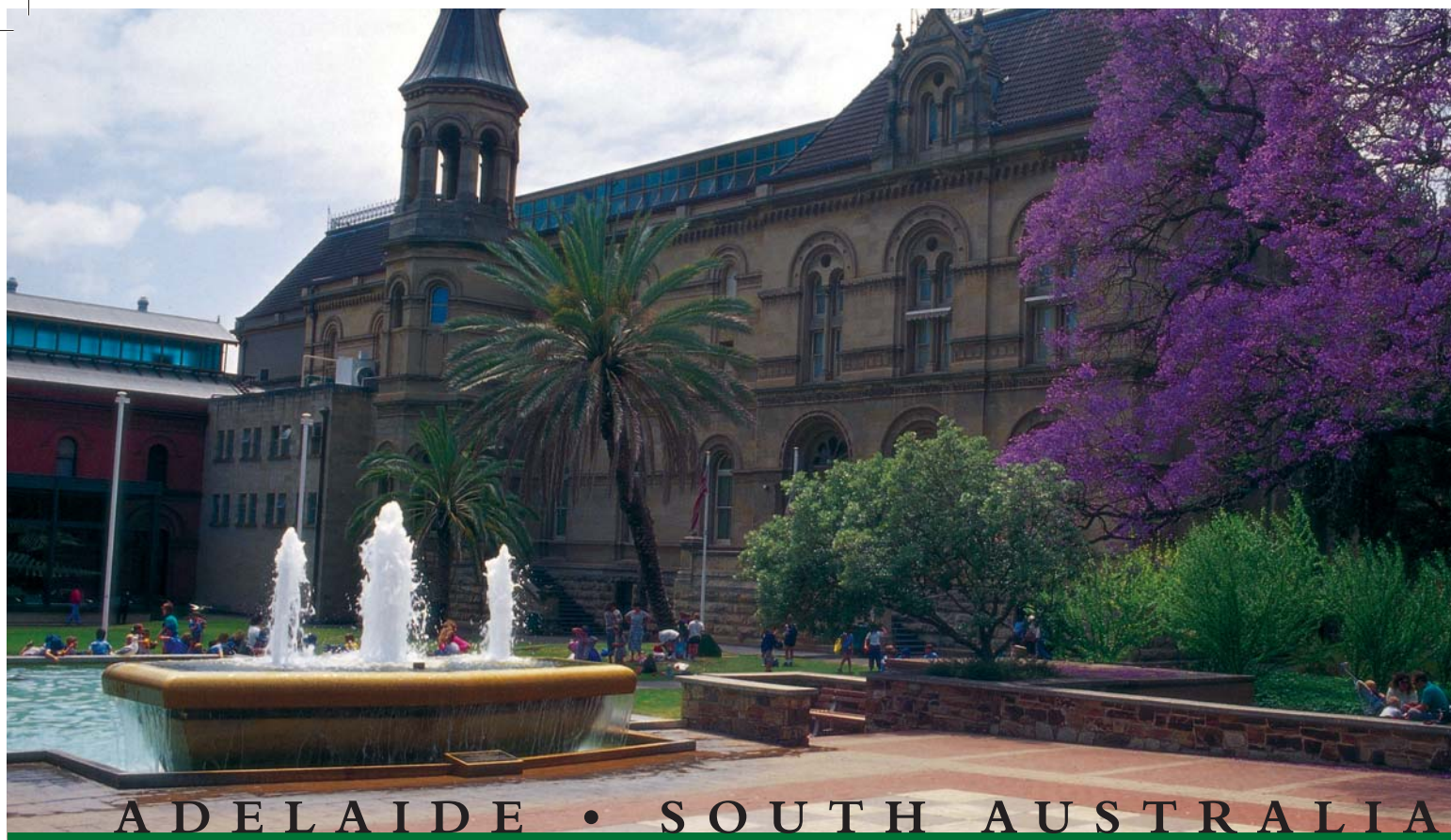
Kristine Barnden NSW
Natasha Huon NSW
Subodh Joshi Vic
Patricia Lai NSW
Emma McAlpine NZ

