



Volume 7 Number 2 May 2004  
Australasian Society for Ultrasound in Medicine

# ULTRASOUND BULLETIN

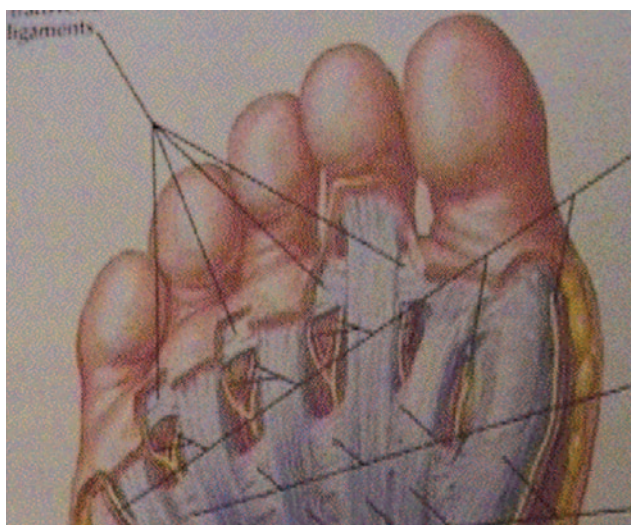
Registration details for ASUM Meetings  
in this issue:

ASUM NZ Branch Scientific Meeting  
25–27 June

ANZSVS/ASUM vascular meeting  
4–8 September

ASUM Annual Scientific Meeting  
23–26 September

Kuala Lumpur 2004 Asia-Link Meeting  
5–6 November



- Carotid ultrasonography
- Acute cholecystitis
- Cystic adventitial disease
- Morton's neuroma
- Lactating adenoma
- Draft worksheets

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**ULTRASOUND BULLETIN**

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Original research, case reports, quiz cases,  
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## Notes from the Editor

Welcome to the May issue of the Bulletin. This must be our biggest ever posting. We try to avoid too many inserts with the Bulletin but this time everything has happened at once. I assure you that this is not a new trend, simply an aberration. The inserts include a complimentary educational CD-ROM from Philips, and registration information for a set of excellent ASUM ultrasound meetings. Not all of the meetings are on inserts. In addition check out the ASUM New Zealand Scientific Meeting on the inside back cover. Registration for all of ASUM's meetings can be obtained online at <http://www.asum.com.au>

March 2004 saw a very successful Multidisciplinary Workshop. A raft of late registrations saw the numbers

greatly exceed our expectations, and the facilities just coped. One paper from that meeting on Morton's neuroma appears in this issue.

This issue again features a variety of technical papers covering aspects of cardiac, vascular, breast and general ultrasound. We continue our series of draft worksheets. Consideration is being given to formalising these into a single official volume. Please let us know if you are using them. Criticism is invited, indeed wanted. Please respond to [editor@asum.com.au](mailto:editor@asum.com.au)

The balance of this issue reflects the wide range of educational projects that your Society is involved in. Read and enjoy.

**Roger Davies**

Editor

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# President's message

*Glenn McNally*



Much has happened since the last Ultrasound Bulletin with Council having been very active in a number of areas important to the functioning and future of the Society.

Everybody will be greatly relieved to see that there are very few pictures of me in this issue. I think there was widespread consensus that the Bulletin would be more enjoyable without the pictures of yours truly, and with this issue the Bulletin has returned as an upmarket publication.

## Multidisciplinary Workshop

The recent Multidisciplinary Workshop held at Conrad Jupiters on the Gold Coast was a tremendous success. Over 400 people attended and the feedback has generally been most favourable.

Special thanks go to Roslyn Savage who acted as a Convenor and to the local organising committee. Congratulations are also due to the ASUM CEO, the ASUM Education Manager and all the support staff involved in the organisation of the Workshop. More details are contained elsewhere in this issue.

## Sale of ASUM office

The sale of the ASUM office in Willoughby (a suburb on the North Shore of Sydney) has been on the Council agenda for some time. Council resolved at its last meeting in November 2003 to sell the office. This

was largely due to the change of requirements of the Secretariat in the years since the original purchase over 15 years ago. Council has determined that a more functional space is required and there is likely to be better capital growth with an office relocation.

The sale was recently completed, with a good price having been realised. A three-year lease back arrangement has been put in place.

Council will commence the search for new premises in the near future to ensure a smooth transition to improved premises in the next one to three years.

## ISO 9001:2000 accreditation

The Society recently achieved ISO 9001:2000 quality management system accreditation. This was a major undertaking, which required the cooperation of all the ASUM staff in ensuring that quality documentation and procedures within the Secretariat were able to be audited. This was a voluntary process.

Council believes it is important that all of our processes are continually reviewed and improved. We believe that this assists in promoting confidence in the Society as a quality organisation where a permanent focus exists on quality improvement and transparent processes.

Congratulations go to our CEO Caroline Hong, Keith Henderson, James Hamilton, Marie Cawood and Iris Hui.

## Indonesian Society for Ultrasound in Medicine

At the recent Multidisciplinary Workshop on the Gold Coast, Dr Daniel Makes, the President of the Indonesian Society for Ultrasound in Medicine (ISUM), was a guest of ASUM Council. Dr Makes was most interested in the concept of the Multidisciplinary Workshop and attended many of the sessions. He also made a presentation to Council about

the current status of education and accreditation of diagnostic ultrasound in Indonesia.

Council has agreed to grant a \$5000 scholarship from the ASUM Asia Link budget to an ISUM member for placement in Australia or New Zealand for one to three months. Council has also agreed to explore the hosting of a joint meeting with ISUM in the next two years.

## DMU (Asia)

The DMU (Asia) continues to make progress. The course is currently being assessed in Malaysia by the National Accreditation Board, Ministry of Higher Learning Malaysia, with regard to becoming a recognised qualification. Such recognition will be a significant achievement for the Society as we work to help to develop the discipline of diagnostic medical sonography in Asia.

Marketing has commenced within the region and the first intake is anticipated for September 2004.

The school is currently seeking an experienced diagnostic medical sonographer from Australia or New Zealand and details of this position are to be found elsewhere in this issue.

The concept of sonographer training is still relatively new in Asia and in Malaysia there is only a handful of accredited sonographers.

## Asia Link Program

The Asia Link Program continues to take shape. Recently, the CEO travelled to Hong Kong following an invitation and sponsorship from the Hong Kong Government. Caroline Hong, CEO, attended several business meetings on behalf of ASUM in Hong

## Dr Daniel Makes, President of ISUM addressing the ASUM Council March 2004





# Australasian Society for Ultrasound in Medicine

## ASUM Meetings 2004

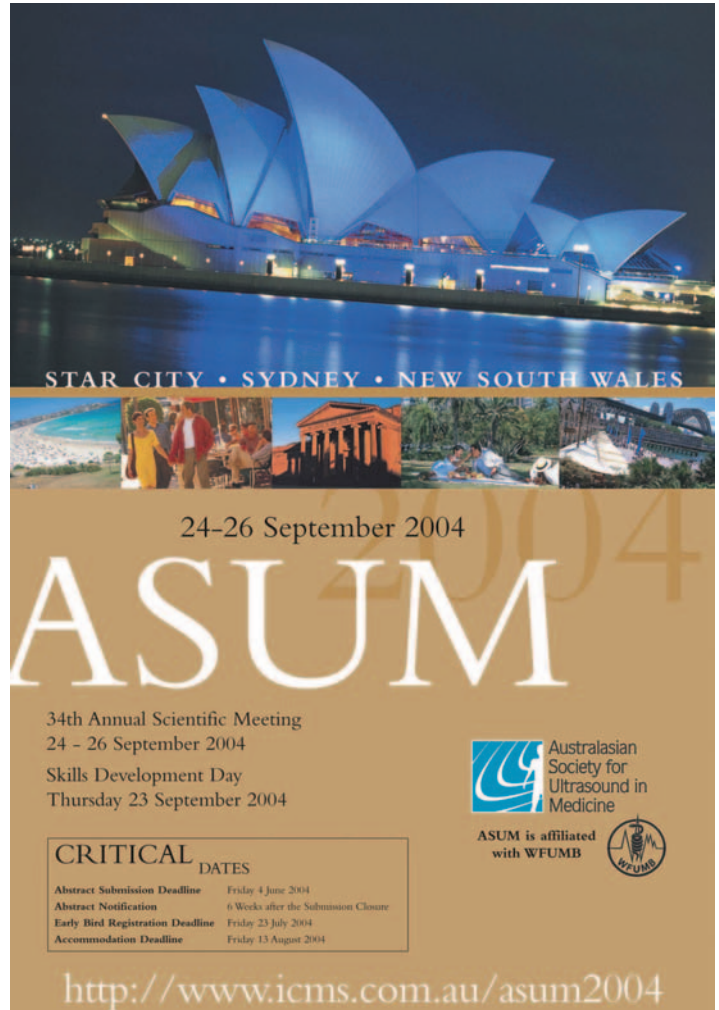
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 website: [www.asum.com.au](http://www.asum.com.au)

## ASUM NZ 2004

Christchurch, NZ 25–27 June 2004  
 See the ASUM website: [www.asum.com.au](http://www.asum.com.au)  
 Contact Rex De Ryke: email [redr1@xtra.co.nz](mailto:redr1@xtra.co.nz)

## ASUM – ANZSVS 2004

Rotorua NZ 4–8 September 2004  
 See the ASUM website: [www.asum.com.au](http://www.asum.com.au)  
 Contact David Ferrar email [vascular@clear.net.nz](mailto:vascular@clear.net.nz)




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24-26 September 2004

# ASUM

34th Annual Scientific Meeting  
 24 – 26 September 2004  
 Skills Development Day  
 Thursday 23 September 2004



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Abstract Submission Deadline	Friday 4 June 2004
Abstract Notification	6 Weeks after the Submission Closure
Early Bird Registration Deadline	Friday 23 July 2004
Accommodation Deadline	Friday 13 August 2004

<http://www.icms.com.au/asum2004>



 Australasian Society for Ultrasound in Medicine  
**ASIA LINK PROGRAM**

**AUSTRALASIAN SOCIETY FOR ULTRASOUND IN MEDICINE**

**ASIA LINK PROGRAM**

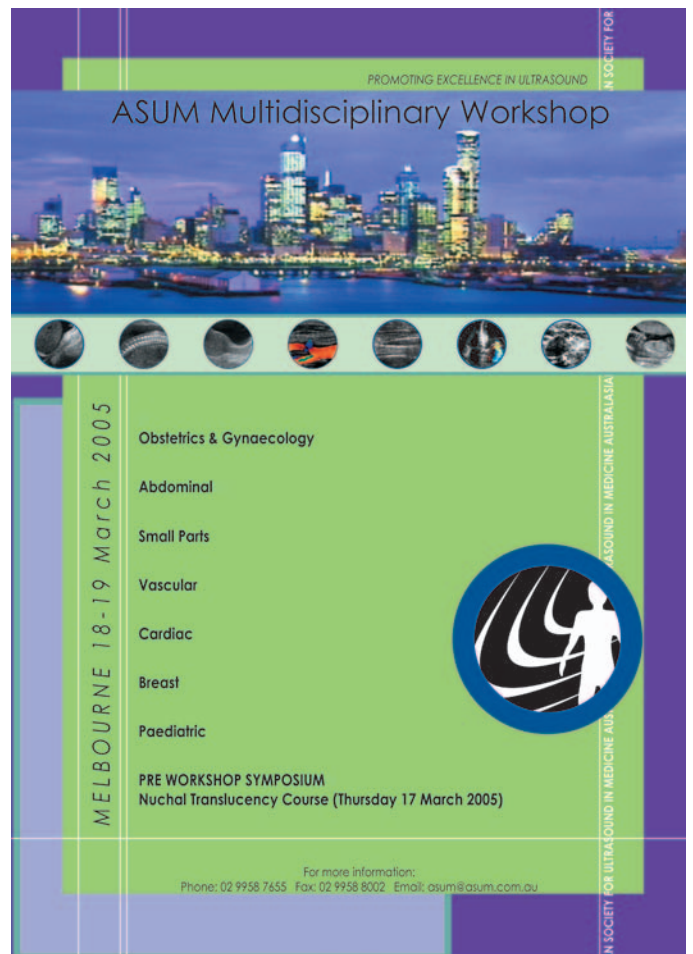
**Friday 5th to Saturday 6th November 2004**  
 at The Sheraton Imperial, Kuala Lumpur

Registration and Enquiries  
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Kong and met with Dr Gregory Antonio and Prof Anil Ahuja who have both agreed to be the local convenors for the proposed Asia Link meeting to be held in Hong Kong and Shanghai in November 2006.