MEMBERSHIP RENEWALS

A reminder to all our valued members, as at the end of financial year, 30th June 2005, all current memberships with ASUM will lapse. We will endeavour to mail out the subscription renewal notices within the following month. Should you have any questions or concerns regarding membership, please feel free to contact our office via email to asum@asum.com.au

EARLYBIRD RENEWALS

Medical / Scientific / Sonographer members	$297.00 if paid by 30th June 2005
Associate members	$231.00 if paid by 30th June 2005
Trainee members	$231.00 if paid by 30th June 2005
Retired members	$99.00 if paid by 30th June 2005
Corporate members	$1100.00 if paid by 30th June 2005
Corresponding ordinary members	$185.00 if paid by 30th June 2005
Corresponding associate members	$140.00 if paid by 30th June 2005



ADELAIDE • SOUTH AUSTRALIA





Adelaide Convention Centre

ASUM 2005

29 Sept–2 Oct 2005

ASUM is affiliated with WFUMB

ASUM is certified ISO 9001:2000 Quality Management Systems

AUSTRALASIAN SOCIETY FOR ULTRASOUND IN MEDICINE

Promoting Excellence in Ultrasound

2/181 High Street, Willoughby
Sydney NSW 2068 Australia
Telephone: +61 2 9958 7655
Facsimile: +61 2 9958 8002
Email: asum@asum.com.au
Wesite: www.asum.com.au

Australasian Society for Ultrasound in Medicine (ASU

MEETING SECRETARIAT
ASUM 2005
C/- ICMS Pty Ltd
84 Queensbridge Street
Southbank VIC 3006
AUSTRALIA
Telephone: +61 3 9682 0244
Facsimile: +61 3 9682 0288
Email: asum2005@icms.com.au

ICMS Managing Meetings Successfully

www.icms.com.au/asum2005

Corporate Members 2005

Australian Imaging & Ultrasound
Distributors
Medical Imaging Solutions
Sharmaine Crooks 02 9888 1000
aiud@audist.com.au

Australian Medical Couches
Couch Manufacturer
Marcus Egli 03 9376 0060
megli@bigpond.net.au

Bambach Saddle Seat Pty Ltd
Sue Johnston 02 9939 8325
sjohnston@bambach.com.au

Bristol-Myers Squibb Medical Imaging
Ultrasound Contrast & Nuclear Imaging Agents
Wayne Melville 02 9701 9108 mob 0409 985 011
wayne.melville@bms.com

Central Data Networks P/L
CDN, Affordable PACS & Medical Imaging Networks
Robert Zanier 1300 722 632 mob 0407 069 307
info@cdn.com.au

Elsevier Australia
Health Science Publisher
Effie Papas 02 9517 8953
e.papas@elsevier.com

GE Healthcare
Tsui Lian 02 9846 4850
tsui_min.lian@med.ge.com

InSight Oceania Pty Ltd
Aloka and SonoSite
John Walstab 1800 228 118
jwalstab@insight.com.au

Mayne Health
Comprehensive Health
Darryl Lambert mob 0412 547 021
darryl.lambert@maynegroup.com

Medfin Aust P/L
Leasing Finance for Medical Practitioners
Michael Fazzolari 02 9462 2204
michael_fazzorlari@medfin.com.au

Meditron Pty Ltd
Acoustic Imaging, Dornier, Kontron
Michael Fehrmann 03 9879 6200
michaelf@dornier.meditron.com.au

Peninsular Vascular Diagnostics
Vascular Ultrasound Education
Claire Johnston 03 9781 5001
pvdvic@austarmetro.com.au

Philips Medical Systems Australasia P/L
Liz Jani 03 9945 2026 mob 0402 144 560
liz.jani@philips.com

Queensland X-Ray
Radiology
Lynne Salmon 07 3343 9466
lsalmon@qldxray.com.au

Rentworks Ltd
Medical Leasing Equipment
Don Hardman 02 9937 1074
don.hardman@rentworks.com

Schering Pty Ltd
Ethical Pharmaceuticals
John Peace 02 9317 8666
jpeace@schering.com.au

Siemens Limited – Medical Solutions
Sonoline and Acuson
Nick Kapsimallis 02 9491 5863
nick.kapsimallis@siemens.com

Sonosite Australasia Pty Ltd
Portable Ultrasound
Greg Brand 1300 663 516
greg.brand@sonosite.com

Sound Medical Equipment
Distribution of ultrasound scanners
Ron Mellenbergh 02 8437 3555
contact@soundmedical.com

Toshiba (Aust) P/L Medical Division
David Rigby 02 9887 8063
drigby@toshiba-tap.com

Research and Grants Application
Notice to Members

Financial assistance is available to ASUM members from the Research and Grants Committee to support medical research into diagnostic ultrasound.

For further information see www.asum.com.au

Applications close 1st November 2005 and 1st May 2006. All applications will be acknowledged.

Contact ASUM
tel +61 2 9958 7655
email asum@asum.com.au

ASUM launches new AMP Banking benefit for members

ASUM is pleased to announce an affinity partnership with AMP Banking which will offer a special home loan package designed especially for members. The Society has chosen AMP Banking as our home loan partner because it offers secure and competitive financial products, backed by a high level of personalised service.

AMP Banking is delighted to launch this partnership with ASUM and believes that members and affiliates will find that is offers great benefits. The Bank is looking forward to providing the best service and products it has to offer.

The AMP Affinity Home Loan Package is suitable for home or investment loans and offers a range of flexible options to make paying off your loan easier. In addition to this great value package, members will also benefit from significant interest rate discounts and fee waivers.

The AMP Affinity Home Loan Package offers members up to 0.65% per annum off AMP's standard variable rate and up to 0.55% per annum off the standard line of credit rate. The application fee is also waived to save members $350 and there is no annual package fee for a further $330 per year saving.

Taking advantage of this fantastic package is easy. Simply contact an AMP Affinity Home Loan Specialist who will identify your home loan requirements and then assist you to structure a loan package to meet your exact needs. You have the choice of dealing with the experienced team over the phone or meeting with an AMP Home Loan Specialist in your local area (not available in all areas). Whether you are buying a home for the first time, refinancing an existing loan or investing in property, the AMP Affinity Banking team will provide you with the ideal solution.

AMP Banking may also provide ongoing management of your loan via an AMP Relationship Manager, who can offer other value-added banking products from AMP's Premier Banking team to eligible customers. Your Relationship Manager becomes your single reference point with AMP Banking, offering expertise in lending, day-to-day banking and e-service solutions.

Not only do ASUM members benefit from discounts off the AMP Home Loan, but they also have access to other benefits such as bonus rates on selected AMP term deposits and benefits on the AMP Cash Management Account. The usual minimum opening balance for the Cash Management Account of $1000 is halved for ASUM members and affiliates.

For more information call 1300 360 525 to speak with an Affinity Home Loan Specialist or email: affinitybanking@amp.com.au to see how you could benefit and save with AMP Banking.

Note: Package benefits, including fee waivers and interest rate discounts, are current as at 1 April 2005, subject to change at any time and only available for loans greater than $100,000. Other fees and charges may apply (eg. for special services). Only available to current ASUM members and affiliates. Approval is subject to AMP Banking guidelines. The credit provider is AMP Bank Limited ABN 15 081 596 009, AFSL No. 234517, trading as AMP Banking. Benefits on other banking services current as at 1 April 2005 and subject to change at any time.

Go with Hertz the World's #1

The ASUM would like to announce Hertz Australia as the preferred car rental partner for the group's member benefit program.

Whether you are travelling on business or leisure, Hertz now offers special discounted rates to ASUM members, renting throughout Australia and New Zealand and selected locations in the UK, Europe, USA and Canada*.

Hertz is the world's largest and longest-established car rental company, operating from more than 7000 locations in over 150 countries. Hertz Australia has over 220 locations including all major airports, so there is sure to be a convenient location close by. No matter where you travel in Australia, Hertz will be there to give you fast and friendly service.

Special rates are available to all ASUM members on our entire fleet of extensive vehicles, including the Nissan Pulsar, Toyota Camry, Ford Falcon and the new Nissan Maxima.