The CEO has established many useful business contacts in Asia and will continue to work with the Asian Convention Bureau and government bodies for support for our Society in the region.

### Queensland sonographer registration

Recently ASUM has communicated with the Medical Radiation Technologists Board (MRT) in Queensland expressing our concern and reservation about a proposal requiring sonographers to register with the MRT. There are several issues within the proposal that concerned the Council, including the fact that many sonographers have not trained as radiographers and that many of those who have, no longer practice radiography.

Registration under the one umbrella, we believe, does not adequately serve the interests of diagnostic medical sonography. It has been suggested that ASAR could take on the role of the national registration body for sonographers. I think that it is yet another illustration of the continuing problem with government and bureaucratic bodies that exist regarding the recognition of the unique discipline of diagnostic medical sonography.

ASUM will continue to promote proper recognition of diagnostic medical sonography by government, state and territory health departments.

### Corporate member liaison

Council has determined that ASUM should continue liaison with trade corporate members by agreeing to meet regularly with a corporate member representative. Initial meetings will be with the ASUM Executive and a key liaison person will be appointed by Council for ongoing liaison with the corporate members, who are key partners with ASUM in supporting its work in Australia, New Zealand and beyond.

### UK/Australia sonographer exchange

The British Medical Ultrasound Society (BMUS) and ASUM have established a Sonographer Exchange

Program. ASUM Council will adopt guidelines, which are currently being developed, to enable an ASUM sonographer member to spend some time in the United Kingdom for a short-term research project. This will be funded from the ASUM Research and Grants Fund.

### Research and Grant Policy

A Research and Grant Policy has now been approved and will soon be placed on the ASUM web site. If you need a copy, please email [asum@asum.com.au](mailto:asum@asum.com.au). Members will soon be able to apply for funding grants for research. It is the aim of the Society to build the funding to at least \$A1 million for the fund to be sustainable in the long term to support ongoing, significant research.

### Giulia Franco Teaching Fellowship

The Giulia Franco Teaching Fellowship, which is sponsored by Toshiba, will travel to Western Australia in 2004.

### Christopher Kohlenberg Teaching Fellowship

There are two Christopher Kohlenberg Teaching Fellowships sponsored by GE, the first will be travelling to New Zealand and the second to the ACT, both in 2004. More information is available from Keith Henderson, ASUM Education Manager. Email [khenderson@asum.com.au](mailto:khenderson@asum.com.au)

### Online education

Members are encouraged to log on to the Online Education Section of the ASUM web site. The Online Education Handbook is functioning and we are looking for both feedback and content. Feedback should be directed to Keith Henderson.

### Business of Ultrasound meeting

I attended, along with Caroline Hong, CEO, on behalf of the Society a short meeting held in Canberra on 28 and 29 February 2004. The meeting entitled 'The Business of Ultrasound' and was hosted by Mr Rob McGregor of SonoEd and sponsored by Toshiba.

The meeting was an interesting mix of sonographers, medical practitioners, corporate and government interests. It provided a productive exchange of views regarding many aspects of the future of diagnostic ultrasound practice.

I participated in a panel discussion concerning the future role of sonographers, about which there will be much future discussion.

Mr Chris Sheedy, the Secretary of the Diagnostic Imaging Branch, Department of Health and Ageing, spoke at this meeting and has agreed to speak at the ASUM 2004 Meeting in Sydney and will address the topic of 'Sonography practice – changing roles and responsibilities'.

Caroline Hong and I will be meeting with Mr Sheedy in the near future in Canberra to advise him of the role that ASUM may have to play in promoting high standards of practice and quality improvement in diagnostic ultrasound. We will also be seeking some support for the quality improvement activities of the Society through assisting funding for the Research and Grants Committee.

### WFUMB sponsored workshop

I participated in a WFUMB-sponsored workshop in the Philippines in January. Several WFUMB Councillors conducted a 'Train the Trainer' workshop in Manila and participated in the 2nd Convention of the Philippines Society for Ultrasound in Clinical Medicine. This was a most interesting experience for me and certainly put into some perspective the great difficulties faced by many practitioners of diagnostic ultrasound in the developing world.

### Draft work sheets

The Bulletin again contains three work sheets. The inclusion of the work sheets is designed to promote further discussion and we would greatly appreciate feedback from members. We are looking to develop a series of work sheets to be reviewed and hopefully adopted by the Standards of Practice Committee.

Obviously there will not be unanimous agreement about the content of such work sheets, however, Council feels that it is appropriate to try and develop some work sheets as a basic aid to support high standards of practice.

Roger Davies and Keith Henderson have again produced an excellent *Ultrasound Bulletin* and our thanks go to both of them.

Best wishes

**Glenn McNally**

President ASUM

Email: [president@asum.com.au](mailto:president@asum.com.au)



STAR CITY • SYDNEY • NEW SOUTH WALES



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**Honorary Secretary**

Roslyn Savage Qld  
Sonographer Councillor

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Dave Carpenter NSW  
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Roger Davies SA

**Sonographer Councillors**

Stephen Bird SA  
Margaret Condon Vic  
Kaye Griffiths NSW  
Janine Horton WA

**ASUM Head Office****Chief Executive Officer**

Caroline Hong

**Education Manager**

Keith Henderson

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asum@asum.com.au  
www.asum.com.au

# How ASUM communicates with members of the Society

*Caroline Hong*



We are often asked about how we communicate with our members. The ASUM Council meets four times each year. News and updates of ASUM activities, ASUM meetings and Council decisions are reported to members via various means. News and update reports are published four times a year in the ASUM Ultrasound Bulletin which now has a circulation of about 3000 copies in Australia, New Zealand, Asia and other overseas countries. ASUM news and all information about meetings, workshops, DDU, DMU, membership and MOSIPP are regularly updated on the ASUM website noticeboard. ASUM also sends out email broadcasts to members from time to time. For instance, members would have been kept up to date with the ASUM Bookshop advising them of the latest in ultrasound books and publications. ASUM also sends out information about upcoming meetings, scholarships and education resources by email broadcasts. Members are encouraged to read the Bulletin and log in to the ASUM website to keep abreast of the latest updates, see [www.asum.com.au](http://www.asum.com.au). Members are also requested to provide an email address to our Membership Registrar by emailing to [registar@asum.com.au](mailto:registar@asum.com.au) if they wish to be included in the ASUM email broadcast list and the ASUM Bookshop email list. Members can have the option of unsubscribing from our email broadcasts by advising us –

even if they have already provided their email addresses for other purpose eg. membership record. Please feel free to direct your enquiries or any requests for information to [asum@asum.com.au](mailto:asum@asum.com.au)

**Congratulations to the President – AICD Diploma**

Congratulations go to Dr Glenn McNally who passed the Diploma course of the Australian Institute of Company Directors.

ASUM now has two graduates of the AICD Diploma, namely, the President and the CEO. Dr David Rogers and Stephen Bird will be the next two Councillors to enrol for the AICD course. This is part of Council's ongoing commitment to maintain high standards in corporate governance in the Society.

**Ultrasound Imaging 1976: Australian Innovations stamp series**

Members are alerted to the release of a set of five stamps which is scheduled for release in May 2004 by Australia Post. One of the set of stamps in the Australian Innovation series is about 'Ultrasound Imaging 1976'. Members are encouraged to spread the news about this special Australia Post stamp release, and to promote actively the advances that ultrasound has made to society since that time. More information is available from your local post office.

**Multidisciplinary Workshop and O and G Symposium – another success story**

This meeting attracted about 400, indicating a growing interest in the workshop style meeting. Our thanks go to Roslyn Savage, members of the organising committee and ASUM staff who worked very hard to make the meeting a success. Again, we are grateful to the sponsors and exhibitors who supported the meeting and provided the equipment for the workshops.





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Professor Lil Valentin, our international speaker, and all the Australian and New Zealand speakers received positive feedback from attendees. Surplus funds from this meeting will again go into the ASUM Research and Grants Fund. The Multidisciplinary Workshop for 2005 is now planned for 17–19 March 2005 in Melbourne.

### ASUM NZ 24–26 June 2004 Christchurch

Rex de Ryke, Convenor of the ASUM NZ meeting to be held at Rydges Hotel in Christchurch, invites all members of ASUM to register early for this conference. An interesting program has been organised and many thanks go to Rex and his dedicated hard working organising committee. There are some cheap airfares on the internet from Australia.

The ASUM Council members will be attending this meeting and will also hold a Council meeting on Saturday 26 June. For more information email Rex de Ryke at [rdr1@xtra.co.nz](mailto:rdr1@xtra.co.nz)

### ASUM 2004 Annual Scientific Meeting 23–26 September 2004 Star City Sydney

All members would have received the Call for Abstracts Brochure. The Registration Brochure will be released soon as the speakers and program are being finalised.

We have 12 keynote speakers, from USA, UK, Brazil, France, New Zealand and Australia. They will be supported by a wide array of quality local speakers. This meeting will remain as ASUM's biggest meeting each year and is the major highlight of our calendar.

If you are not a resident of Sydney, you may also use this opportunity to combine a holiday in Sydney and regional NSW. There are wonderful attractions in Sydney, the Blue Mountains, the Hunter Valley and many others.

### ASUM 2004 Asia Link Malaysia 5-6 November 2004

ASUM has successfully negotiated with Malaysian Airlines (MAS) for special discounted airfares for Australian and NZ members to attend the meeting in Kuala Lumpur. This meeting will present another exciting

program with many opportunities for combining a holiday pre- or post meeting. ASUM has negotiated the special airfares which start from \$A800 to Kuala Lumpur return. There is also a special 'Discover Malaysia' airfare for \$US199 for a maximum of five domestic stops in Malaysia, including Sabah, Langkawi Island and Penang Island. This meeting will attract attendance from Australia, NZ, Singapore, Thailand, Indonesia, Malaysia and other parts of the Asia.

Keynote speakers include the leading radiologists of Malaysia, Dr P Sathyamorthy, Dr Sulaiman Tamanang, and well renowned obstetricians/gynaecologists Dr Raman Subramaniam and Dr Patrick Chia.

The Australian and New Zealand Faculty will consist of Dr Simon Meagher, Dr David Rogers, Dr Roger Davies, Dr Stan Barnett, Dr Andrew Ngu and Dr Glenn McNally. If you are planning to attend a meeting in Asia, mark this meeting on your calendar.

### Sonographer exchange with BMUS

BMUS and ASUM have a sonographer exchange program in place. ASUM Council will adopt guidelines, which are being developed to create an exchange program for an ASUM sonographer to spend some time in the UK for a short term research project. This will be funded from the ASUM Research and Grants Fund.

### Teaching Fellowships

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There are two Chris Kohlenberg Fellowships, sponsored by GE, the first will travel to NZ and the second will go to the ACT, both in 2004. More information is available from Education manager Keith Henderson at email [khenderson@asum.com.au](mailto:khenderson@asum.com.au)

### Education Online now live

Members are encouraged to log on to the Online Education section of the ASUM website. Branches are asked to actively promote the website and to forward feedback on the Online Education Handbook to the Education Committee by emailing [khenderson@asum.com.au](mailto:khenderson@asum.com.au)

### Research and Grants policy

This policy is now approved. It will be placed on the ASUM website. If you need a copy, please email [asum@asum.com.au](mailto:asum@asum.com.au). Members will soon be able to apply for grants and funding for research. It is the aim of ASUM to build the fund to at least \$A1m for the fund to be sustainable in the long term and for ongoing research.

### ASUM AGM Saturday 25 September 2004

This year the AGM will be held at Star City Sydney on 25 September 2004 during the ASUM 2004 Annual Scientific Meeting. The ASUM Council has approved for Tulloch Bove and Gauld to again be the financial auditors for the Society. Council has also approved for a CPI increase in 2005–2006 membership subscription rates which will be recommended to the AGM for adoption.

### Dr Caroline Hong

Chief Executive Officer  
email [carolinehong@asum.com.au](mailto:carolinehong@asum.com.au)

## Join ASUM

The Australasian Society for Ultrasound in Medicine is a multidisciplinary society whose primary role is to assist in disseminating scientific information, providing education and setting standards of practice in this continually developing specialty.

Our members include medical specialists in almost all disciplines of medicine: medical doctors, sonographers, scientists, veterinarians and corporations.

The society is affiliated with the World Federation for Ultrasound in Medicine and Biology (WFUMB) and has linkages with ultrasound societies in Asia.

For information contact:

**Membership Registrar**  
**Australasian Society for Ultrasound in Medicine**  
2/ 181 High St Willoughby NSW 2068  
tel +61 2 9958 7655  
fax +61 2 9958 8002  
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# Carotid ultrasonography – How do I do it?

*Stella SY Ho*

## Introduction

Ever since the results of two large randomised trials: North American Symptomatic Carotid Endarterectomy Trial (NASCET) and the European Carotid Surgery Trial (ECST), published in 1991 showing the benefit of carotid endarterectomy for high-grade internal carotid artery stenosis greater than 70% diameter reduction<sup>1,2</sup>, carotid ultrasonography has become an important tool for stroke management and prevention, and is one of the standard investigations for patients suffering from transient ischaemic attacks (TIA) and recent acute strokes.

Hence, the primary role of carotid ultrasonography for these patients is to look for the presence of carotid stenosis and to document the degree of stenosis in conformity to the criteria in these randomized trials – the NASCET criteria are most widely adopted by vascular sonologists.

It is noteworthy that the diagnostic criteria of the two trials are different. In NASCET, the degree of stenosis was determined by comparing the diameter of the residual lumen to the true diameter of a normal portion of ICA on arteriography, whereas in ECST, comparison was made between the diameter of the residual lumen and an estimate of the true diameter in the same segment<sup>1,2</sup>.

## Clinical indications

Recent TIA and acute strokes are the most common and important clinical indications that we encounter in everyday carotid ultrasound examinations because of the high association between recurrent strokes and the presence of an occult carotid stenosis<sup>3</sup>. Other indications include follow-up of carotid endarterectomy or angioplasty and follow-up of a carotid stenosis greater than 50% diameter reduction.

## Equipment

A high-resolution linear array transducer with frequency range between 10 – 5 MHz is preferable. Trapezoidal imaging is definitely advantageous in providing a wider field of view for assessing the extracranial segment of the internal carotid artery (ICA). The ultrasound system should include all standard features for colour Doppler imaging such as adjustable sample volume size, simultaneous duplex or

triplex mode of operation, steerable ultrasound beam angle, adjustable angle correction, selectable sweep speeds, wall filters and spectral display.

## Technique

Each vascular laboratory should develop its own scanning protocol and diagnostic criteria in conformity to the criteria in the randomised trials – say the NASCET criteria, with proper validation with arteriography. The vascular sonologists must adhere to the standardised technique in carotid examinations so as to ensure the diagnostic accuracy for documentation of high-grade stenoses of greater than 70% diameter reduction.

## Patient preparation

No prior patient preparation is required. During the scan, the patient lies supine with the neck rested on a pillow and slightly extended. The patient's head turns away from the side being examined.

## Imaging protocol

The scan should cover both common carotid arteries (CCA) and the proximal segments of their branches: the external carotid arteries (ECA) and ICA as well as the extracranial vertebral arteries (VA), utilising gray-scale, colour Doppler and spectral Doppler imaging.

## Gray-scale imaging

A quick sweep of the carotid arteries is first performed to exclude any carotid stenosis. If there is plaque formation, the location and severity of luminal narrowing should be documented. If a stenosis is of low-grade ie. less than 50% diameter reduction, direct measurement of the stenosis on the frozen gray-scale image usually gives a good estimation of the severity of the luminal narrowing. Colour/power Doppler imaging is helpful in depicting the residual lumen in moderate and high-grade stenosis.

## Colour and spectral Doppler imaging

If direct measurement of a stenosis is inadequate due to densely calcified plaques or poor visualisation of residual lumen, spectral Doppler analysis of the flow velocities before, at and after, the stenosis must be carefully performed for estimation of the peak systolic velocity (PSV) at the most stenotic segment, since the PSV is an important estimate for the degree of stenosis.

Colour Doppler imaging is not always necessary in normal cases but is particularly useful in guiding angle correction during velocity measurement at the stenosis and aiding in the delineation of the residual lumen (Figure 1).

Estimation of the degree of stenosis by Doppler flow velocities at the stenosis relies heavily on the accuracy of angle correction. A 2° error in angle correction at a large

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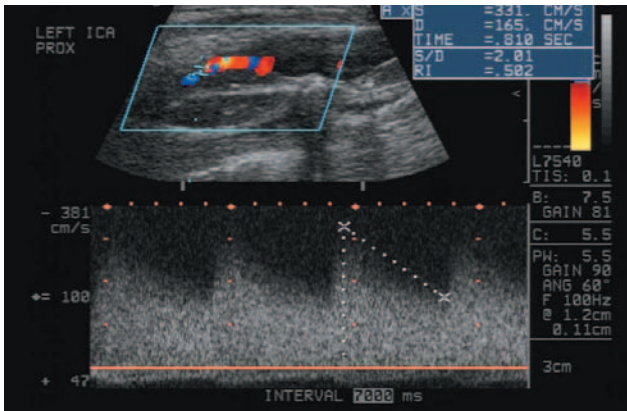
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**Figure 1** High-grade ICA stenosis. Accurate angle correction could easily be achieved with the delineation of the residual lumen by colour Doppler imaging. Measured PSV at the stenotic segment was 331.0 cm/s indicative of a  $\geq 70\%$  stenosis



angle of insonation  $\geq 70^\circ$  will incur an unacceptable error in the velocity measurement. To ensure accurate velocity measurement, a small angle of insonation  $\leq 60^\circ$  is always applied. For reasons discussed below, the author further recommends constant insonation angle during ICA flow velocity measurement when feasible.

Using constant insonation angle in ICA velocity measurement, we compared the side-to-side difference of ICA flow velocities in 68 Chinese stroke patients who had no, or only mild, extracranial carotid stenosis  $\leq 50\%$  diameter reduction, and correlated the findings with their MR arteriography of the brain.

We found that in 42 patients without any significant stenosis in the middle cerebral arteries, the side-to-side ICA flow velocities were relatively symmetrical,  $\leq 15$  cm/sec. Of 10 patients with asymmetrical flow  $> 15$  cm/sec, all had severe unilateral middle cerebral artery stenosis.

Using this cutoff of flow asymmetry, the sensitivity and specificity for predicting intracranial stenosis were 53% and 86% respectively. Despite the relatively low sensitivity, a discrepancy of ICA flow velocities  $> 15$  cm/s is a very useful parameter for excluding intracranial stenosis. This information is especially relevant in our population because intracranial stenosis is more prevalent in the Chinese population<sup>4</sup>.

The vertebral arteries are not as extensively investigated as the carotid arteries, partly because of lower clinical relevance compared with the carotid arteries and partly due to the fact that vertebral angioplasty is infrequently performed by the interventional radiologists in our institution. To locate the vertebral artery, the transducer is tilted 2–3 cm laterally from the ipsilateral CCA. The vessel lumen is usually visualised between the acoustic shadows cast by the bony foramina of the cervical vertebrae.

Doppler imaging is used to check for artery patency and flow direction. Retrograde flow in the vertebral artery is diagnostic of subclavian steal syndrome<sup>5</sup>. Normal vertebral arteries are usually symmetrical in size (about 3.8 mm) in diameter and flow but hypoplasia in either artery is common and may result in flow asymmetry<sup>6</sup>.

Measuring the vessel diameter may give us a clue to the flow asymmetry encountered and exclude any underlying significant arterial occlusive disease.

## Documentation of ICA stenosis

Recently, a multidisciplinary expert panel of the Society of Radiologists in Ultrasound (USA) issued a consensus statement regarding Doppler ultrasound in the diagnosis of carotid artery stenosis. The panel recommended that the degree of stenosis should be determined from both gray-scale (plaque formation) and Doppler ultrasound (PSV), and classified into the categories: normal,  $< 50\%$  stenosis, 50% to 69% stenosis,  $\geq 70\%$  stenosis to near occlusion, near occlusion and total occlusion. Only when these findings are questionable should the PSV ratio (= PSVstenosis/ PSV ipsilateral normal CCA) and ICA end-diastolic velocity be used<sup>7</sup>.

## Diagnostic criteria

In our institution, we also utilise the information obtained on gray-scale and Doppler ultrasound for the diagnosis of carotid artery stenosis. However, we adopt the PSV ratio instead of the PSV to estimate the degree of stenosis because PSV ratio is physiologically independent, eliminates technical variations and is unaffected by tandem or contralateral arterial stenosis. Having said that, it cannot be applied if the ipsilateral CCA is diseased.

Because of variability in the computation of Doppler velocity by different ultrasound machines, each laboratory should perform an internal validation for the Doppler criteria they are using with arteriography<sup>8</sup>. Only when the laboratories have not yet gathered enough data for validation, should they use published data as a rough guide for diagnosis of ICA stenosis.

The diagnostic criteria quoted in the recent consensus statement by the Society of Radiologists in Ultrasound provide a reasonably reliable reference for application (table 1)<sup>7</sup>.

## Other useful information

With the advent of ultrasound technology, a carotid ultrasound examination should not only identify the presence or absence of an operable carotid stenosis, but also acquire useful data such as intima-media thickness (IMT) of the carotid artery, plaque morphology and arterial blood flow volume for the prediction of risk and prognosis of stroke patients.

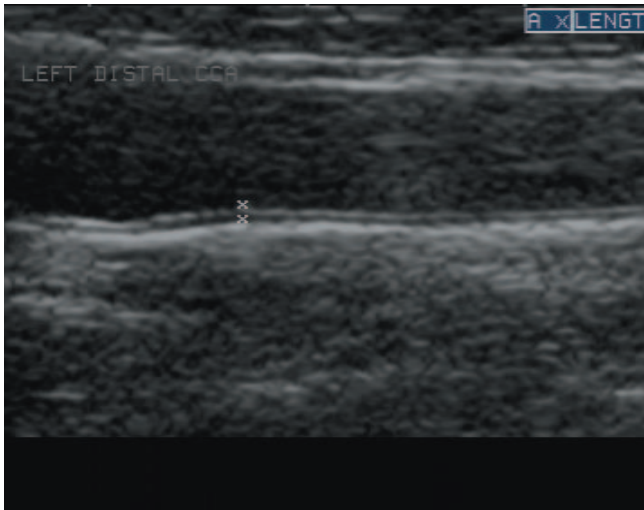
## Intima-media thickness

Intima media thickness (IMT) is defined as the distance between the leading edges of the lumen-intima interface and the media-adventitia interface of the far wall (figure 2). Recent studies have shown that IMT is a strong predictor of incident stroke and the risk increases at higher IMT values<sup>9,10</sup>.

**Table 1** Doppler Criteria for Diagnosis of ICA Stenosis

Degree of Stenosis(%)	ICA PSV (cm/sec)	PSV ratio
Normal	$< 125$	$< 2.0$
$< 50$	$< 125$	$< 2.0$
50–69	125–230	2.0 – 4.0
$\geq 70$ – less than near occlusion	$> 230$	$> 4.0$
near occlusion	High/Low /Undetectable	Variable
Total occlusion	Undetectable	Not applicable

**Figure 2 Intima-media Thickness.** IMT is the distance (x – x) between two bright interfaces in the far wall of distal 1 cm CCA just proximal to flow divider and normally less than 1.0 mm

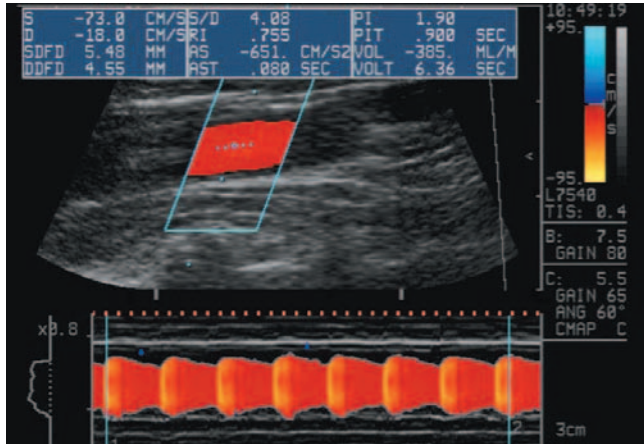


Though measurement of IMT in the literature is variable with regard to the site of investigation and the number of measurements; in a practical sense, measuring IMT at the distal CCA 1 cm segment just proximal to the bifurcation is recommended as measurements in this segment are more reproducible. An IMT  $\geq$  1.0 mm is considered as definitely abnormal<sup>11</sup>.