Also available to ASUM members is The Hertz Prestige Collection, featuring the BMW Z4 convertible and Jaguar X-Type Sedan. So why not indulge in a true driving experience during your next business trip or holiday escape? Selected locations also offer 4WDs, buses and trucks.

As ASUM's official car rental partner, Hertz offers you exclusive special member rates and value-added benefits all year round. All you have to do is simply quote the Customer Discount Programme (CDP) number 1594587 at the time of reservation to receive the special discounted rates.

An additional benefit to ASUM members is free membership of Hertz #1 Club Gold. Annual membership usually costs $50. Membership of Hertz #1 Club Gold means that after a car is booked all paperwork will be prepared in advance of your arrival. Simply proceed to the specially designated #1 Club Gold check-in areas, located at rental counters throughout Australia and overseas, show your driver's licence, and go.

To find out more about these exclusive benefits and to make a booking contact Hertz on 13 30 39 or visit hertz.com.au and quote the ASUM CDP number.

*Overseas bookings must be made in advance from Australia for special rates to apply.

2005

April onwards
DMU Part II Supplementary Practical Examinations
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

Sat 21 May – 3 Days
ASUM Singapore Asia Link: Medical Ultrasound Society (Singapore) 3rd Annual Ultrasound Seminar 2005
ASUM supports this meeting. Dr Tony Joseph is the ASUM nominee for this meeting on the topic of Ultrasound in Emergency Medicine
Venue: National Dental Centre, Singapore
Contact: Ms Phua Chay Sin
Tel +65 6436 8043 Fax +65 6226 5660
Email ddipcs@nccs.com.sg

Fri 27 May – 2 Days
ASUM Korea Asia Link: 2005 Annual Scientific Meeting of the Korean Society of Medical Ultrasound
ASUM supports this meeting. Assoc Prof Albert Lam is the ASUM nominee for this meeting on the topics relating to Paediatric Ultrasound
Venue: Seoul Asian Medical Center, Seoul Korea
Contact: Prof Seung Hyup Kim MD
Tel +82 2 2072 3259 Fax +82 2 2743 6385
Email kimsh@radcom.snu.ac.kr

Sat 4 June – 2 Days
ASUM WA Branch – Physics Weekend
Lectures presented by: Roger Gent and Mike Dadd
Venue: Seminar Room, Perth Radiological Clinic, Subiaco, Perth
Contact: Felicity
Tel +61 8 9400 9860
Email farrigo@perthradclinic.com.au
Christina
Tel +61 8 9340 8236
Email Christina.White@health.wa.gov.au

Sat 11 June – 3 Days
1st World Congress on Ultrasound in Emergency and Intensive Care
Venue: Milan, Italy
Website http://www.emergencyultrasound.org

Sat 18 June
DDU Part II 2005 Oral Examination for non-cardiology candidates
Held only in Sydney
Refer DDU Handbook for further information
Contact: Marie Cawood DDU Coordinator
Email ddu@asum.com.au

Sun 19 June – 3 Days
2005 AIUM Annual Convention
Venue: Walt Disney World Swan and Dolphin, Orlando, FL USA
Contact: Brenda Kinney
Tel +1 301 498 4100
Email bkinney@aium.org
Website http://www.aium.org

Thu 23 June
DDU Part II 2005 Oral Exams for cardiology candidates
Held only in Melbourne
Refer DDU Handbook for further information
Contact: Marie Cawood DDU Coordinator
Email ddu@asum.com.au

Thu 21 July
ASUM Victorian Branch Meeting – Ultrasound Lecture Series
Dr Andrew Dobrotiwir and Sheryl Rogerson 'Paediatric Ultrasound with an MRI Correlation'. This lecture covers both in utero and paediatric ultrasound. It is a combined lecture with the College of Radiologists and will be broadcast
Venue: Latrobe Lecture Theatre, 2nd Floor, The Royal Melbourne Hospital, Melbourne
6.30 pm Refreshments, 7.00 pm Presentation
Contact: Monica Pahuja
Email mpahuja@mercy.com.au