### Plaque morphology

The importance of plaque morphology is emphasised when it has been demonstrated to be associated with cerebrovascular events. Although the degree of stenosis is still an independent strong predictor of ischaemic stroke, heterogeneity and surface irregularity of the plaque have also been found to be positively correlated with an increased risk of strokes<sup>12-14</sup>. Therefore, differentiating the echopattern of a plaque into 'homogeneous' and 'heterogeneous', and characterizing the plaque surface into 'smooth' and 'irregular' are recommended in a routine carotid ultrasound examination.

**Figure 3 Colour Velocity Imaging Quantification.** CCA flow was equal to 385 mL/min. Noted that CVIQ was more superior than Doppler technique in arterial blood flow volume estimation because in CVIQ blood flow volume was computed as a function of simultaneous vessel diameter and flow velocity over several cardiac cycles



### Arterial blood flow volume

Arterial blood flow volume is a valuable clinical parameter and previous studies have been reported on its clinical significance in proximal ICA stenosis/occlusion with respect to altered cerebral haemodynamics<sup>15,16</sup>.

As estimation of arterial blood flow volume by Doppler technique has inherent technical errors<sup>17</sup>, colour velocity imaging quantification utilising time domain processing has been advocated as an accurate technique for blood flow volume measurement (figure 3)<sup>18</sup>.

Using this technique, the author demonstrated that in 40 patients with carotid occlusive disease, a blood flow volume of  $\geq$  370 mL/min in the CCA or  $\geq$  120 mL/min in the vertebral artery was indicative of the presence of intracranial collaterals<sup>19</sup>. This information is important because intracranial collateralisation is found to be associated with a reduction in hemispheric cerebrovascular events<sup>20</sup>. Therefore, with the availability of the equipment, arterial blood flow volume should be incorporated into routine carotid ultrasound examination for an additional five to ten minutes in procedure time.

### Conclusion

Carotid ultrasound examinations are indispensable in current management and prevention of strokes. Its primary role is to look for carotid arterial occlusive disease and document the degree of stenosis based on standardised, validated diagnostic criteria in accordance with those of randomised trials. Both gray-scale imaging and Doppler criteria should be used in diagnosis.

With the advance of ultrasound technology, more clinically relevant information such as IMT, plaque morphology and arterial blood flow volume can be obtained in a carotid ultrasound examination and it is invaluable in helping the neurologists in the prediction of stroke risk and prognosis of stroke.

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# The gallbladder wall: acute cholecystitis versus circumferential gallbladder oedema

Jacqueline F Spurway, Bradley J Simmons and Roger P Davies

## Introduction

The ultrasound criterion for a normal gallbladder wall is less than or equal to 3 mm. Increased thickness of the gallbladder wall is frequently described as a sign of acute inflammatory involvement of the gallbladder. Several non-biliary conditions can lead to a similar sonographic appearance and this article will summarise the differences on ultrasound examination between acute cholecystitis and global gallbladder wall thickening without intrinsic gallbladder disease.

## Acute cholecystitis

Acute cholecystitis commonly occurs in the 5–6th decade of life, and three-quarters of cases occur in females<sup>1</sup>. A majority of cases (96%) occur secondary to cystic duct obstruction, while the remainder arise from the reflux of pancreatic enzymes<sup>2</sup>.

Less than 10% of acute cholecystitis cases occur in the absence of gallstones. Acalculous acute cholecystitis frequently occurs in the elderly and the critically ill and may be due to depressed motility or starvation eg. trauma, narcotics, total parenteral nutrition; diminished perfusion through the cystic artery eg. arteriosclerosis, diabetes, shock; extrinsic compression of the cystic duct eg. lymphadenopathy; and infections including salmonella and cholera<sup>3</sup>.

Ultrasound criteria for the diagnosis of acute cholecystitis depend on the presence of several of the following characteristics:

- Gallbladder wall thickness exceeding 3 mm. This feature is only present in 50–75% of patients<sup>4</sup> (Figure 1);
- Positive sonographic ‘Murphy’s sign’. The ‘Murphy’s sign’ is defined as tenderness elicited by direct transducer pressure over the inflamed gallbladder;<sup>5</sup>
- ‘Halo sign’ with the wall appearing as three layers with an anechoic/hyperechoic middle layer;
- Gallbladder hydrops defined as the AP diameter measuring greater than 50 mm;

Figure 1 Acute cholecystitis with the gallbladder wall thickened to 2.3 cm. A calculus is noted in the fundus and dependent sludge is present

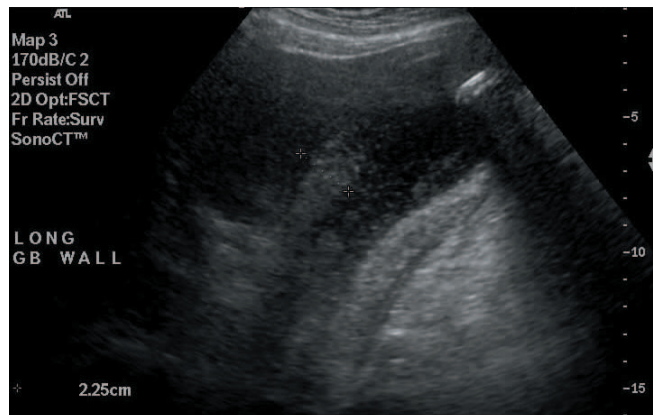
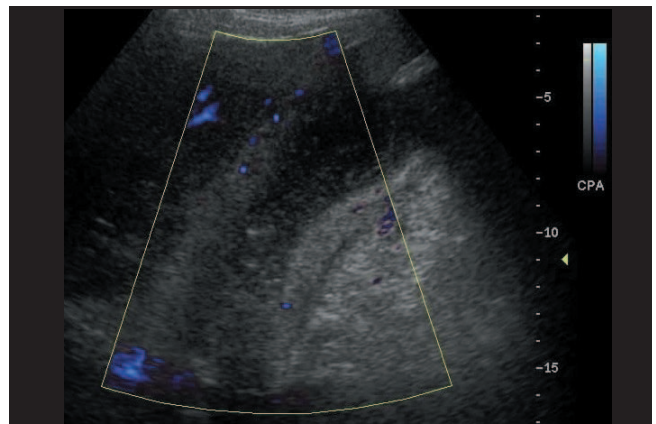


Figure 2 Hyperaemic vascularisation of the gallbladder wall



- The presence of pericholecystic fluid; and
- Hyperaemic vascularisation on colour Doppler<sup>6</sup> (Figure 2).

## Circumferential gallbladder wall oedema

Predisposing factors in gallbladder wall thickening, unrelated to intrinsic gallbladder pathology, include reduced plasma osmotic pressure, increased portal venous pressure and/or increased extravascular fluid volume<sup>4</sup>. These factors may be present in any of the following conditions; hypoproteinemia; elevated portal venous pressure; congestive heart failure; multiple myeloma; acute viral hepatitis; hypoalbuminemia; haemorrhagic fever with renal syndrome (hantaviruses)<sup>7</sup>; falciparum malaria; amoebic and pyogenic liver abscesses; cirrhosis; infectious mononucleosis<sup>8</sup>; dengue haemorrhagic fever<sup>9</sup>; septicaemia; ascites; and AIDS.

Ultrasound criteria for the diagnoses of circumferential gallbladder wall thickening depend on the presence of several of the following characteristics:

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Figure 3 Normal vascularity of thickened gallbladder wall

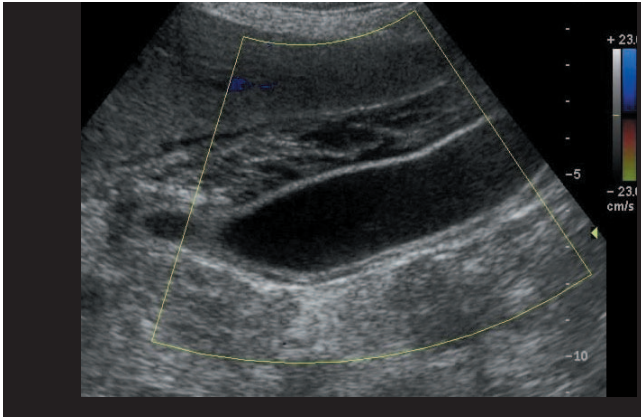


Figure 4a Hypoechoic, striated collection surrounding a normal gallbladder wall

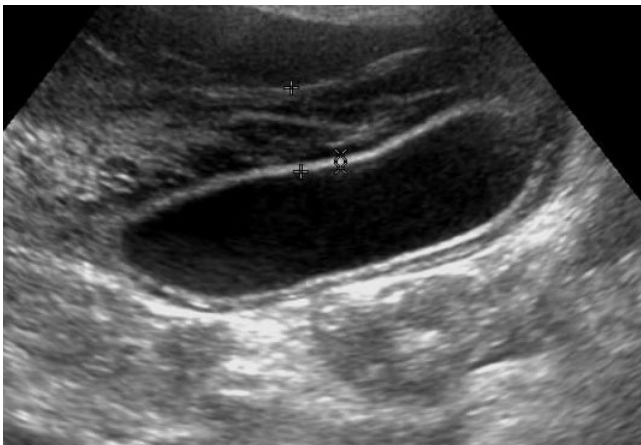


Figure 4b Hypoechoic, striated collection surrounding a normal gallbladder wall

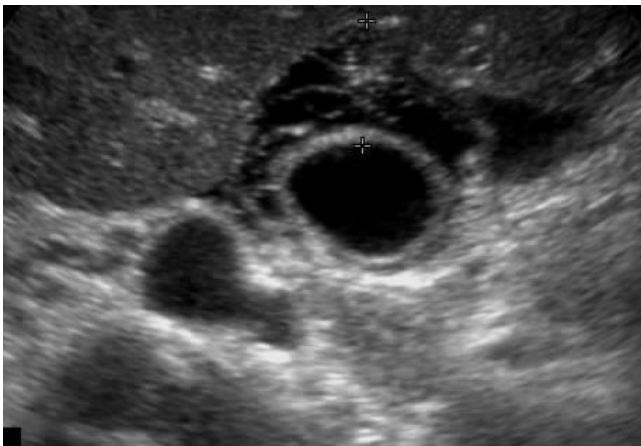


Figure 5 Striated gallbladder wall

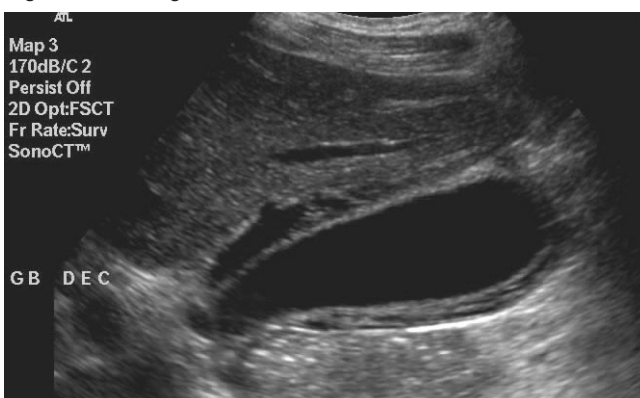
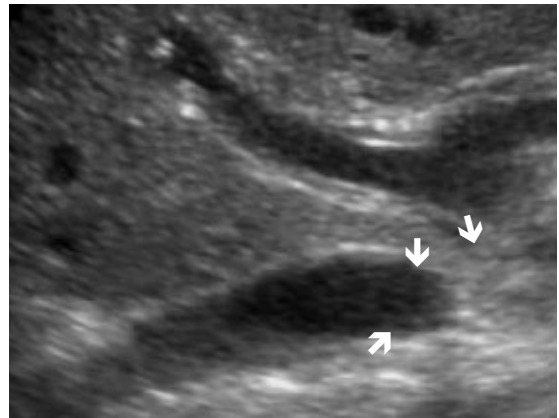


Figure 6 Generalised oedema around the intrahepatic portal triad



- Gallbladder wall thickening to greater than 3 mm;
- Negative sonographic 'Murphy's sign';
- Normal vascularity of the thickened wall (Figure 3);
- The gallbladder wall may be seen as a distinct normal wall surrounded by a hypoechoic, striated collection (Figure 4); the striated thickening around the gallbladder wall often contains anechoic material consistent with oedema (Figure 5).
- Free fluid in other peritoneal recesses
- Hypoechoic borders of the intrahepatic portal triad consistent with generalised oedema (Figure 6); and in acute disease states the gallbladder wall thickening resolves with the course of the disease and without antibiotic therapy.