Thur 28 July
ASUM DMU Practical Examiner Accreditation Training Day
Venue: Wellington, NZ, Duxton Hotel
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

Fri 29 July – 3 Days
ASUM NZ Joint Meeting with RANZCR
Topic: Meeting in the Middle – Abdominal Imaging in the Capital
Venue: Wellington Convention Centre Wellington, NZ
Contact: Email admin@mianz.co.nz
Tel +64 9 917 3645 Fax +64 9 917 3651
Website http://www.mianz.co.nz/conference.html

Sat 30 July
DMU Part I and Part II Written Examinations
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

August – October
DMU Part II Practical Examinations
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

Thu 1 September
ASUM Victorian Branch Meeting – Ultrasound Lecture Series
Michael Bethune 'Soft Markers'
Venue: Latrobe Lecture Theatre, 2nd Floor, The Royal Melbourne Hospital, Melbourne
6.30 pm Refreshments, 7.00 pm Presentation
Contact: Monica Pahuja
Email mpahuja@mercy.com.au

Fri 9 September – 6 Days
The Vascular 2005 Conference
Venue: Sydney Hilton, Sydney
Contact: Vanessa Russell Conf Manager
Tel +61 3 9645 6311 Fax +61 3 9645 6322
Email vanessa@wsm.com.au
Website http://www.vascular2005.com

Sun 25 September – 5 Days
15th World Congress on Ultrasound in Obstetrics and Gynecology
Contact: Congress Secretariat Concorde Services Ltd
42 Canham Road, London W3 7SR
United Kingdom
Tel +44 20 8743 3106 Fax +44 20 8743 1010
Email isuog@concorde-uk.com
Website http://www.isuog2005.com

Thu 29 September
ASUM DMU Practical Examiner Accreditation Training Day
Venue: Adelaide Convention Centre, Adelaide
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

Thu 29 September – 4 Days
ASUM 2005 35th Annual Scientific Meeting of the Australasian Society for Ultrasound in Medicine
Venue: Adelaide Convention Centre, Adelaide
Contact: ASUM
2/181 High Street
Willoughby NSW 2068
Tel +61 2 9958 7655 Fax +61 2 9958 8002
Website http://www.icms.com.au/asum2005

Sat 1 October
ASUM Annual General Meeting
Time: 10.30–11.00 am
Venue: Adelaide Convention Centre, Adelaide
Contact: ASUM
2/181 High Street
Willoughby NSW 2068
Tel +61 2 9958 7655 Fax +61 2 9958 8002
Website http://www.icms.com.au/asum2005

Sat 8 October
DMU OSCE Cardiac and Vascular Examinations
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

Sat 15 October
DMU OSCE General and Obstetrics Examinations
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

Thu 20 October
ASUM Victorian Branch Meeting – Ultrasound Lecture Series
Speaker and Topic TBA. This is another combined meeting and will be broadcast
Venue: Latrobe Lecture Theatre, 2nd Floor, The Royal Melbourne Hospital, Melbourne
6.30 pm Refreshments, 7.00 pm Presentation
Contact Monica Pahuja
Email mpahuja@mercy.com.au

Thu 20 October – 3 Days
ECHO Australia 2005 Cardiac Conference
Topic: 'Clinical Applications of Echocardiographic Findings, acquisition of high quality data, and avoiding errors in Interpretation'
Venue: Four Seasons Hotel, Sydney
Contact: Linda Rattray
Tel +61 2 9846 4735 Fax +61 2 9846 4002
Email Echo.Australia2005@ge.com

Wed 5 November
DMU Supplementary Part 1 Written Examination
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

Thu 10 November – 2 Days
ASUM MUST Asia Link 2005 'Excellence in Ultrasound' Meeting
Venue: Bangkok, Thailand
Contact: ASUM
2/181 High Street
Willoughby NSW 2068
Tel +61 2 9958 7655 Fax +61 2 9958 8002
Email asum@asum.com.au