### Conclusion

Gallbladder wall thickening can be due to inflammatory reaction in the case of acute cholecystitis or as a consequence of non-biliary conditions. The distinguishing characteristics of acute cholecystitis over non-biliary gallbladder wall thickening are a positive sonographic 'Murphy's sign', hyperaemic response in the wall and lack of striations. In acute cholecystitis the entire wall is involved in the inflammatory process whereas a delineated wall with associated oedema is seen in the non-biliary response. Specific interrogation of these secondary signs should be routine in patients at increased risk of non-inflammatory gallbladder wall thickening to avoid an erroneous diagnosis of acute cholecystitis.

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# Isolated occlusion due to cystic adventitial disease of the popliteal artery – ultrasound diagnosis

Allison C Newey, Dhanabalan Thiruchelvam, Roger P Davies

## Abstract

Cystic adventitial disease (CAD) of the popliteal artery is a relatively rare cause of occlusion compared to the more prevalent atherosclerosis and occurs most commonly in younger male patients. A case of cystic adventitial disease of the popliteal artery identified preoperatively based on the arterial ultrasound appearances is presented. The imaging of cystic adventitial disease is discussed and the importance of recognising this condition is emphasised. Treatment options do not include percutaneous angioplasty that might otherwise be a first choice in a patient with isolated occlusive arterial disease.

## Key Words

Cystic adventitial disease; popliteal artery; angiography.

## Introduction

Cystic adventitial disease is one of the more rare non-atherosclerotic causes of isolated occlusive peripheral arterial disease. Atkins and Key first reported this condition in the external iliac artery in 1947<sup>1</sup>. It most commonly affects the popliteal artery and is characterised by a mucinous cyst in the tunica adventitia layer of a blood vessel wall. This cystic structure can eventually cause a localised narrowing in the vessel lumen and may lead to intermittent claudication. Diagnosis is based on history, examination, and imaging. Characteristic ultrasound appearances may lead to prospective identification.

## Case report

A 53-year-old man presented with a sudden onset of intermittent claudication of the right calf. Previously he was able to walk extended distances including steep inclines. In 8 weeks before presentation, there was a rapid deterioration with claudication at 700 metres progressing to symptoms at

100 metres. Other symptoms included episodic right foot sweating and non-positional sensations of hyper- and hypothermia.

The past history included hypercholesterolemia treated with Simvastatin and a brief period of smoking as a teenager. There was no history of diabetes mellitus nor was there a family history of coronary or peripheral vascular disease. A ruptured cruciate ligament of the right knee 20 years before was not repaired.

On examination, the right foot appeared slightly pale and was cooler than the left. In the right leg there was a strong femoral pulse. No popliteal pulse was palpable. Right foot pulses were present but diminished when compared to the left. On right knee flexion the right foot pulses were absent. No bruit was heard in the popliteal fossa. No neurological deficits were noted. There were no other stigmata of peripheral vascular disease. Peripheral pulses were normal in the left leg.

**Figure 1** Digital subtraction angiogram of the popliteal artery showing abrupt tapering to near occlusion of the proximal popliteal artery on the right over a distance of approximately 2.5 cm. Distal to this there is a tapered reconstitution of a faintly opacified vessel at the level of the superior patella border and distal to this the popliteal artery is normal in calibre



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An arterial ultrasound of the right leg was performed elsewhere. Pre-exercise pressures were measured with an ankle-brachial index (ABI) of 1.0 in the right leg and 1.08 on the left side. The ABI dropped to 0.5 and 0.6 after 1 and 2 minutes of exercise but returned to 1.0 after 5 minutes. Grey-scale imaging demonstrated 80% narrowing of the right popliteal artery 4–5cm above the knee crease. There was no evidence of plaque nor calcification reported in this region. Distal to this, arteries showed low velocity monophasic waveforms.

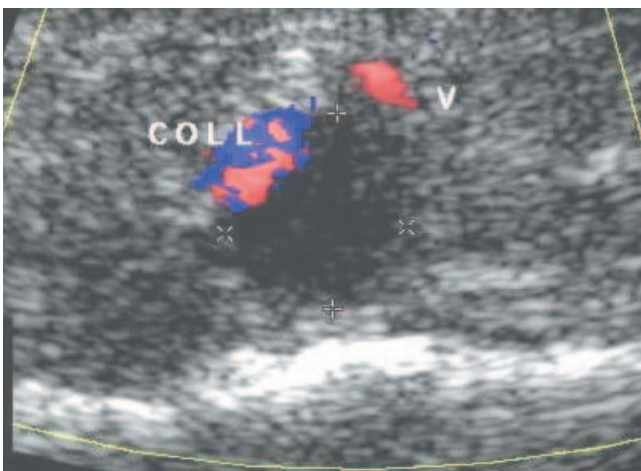
The patient then proceeded to aorto-bi-femoral arteriogram with a view to angioplasty of the suspected atherosclerotic popliteal plaque. The aorta was normal in calibre and the iliac system showed minor tortuosity. There was no evidence of calibre change to indicate the presence of atherosclerotic disease. The iliac system was otherwise normal. Distally on the right, the common femoral artery was normal in calibre. The profunda femoris and superficial femoral system were both uniform and normal in calibre, again with no evidence of atherosclerotic disease. The only abnormality seen was just beyond the right adductor hiatus where there was an abrupt tapering near occlusion of the proximal popliteal artery on the right over a distance of approximately 2.5 cm (Figure 1).

There was a tapered reconstitution of the vessel at the level of the superior patella border and distal to this the popliteal artery was normal in calibre. There was three-vessel run-off and the posterior and anterior tibial vessels crossed the ankle joint.

The abrupt tapered occlusion of the proximal popliteal artery in the absence of any other evidence of atherosclerotic disease was thought atypical for atherosclerotic disease. A further ultrasound examination was therefore performed to determine whether there was an extrinsic cause of compressive occlusion of the popliteal artery.

Ultrasound of the right popliteal artery demonstrated a normal calibre vessel with laminar flow proximally. There was ectasia of the artery through the obstructed segment with mural anechoic material compressing the lumen (dimensions: 14 mm x 13 mm) Figure 2. Peripheral flow was seen around the occluded central lumen corresponding to the appearance at angiography.

**Figure 2** Axial ultrasound section through the occluded segment. Anechoic mural material measuring 1.4 by 1.3 cm is seen compressing the lumen. Colour flow is seen in a small adjacent collateral vessel



Below the level of the occlusion, the artery returned to normal calibre and damped low velocity flow was demonstrated in the distal popliteal artery. The anechoic material filling the lumen of the proximal popliteal artery raised the possibility of cystic adventitial disease as a cause for the occlusion.

Open excision of the cystic lesion and interposition vein graft was performed. Pathological examination of the excised segment confirmed precisely the diagnosis and morphology of the lesion as predicted by preoperative imaging.

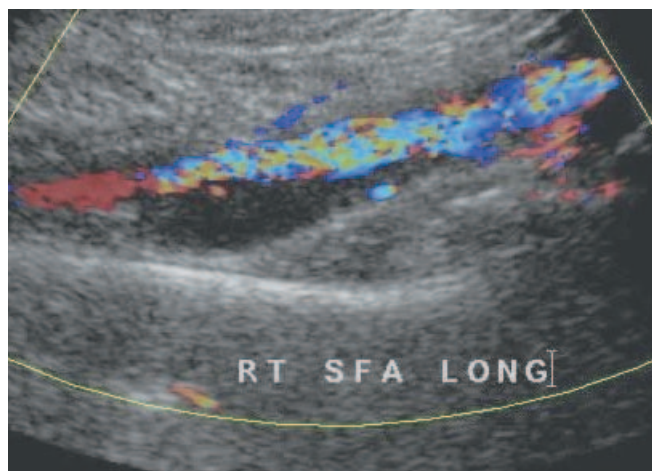
## Discussion

Cystic adventitial disease (CAD) is a rare condition most widely reported affecting the popliteal artery. There is a cystic abnormality of the adventitia and this may occasionally cause occlusion of the lumen of the artery causing symptoms of intermittent claudication. It has been described in the popliteal artery, external iliac artery, axillary artery, and distal brachial, radial, and ulnar arteries as well as in the saphenous, iliac, and common femoral veins. There are around 300 reported cases<sup>2</sup>. The ultrasound appearances and preoperative recognition by ultrasound are not widely reported.

CAD most commonly affects males in the fourth to fifth decades of life. The intermittent unilateral claudication may be severe and of rapid onset. Patients may often be lacking in typical risk factors for atherosclerosis, and there is usually no history of preceding trauma. On examination all pulses in lower extremities can usually be palpated. Pedal pulses may sometimes disappear on knee flexion<sup>3</sup>. There may be a bruit auscultated in the popliteal fossa<sup>4</sup>. Right and left legs are equally affected<sup>5</sup>.

The aetiology of CAD is not clear. One proposed mechanism is that microtrauma due to movement of the popliteal artery during knee flexion leads to adventitial trauma and cyst formation<sup>6</sup>. This theory does not entirely explain why there is not a higher incidence in athletes and labourers, nor why the disease is more frequent in younger patients. An alternate explanation is the formation of a ganglion-like collection either from pluri-potent connective tissue cells in the wall of the artery or vein or as a result of cell migration, possibly supported by the fact that adventitial cysts may be

**Figure 3** Longitudinal ultrasound image shows eccentric colour flow closely matching the angiographic appearance. The expanded vessel with the large eccentric anechoic concentric lesion is again demonstrated



biochemically and histologically similar to synovial ganglia<sup>7</sup>. It has been proposed that the cysts may arise from synovial structures and track along vascular branches to the adventitia of the adjacent major vessels. Connections between the joint capsule and adventitial cyst seem to support this theory<sup>8</sup>. The alternative developmental theory suggests mucin-secreting cells derived from the mesenchyme of adjacent joints are misplaced into the adventitial layer of nearby arteries or veins during development<sup>9</sup>. These cells may become stimulated in adult life to actively secrete mucoid material resulting in the acute onset of compressive symptoms.

CAD is always localised in vessels adjacent to a joint, and may communicate with the joint. At gross examination there is usually a unilocular or multilocular cyst (averaging 1–8 cm) situated in the adventitia containing gelatinous material that usually appears clear. It does not communicate with the vascular lumen, and the cyst itself does not characteristically have a lining. It is histologically similar to a ganglion cyst with the contents rich in hyaluronic acid<sup>10</sup>.

CAD may be difficult to diagnose. In young patients presenting with claudication, a non-atherosclerotic cause of popliteal disease, such as CAD, popliteal entrapment, popliteal aneurysm, compression by a Baker's cyst, embolism, or false aneurysm should be considered<sup>11</sup>. Duplex ultrasound, computed tomography (CT) or magnetic resonance (MR) imaging can demonstrate the cystic lesion. Arteriography may demonstrate a segmental stenosis, which is most often scimitar shaped. It can also have the appearance of a smooth 'hourglass' shape, demonstrate a triangular filling defect, have the shape of a flute embouchure, or be M-shaped. Less commonly there is segmental occlusion<sup>12</sup>.

The remainder of the vascular system is otherwise unremarkable with normal calibre of the artery proximal and distal to the affected segment. The normal course of the popliteal artery in the popliteal fossa helps to differentiate CAD from popliteal entrapment syndrome<sup>12,13</sup>.

Ultrasound may be valuable in detecting and characterising CAD. It is more specific than angiography in demonstrating the contents of the extra-luminal mass or pseudo-occlusions<sup>14</sup>. Ultrasound can visualise the cystic lesion in the artery wall, which is anechoic, or has hypoechoic contents. The wall typically shows less echogenicity than the wall of a popliteal artery aneurysm where there is laminated thrombus and atherosclerotic or calcified and thickened intima. The isolated eccentric nature of the lesion, the characteristic echo-characteristics and the patient's age should suggest the diagnosis of CAD<sup>15</sup>.

In this case the appearance of the angiogram aroused suspicion, leading to the ultrasound confirming the diagnosis.

Colour Doppler ultrasonography shows a typical picture of stenosis with increased systolic and diastolic velocities, poststenotic turbulence and distal flow reduction. Intravascular ultrasound (IVUS) has been reported as being a helpful diagnostic modality but is restricted due to cost and the invasive nature of the procedure<sup>16</sup>. With IVUS, CAD appears as a sharply bordered, hypoechoic cyst located within the adventitia of the arterial wall. The cyst can displace the media centrally, and the arterial lumen is

narrowed<sup>11</sup>. Initial evaluation of the popliteal fossa should be by non-invasive means with (colour Doppler) US, CT, or MR imaging<sup>11</sup>.

CT with angiographic contrast may have the advantage of not only outlining the vessel lumen but also displaying the tissue characteristics of the perivascular lesion (eg. fluid density, soft tissue density or mixed)<sup>17</sup>. For this reason some reports suggest that CT is superior to arteriography in the assessment of suspected popliteal vascular disease<sup>18</sup>. In CAD, a low attenuation lesion (values between water and muscular tissue) is present. There should be no calcification in the cyst wall<sup>19</sup>. Axial images can demonstrate the relationship between the cyst and the artery and the severity of the lumen reduction can be measured. CT may be useful for distinguishing CAD from popliteal artery entrapment and popliteal artery aneurysm.

MR imaging has been used for evaluation of CAD. Like CT it can directly detect the cyst and show the cyst wall. There appears to be little evidence that MRI is superior to other forms of imaging for the diagnosis and planning therapy for CAD<sup>20</sup>.

The differential diagnosis of stenosis of the popliteal artery includes popliteal aneurysm, Baker's cyst, fibromuscular dysplasia, atherosclerotic stenosis, popliteal artery entrapment syndrome, and false aneurysm. True aneurysms are a dilatation of all three layers of the vessel wall, whereas CAD affects only the adventitia, leaving the intimal layer uninterrupted. A fine echogenic line can be seen on ultrasound separating the cyst from the intimal layer<sup>21</sup>. False aneurysms lie completely outside the vessel and typically connect to the lumen by a neck. Blood flow is usually seen within a false aneurysm and is never present in the cyst of CAD. In fibromuscular dysplasia of the popliteal artery the typical angiographic findings are alternate dilatation and stenosis of short segments of the artery giving a classic beaded appearance or string of pearls<sup>13</sup>. In this condition, simple stenosis, aneurysmal dilatation or occlusion may be present. However it can be differentiated from CAD as there is no cyst within the vessel wall. Finally, with a Baker's cyst, the cyst is not connected or adjacent to the popliteal artery and instead lies more medial and closer to the knee joint.

Due to the rarity of CAD there still remains no standardised method of surgical intervention. Although spontaneous resolution<sup>22,23</sup> and spontaneous rupture<sup>24</sup> have been reported, therapy is aimed at cyst removal and maintaining the patency of the popliteal artery. Surgical resection of the cyst is performed via a posterior popliteal approach. Sometimes the cyst can be enucleated, but the affected segment of the artery often requires resection and repair with an interposition vein graft<sup>13</sup>. This technique has shown long term durability in one small series. Using this approach, Flannigan et al. report a success rate of 94%<sup>25</sup>. Percutaneous trans-luminal angioplasty (PTA) has not been shown to be successful<sup>26</sup>. Because the intima is not affected in CAD, ballooning the area does not change the pressure on the vessel lumen due to the cyst. The applicability of an endovascular stent for CAD of the popliteal artery has yet to be shown<sup>27</sup>. Percutaneous cyst aspiration under ultrasound or CT guidance can be performed and has been shown to effectively relieve the obstruction; however there has been a high

incidence of recurrence reported<sup>10,13</sup>.

In conclusion, CAD is a relatively rare cause of non-atherosclerotic peripheral occlusive disease. Prospective diagnosis is important for treatment selection.

Sonographers, radiologists, surgeons and other practitioners should be aware of this condition so that the appropriate investigations and management can be arranged. In the investigation of a young patient, non-invasive investigations should be performed first. In the older patient who often proceeds to angiography, as was the case in this report, it is important to recognise the characteristic appearance of CAD and consider US, CT or MRI to clarify the diagnosis.

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# Ultrasound diagnosis of Morton’s neuroma

## Presented at the ASUM Multidisciplinary Workshop 2004

Peter Murphy

### Introduction

Ultrasound is an important adjunct to the accurate diagnosis of Morton’s neuroma in people presenting with a painful forefoot.

Morton’s neuroma is a non neoplastic enlargement of a digital branch of the medial or lateral plantar nerve. It is not a true neuroma being characterised by perineural fibrosis, vascular proliferation, edema of the endometrium and axonal degeneration.

People most commonly affected are females between 18–85 years and athletes.

The condition was named after Thomas Morton in 1876 who described the affected patient as “*in walking paroximal pain that goes to the heart and provokes unbearable sensations with cold sweats and finally prevents the individual to direct his spirit and will to any other subject but to this unbearable pain.*”

### Etiology

Many require a physical change to the metatarsal tunnel. High heeled narrow toe shoes place excess bodyweight onto the metatarsal (MT) heads and compress the neurovascular bundle (NVB). Crouching can mimic the same effect as wearing heeled shoes (Figures 1–4).

The condition can result from trauma such as repetitive impacts due to sporting activities like running and tennis or may be due to injuries like fractures, sprains or dislocations.

Rheumatoid inflammation and biomechanical abnormalities (such as unstable pronation of the foot, stretches the plantar nerve against the deep metatarsal ligament (DML)). Another cause is degenerative changes in the metatarsal tunnel because of diabetes.

As NVB passes through the MT tunnel near its termination, local nerve ischemia can easily result from compression.

### Anatomy: Nerve location metatarsal tunnel

Figure 2

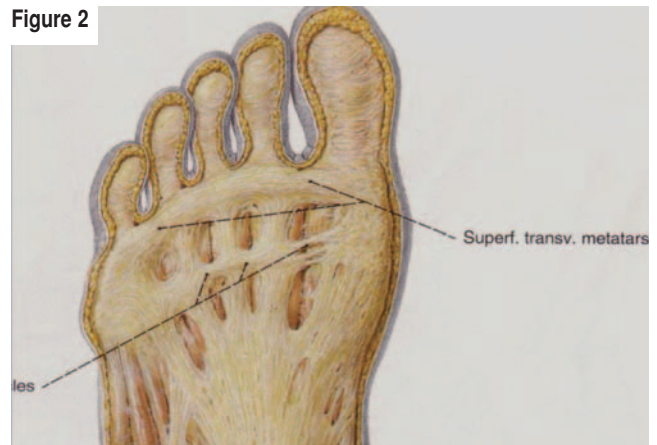


Figure 3

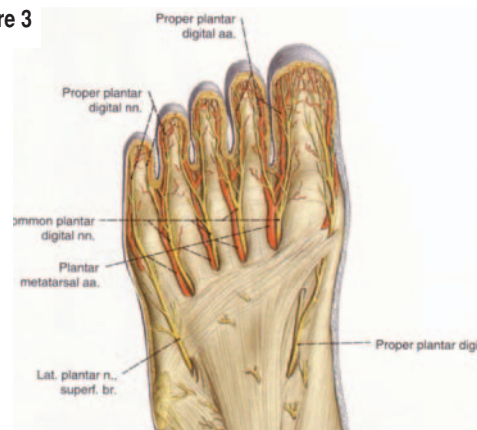


Figure 4

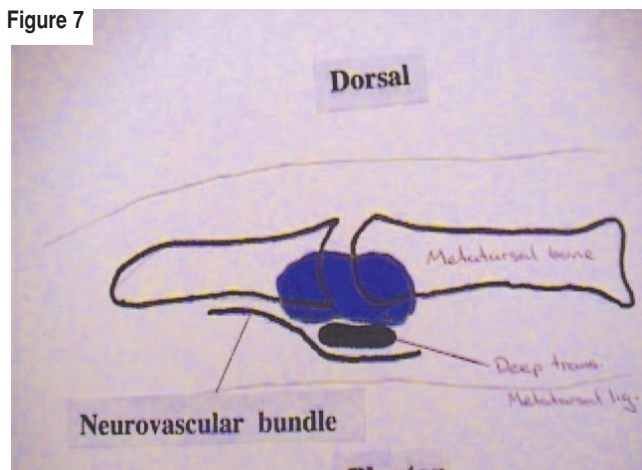
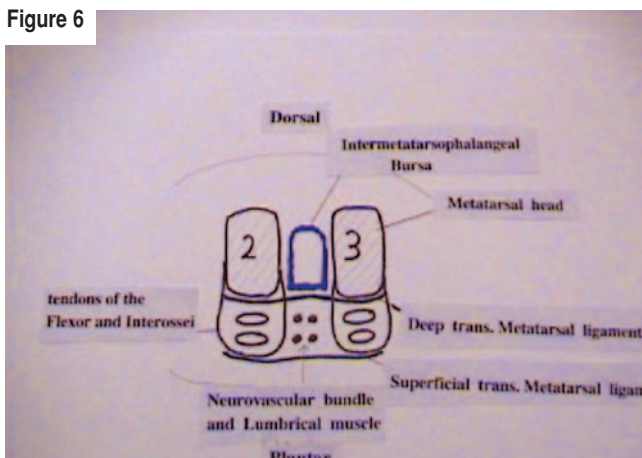
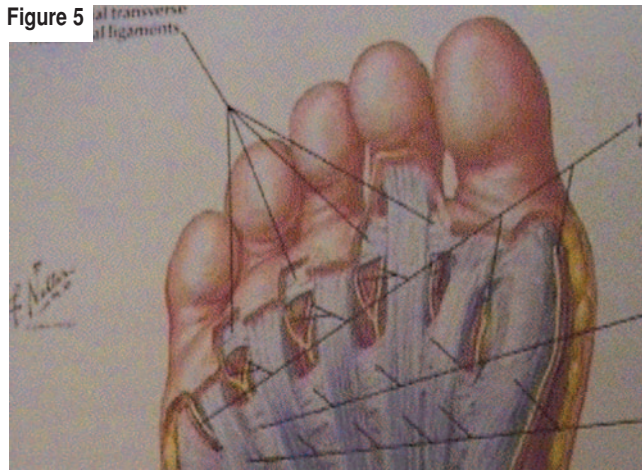


Figure 1



### Metatarsal tunnel

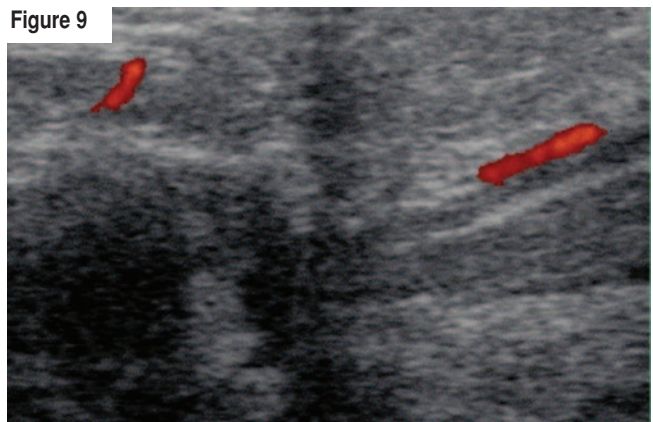
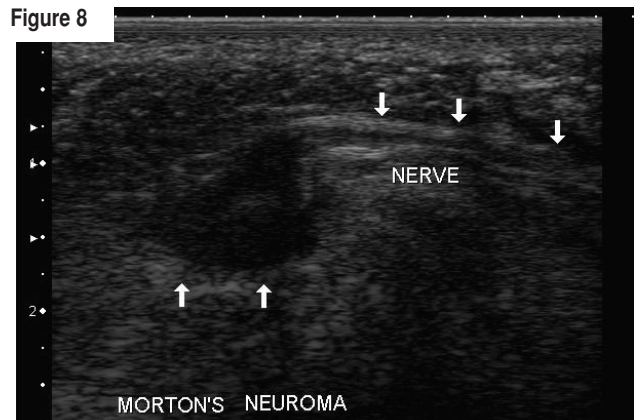
The plantar aspect of the tunnel is the superficial transverse metatarsal ligament. The dorsal surface of the tunnel is the deep transverse MT ligament. Lateral and medial walls are the tendons of the flexor and interossei. The tunnel contains the NVB and lumbrical muscle (Figures 5–7).