Thu 22 November 2005
ASUM Victorian Branch Meeting – Ultrasound Lecture Series
Interesting Cases (Combined meeting with ASA)
Venue: Latrobe Lecture Theatre, 2nd Floor, The Royal Melbourne Hospital, Melbourne
6.30 pm Refreshments, 7.00 pm Presentation
Contact: Monica Pahuja
Email mpahuja@mercy.com.au

2006

Wed 22 March 2006 – 5 Days
ASUM Multidisciplinary Workshop
Incorporating:
- DMU Preparation Course – 5 Days
- DDU Technical Seminars – 2 Days
- O&G Meeting – 2 Days
- Vascular Workshop – 2 Days
- Musculoskeletal 1–2 Days
- Point of Care Courses –1 Day

Venue: Gold Coast, Queensland
Contact: ASUM
2/181 High Street
Willoughby NSW 2068
Tel +61 2 9958 7655 Fax +61 2 9958 8002
Website www.asum.com.au

Thu 23 March
ASUM DMU Practical Examiner Accreditation and Training Day
Venue: Gold Coast, Queensland
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

Thu 18 May – 3 Days
World Congress of Echocardiography and Vascular Ultrasound
Venue: Marrakesh, Morocco
Contact: Navin C. Nanda, MD, President ISCU
PO Box 323 Gardendale, AL 35071 USA
Tel +1 205 934 8256 Fax +1 205 934 6747
Email isuc@iscu.org

Sun 28 May – 5 Days
11th Triennial Congress World Federation for Ultrasound in Medicine and Biology (WFUMB)
Venue: Seoul Korea
Contact: Byung Ihn Choi MD
Congress Secretariat
Tel +82 2 760 2515, Fax +82 2 743 6385
Email choibi@radcom.snu.ac.kr;
Website http://www.wfumb2006.com

Sat 29 July
DMU Part I and Part II Written Examinations – Provisional
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

Thu 14 September – 4 Days
ASUM 2006 36th Annual Scientific Meeting of the Australasian Society for Ultrasound in Medicine
Venue: Melbourne
Contact: ASUM
2/181 High Street Willoughby NSW 2068
Tel +61 2 9958 7655 Fax +61 2 9958 8002
Email asum@asum.com.au

Sun 5 November – 5 Days
XVIII FIGO World Congress of Gynaecology and Obstetrics
Venue: Kuala Lumpur, Malaysia
Website http://www.figo2006kl.com

2007

March 2007 – 5 Days
ASUM Multidisciplinary Workshop
Venue: Sydney
Contact: ASUM
2/181 High Street
Willoughby NSW 2068
Tel +61 2 9958 7655 Fax +61 2 9958 8002
Website http://www.asum.com.au

Sat 28 July
DMU Part I and Part II Written Examinations – Provisional
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

2008

Sat 26 Jul 2008
DMU Part I and Part II Written Examinations – Provisional
Contact: James Hamilton DMU Coordinator
Tel +61 2 9958 0317 Fax +61 2 9958 8002
Email dmu@asum.com.au

2009

Thu 5th Sep 2009 – 4 Days
ASUM WFUMB 2009 World Congress
Venue: Sydney Convention and Exhibition Centre, Sydney
Contact: Dr Caroline Hong ASUM CEO
Email carolinehong@asum.com.au or asum@asum.com.au
ASUM Head Office:
2/181 High Street
Willoughby NSW 2068 Australia

'MUST ATTEND' ASUM MEETINGS

2005

29–31 July ASUM New Zealand Annual Meeting
(Joint Meeting with RANZCR) Wellington New Zealand

29 September – 2 October 35th Annual Scientific Meeting Adelaide Australia

10–11th November ASUM Asia Link Program Bangkok Thailand
(Joint meeting with Medical Ultrasonic Society of Thailand)

2006

22–26 March Multidisciplinary Workshop Gold Coast Australia

14–17 September 36th Annual Scientific Meeting Melbourne Australia

2009

5–8 September WFUMB 2009 World Congress Sydney Australia
Congress to be hosted by ASUM
Contact ASUM tel +61 2 9958 7655 Fax +61 2 9958 8002
Email asum@asum.com.au Website www.asum.com.au

If you would like further information on any of the events listed, contact ASUM by email to:
asum@asumcom.au

As ASUM relies upon information supplied by meeting organisers to compile this calendar, no responsibility is taken for the accuracy of information published and members are advised to check times, dates and venues directly with meeting organisers.