### Neuroma

Hypoechoic, non compressible, located at the plantar side of the DMT ligament within the web space with positive Mulder's and Tinel's sign (Figures 8–13). Figure 11 demonstrates the location of this neuroma distal and plantar from the metatarsalphalangeal (MTP) joint.

### Morton's neuroma



### Neuroma

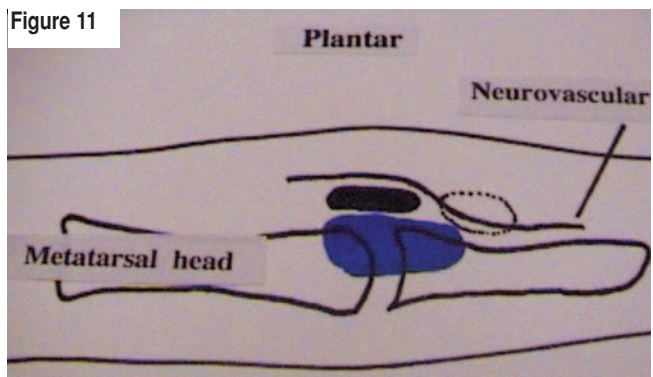
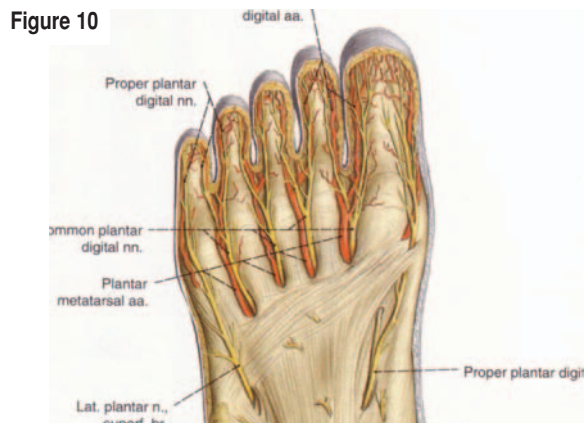




Figure 12

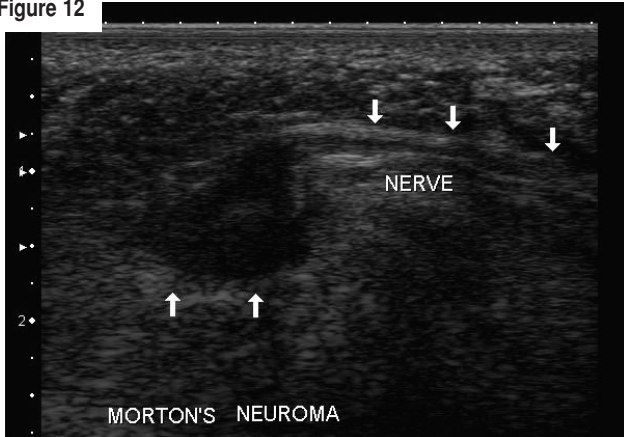
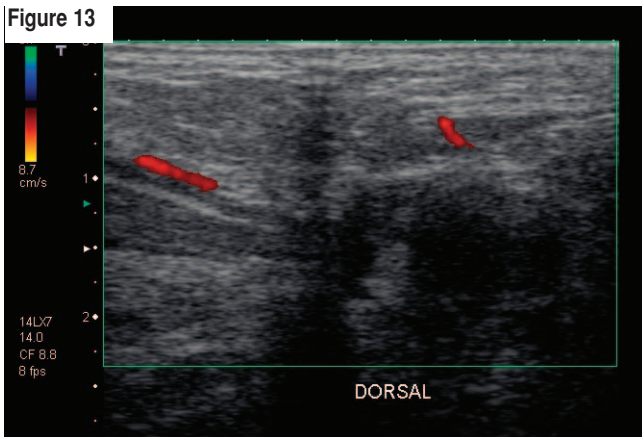


Figure 13



**Neuroma**

Figure 14

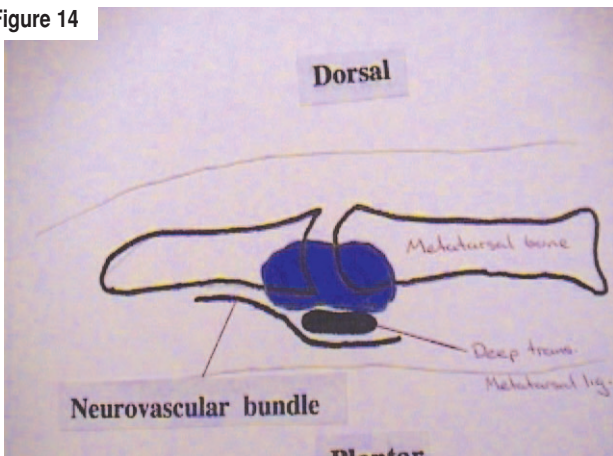
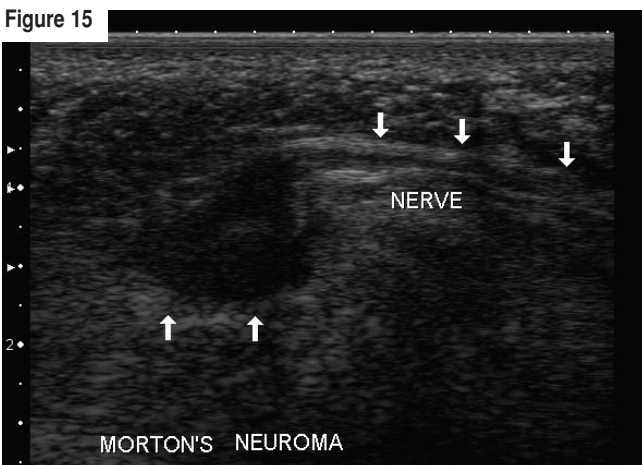


Figure 15



**Mulder's test**

Compression of the MT heads against each other provokes an increase in pain and sometimes a 'click' is felt (Figure 16).

Figure 16



**Mulder's test with compression**

Applying compression onto the MTP web space will push the bursa towards the plantar aspect of the foot and with compression of the MTs provokes an increase in pain (Figure 17).

Figure 17



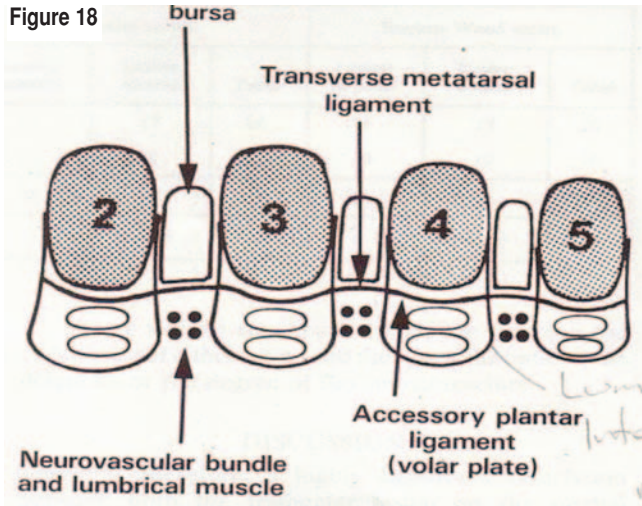
**Tinel's sign**

The Tinel-Hoffman sign results from tapping over a nerve trunk which causes a sensation of tingling and pins in its distribution.

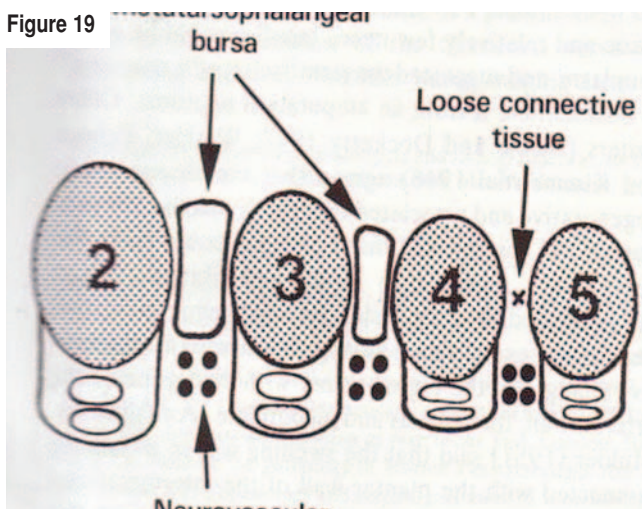
**Differential diagnosis**

In 1980 Bossley and Carney conducted a study on the intermetatarsophalangeal bursa which was published in the *Journal of Bone and Joint Surgery* volume 62-B No 22 May 1980 p 184. The bursa is visualised at the level of the 1/2, 2/3, 3/4, 4/5 MT heads on the dorsal aspect of the DML. Moving distally past the MT heads the bursa is still present between the 2/3 and 3/4 MTP webspace beyond the DML.

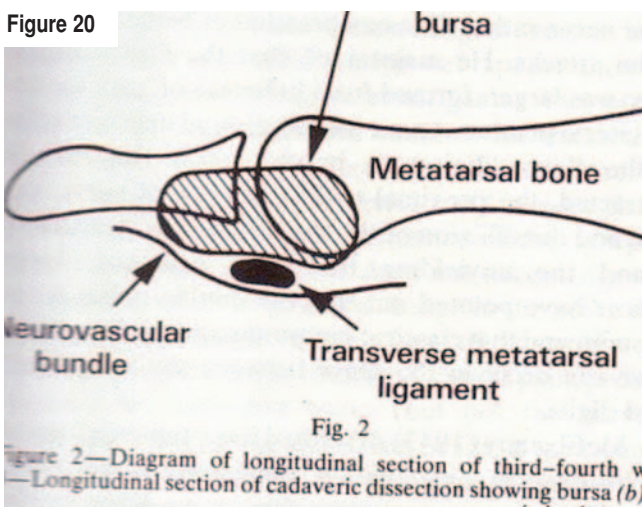
Note that the bursa at the level of the MT heads is present.



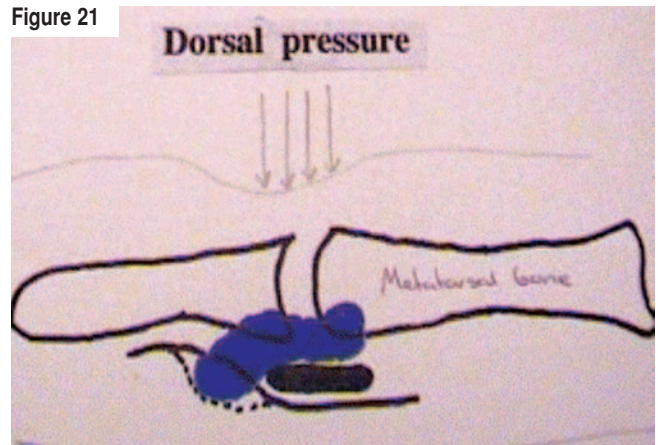
Distally pass the MT heads the bursa is still present between the 2/3 and 3/4 webspace beyond the DML



In the sagittal diagram below you can appreciate how closely applied this bursa is to the neurovascular bundle. By applying dorsal pressure this bursa is displaced towards the NVB (Figures 18–21).



By applying dorsal pressure this bursa is displaced towards the NVB.



### Mulder's test with compression

Applying dorsal compression onto the MTP web space will push the bursa towards the plantar aspect of the foot and with compression of the MTs provokes an increase in pain. Tissues from the web space of patients with classical neuroma symptoms often show lymphocytic infiltration, with additional fibrinoid necrosis of the bursal wall.



### Pathology

#### Neuroma

- 1 Hypochoic mass 2/3 3/4 web space.
- 2 Non compressible.
- 3 Plantar distal DML
- 4 Positive Mulder's and Tinel's sign.
- 5 Pain appears cutting and electrical sensation.