Guidelines for authors

Authors are invited to submit papers for publication in the categories described below. Final responsibility for accepting material lies with the Editor, and the right is reserved to introduce changes necessary to ensure conformity with the editorial standards of the *Ultrasound Bulletin.*

Original research

Manuscripts will be subject to expert referee prior to acceptance for publication. Manuscripts will be accepted on the understanding that they are contributed solely to the *Ultrasound Bulletin.*

Quiz cases

A case study presented as a quiz, involving no more than three or four images and a paragraph briefly summarising the clinical history as it was known at the time. It will pose two or three questions, and a short explanation.

Case reports

Case reports are more substantial presentations resembling short scientific papers which illustrate new information, or a new or important aspect of established knowledge.

Review articles

Review articles are original papers, or articles reviewing significant areas in ultrasound and will normally be illustrated with relevant images and line drawings. Unless specifically commissioned by the Editor, articles will be subject to expert referee prior to acceptance for publication.

Forum articles

Members are invited to contribute short articles expressing their observations, opinions and ideas. Forum articles should not normally exceed 1000 words. They will not be refereed but will be subject to editorial approval.

Calendar items

Organisers of meetings and educational events relevant to medical ultrasound are invited to submit details for publication. Each listing must contain: activity title, dates, venue, organising body and contact details including name, address, telephone and facsimile numbers (where available) and email address (where available). Notices will not usually be accepted for courses run by commercial organisations.

Corporate news

Corporate members are invited to publish news about the company, including structural changes, staff movements and product developments. Each corporate member may submit one article of about 200 words annually. Logos, illustrations and tables cannot be published in this section.

Format

Manuscripts should be submitted in triplicate in print and on PC formatted diskette as MS Word documents.
Images must be supplied separately and not embedded. PowerPoint presentations are not accepted.

- Font size: maximum 12 pt, minimum 10 pt
- Double spacing for all pages
- Each manuscript should have the following:

Title page, abstract, text, references, tables, legends for illustrations.

- Title page should include the:

Title of manuscript, the full names of the authors listed in order of their contribution to the work, the department or practice from which the work originated, and their position.

Corresponding author's name, contact address, contact telephone number and facsimile number (where available) for correspondence.

- Abbreviations may be used after being first written in full with abbreviation in parentheses.
- References should be cited using the Vancouver style, numbered according to the sequence of citation in the text, and listed in numerical order in the bibliography. Examples of Vancouver style:

1 In-text citation Superscript. If at the end of of a sentence the number(s) should be placed after the full stop or comma.

2 Journal article Britten J, Golding RH, Cooperberg PL. Sludge balls to gall stones. *J Ultrasound Med* 1984; 3: 81–84.

3 Book: Strunk W Jr, White EB. The elements of style (3rd ed.). New York: Macmillan, 1979.

4. Book section Kriegshauser JS, Carroll BA. The urinary tract. In: Rumack CM, Wilson SR, Charboneau JW, eds. *Diagnostic Ultrasound*. St Louis, 1991: 209–260.

Abstract

Manuscripts for feature articles and original research must include an abstract not exceeding 200 words, which describes the scope, major findings and principal conclusions. The abstract should be meaningful without reference to the main text.

Images

Images may be submitted as hard copy (in triplicate) or in digital format. Images sent must have all personal and hospital or practice identifiers removed. Do not embed images in text. Separate images are required for publication purposes.

A figure legend must be provided for each image. Hard copy images should be presented as glossy print or original film. Any labelling should be entered on the front of the glossy print using removable labels. Send one copy of illustrations without labelling as this can be added electronically prior to publication. On the back of the print include the author's name, figure number and a directional arrow indicating the top of the print.

Digitised graphics should be supplied as JPG or TIFF files on PC formatted 3.5" diskette or CD, which must be clearly labelled with the author's name and the names of the image files.

Copyright

Authors are required to provide assurance that they own all property rights to submitted manuscripts, and to transfer to ASUM the right to freely reproduce and distribute the manuscript.

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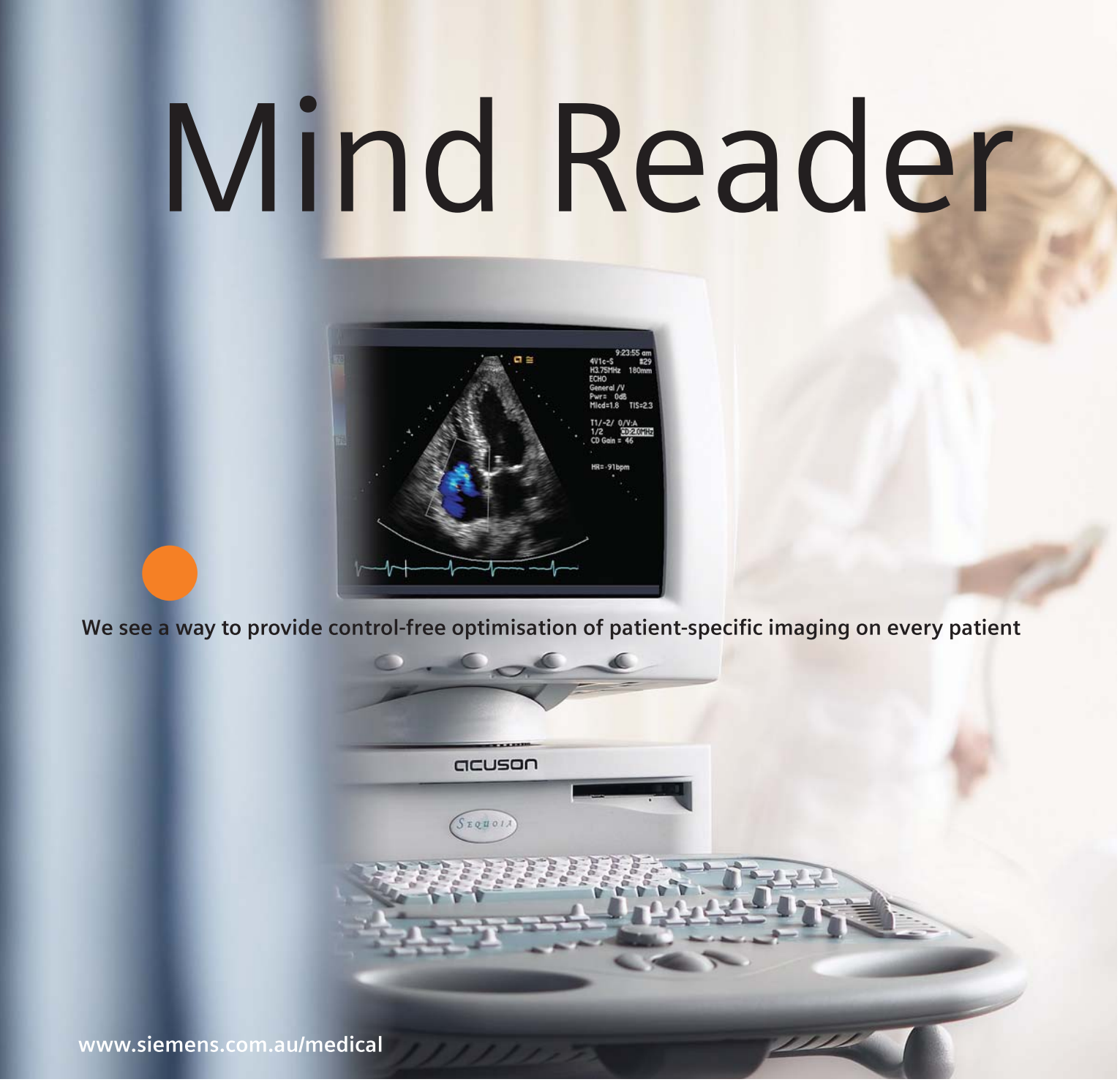

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