#### Bursa

- 1 Hypochoic
- 2 Compressible
- 3 Dorsal aspect DML
- 4 Positive Mulder's sign.

### Bursa

Applying dorsal pressure you can compress the bursa (Figures 22–24).

Figure 23



Figure 24

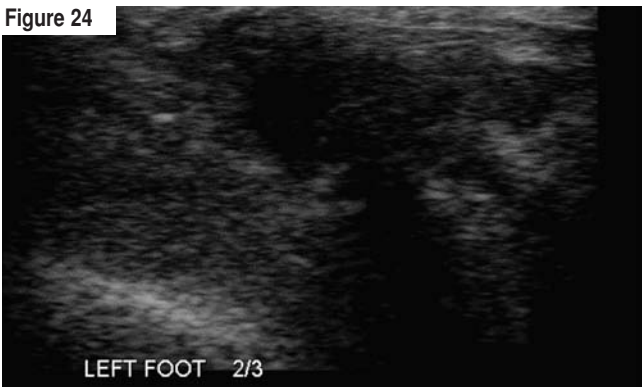
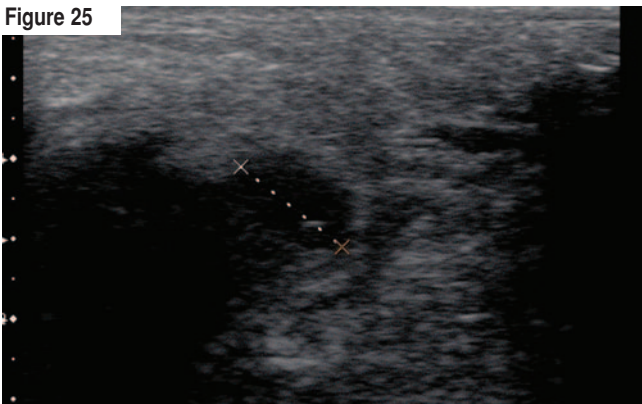


Figure 25



**Neuroma**

Apply dorsal pressure and you may distort the mass and also produce a sharp electrical pain (26–28).

**Important**

Clinical correlation with the history and physical examination is extremely important to prevent a wrong diagnosis.

Figure 26

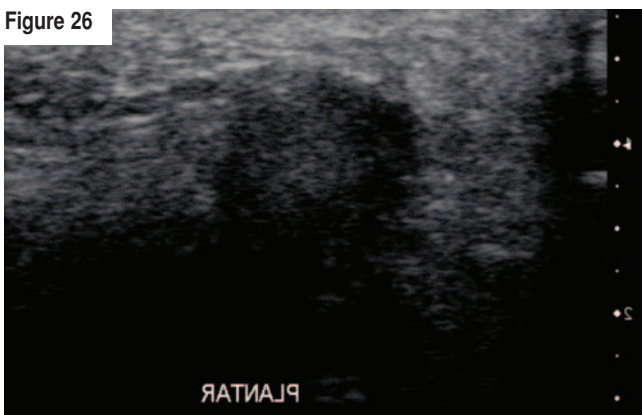


Figure 27

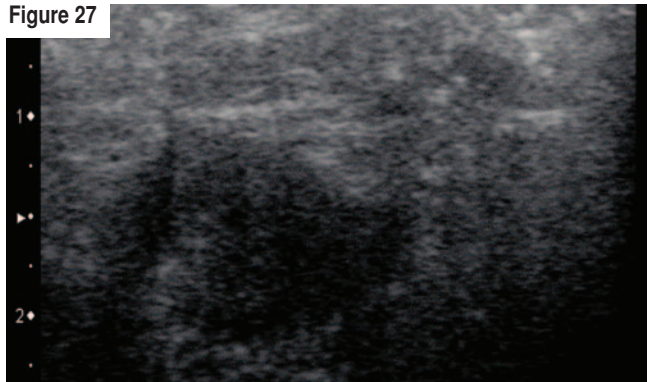
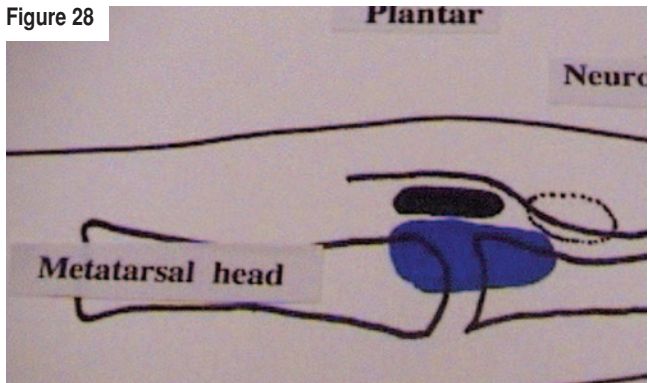
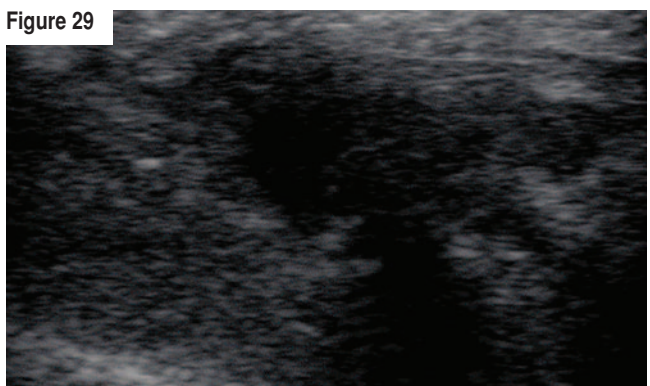


Figure 28



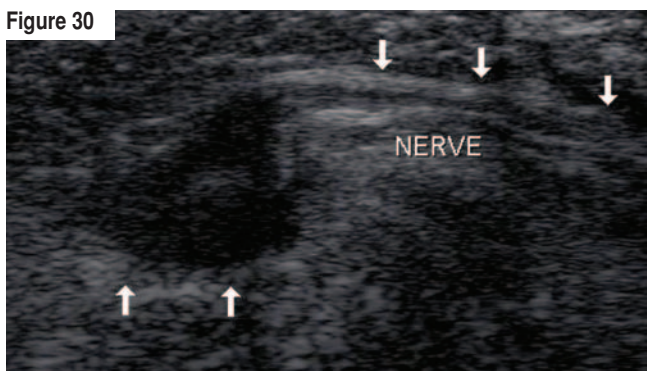
**Bursa**

Figure 29



**Neuroma**

Figure 30



**Conclusion**

If you demonstrate a mass between the MT heads it would most likely be a bursa, look more distally towards the web space you can visualise the neuroma and plantar nerve. The most important thing to remember is that the nerve is located on the plantar surface of the MTP joint not between the MTP joints (Figures 6,7,8).

# Lactating adenoma – a case study

Deborah Moir

## Presentation

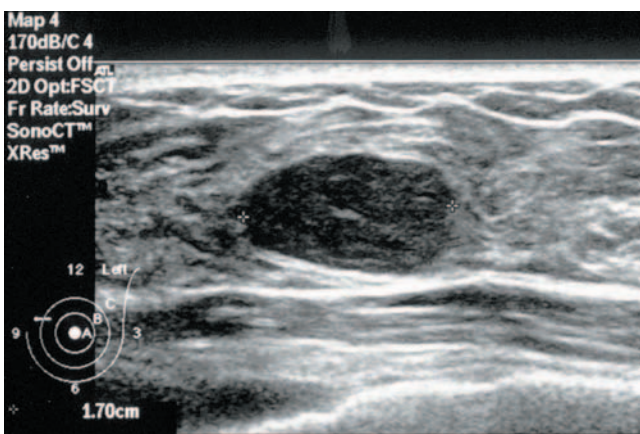
A 23-year-old woman presented to our department with a palpable lump in her left breast. The woman was pregnant at the time and had only noticed the lump since pregnancy.

## Ultrasound examination findings

As the woman was young and pregnant a mammogram was not performed. The lump was easily palpable, and both breasts were examined using an ATL 5000 and a 12–10MHz linear probe. The right breast was considered to be normal.

On scanning the left breast the palpable lump, which was situated medial to the left nipple, was found to be a solid well-circumscribed lesion measuring 2 x 1.7 x 1 cm. There were also three other lesions found within the left breast. Two, which measured 19 mm and 9 mm in maximum diameter and were situated inferior and medial to the left nipple, were also solid and well circumscribed. These lesions, at the time of the examination, were all felt to represent fibroadenomata due to their sonographic characteristics. However the fourth lesion, which was situated just superior to the left nipple and measuring 9 mm in maximum

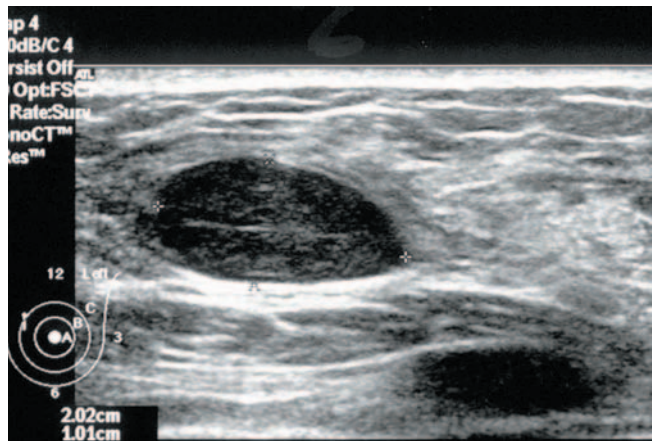
Figure 1 Palpable lesion 1



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Figure 2 Palpable lesion 2



diameter, was found to be solid with ill-defined margins. The aetiology of this lesion was uncertain. The differential diagnoses considered were;

- 1 An inflammatory lesion.
- 2 An ill-defined fibroadenoma
- 3 Carcinoma of the breast

The radiologist discussed these findings with the patient at the time of the examination and it was decided a fine needle aspiration should be performed of the fourth lesion.

## Fine needle aspiration technique

The procedure was explained to the patient, who was placed in the right posterior oblique position with a sponge pad underneath her left shoulder. Using a sterile technique and under ultrasound guidance a 22 gauge needle was passed into the lesion and aspiration performed. Two separate needle passes were performed, with aspiration, and the resulting slides were sent for cytology evaluation.

## Cytology findings

Specimen – FNA left breast

Description – 2 wet fixed slides, 2 air-dried slides, 6mL of HMS

Microscopic – this is a highly cellular specimen containing clusters of malignant glandular epithelial cells consistent with carcinoma of the breast.

We received this report and following our protocol, the radiologist contacted the referring doctor to ensure the results had been received. The patient was referred to a breast surgeon.

## Patient follow-up

Seven months later the patient re-presented at our centre for a routine follow-up scan. She was now post-partum and post

surgery. A bilateral breast ultrasound was again performed. The ultrasound was deemed to be normal and no lesions were found in either breast. On examining the patient, she was found to have a small scar above the left nipple, and on questioning the patient, she informed us she was counselled postoperatively that the lesion was actually benign.

### Pathology discussion

The laboratory was contacted and the patient's surgical pathology report was obtained.

A frozen section of two areas of the left breast, which had been surgically removed, had been performed. One area was the suspicious lesion superior to the nipple and the other was the palpable lesion medial to the nipple.

The sections are described macroscopically to contain tan coloured, firm nodules consistent with a lactating breast.

Microscopically the areas are said to both be consistent with lactating adenomas. The one above the nipple did not have a capsule, whereas the palpable lesion was partially encapsulated.

### Lactating adenoma

This is a tumour of usually young females who are either pregnant or breast-feeding. It is a variation of a fibroadenoma.

A fibroadenoma consists of delicate fibroconnective tissue stroma with glandular structures within. The glandular lining consists of a single or multiple layers of epithelial cells. When the entire tumour consists of glands with very little intervening stroma, this is termed a tubular adenoma. Lactating adenomas are similar to tubular adenomas, but occur in the pregnant or lactating breast and are often multiple. The lactating adenoma is often encapsulated and lobular. It demonstrates secretory activity that varies according to length of pregnancy and initiation of lactation. A small proportion of these adenomas show evidence of infarction. These lesions are considered to be benign, though can occur simultaneously with a carcinoma. They are not considered a risk factor for the subsequent development of cancer.

### Discussion

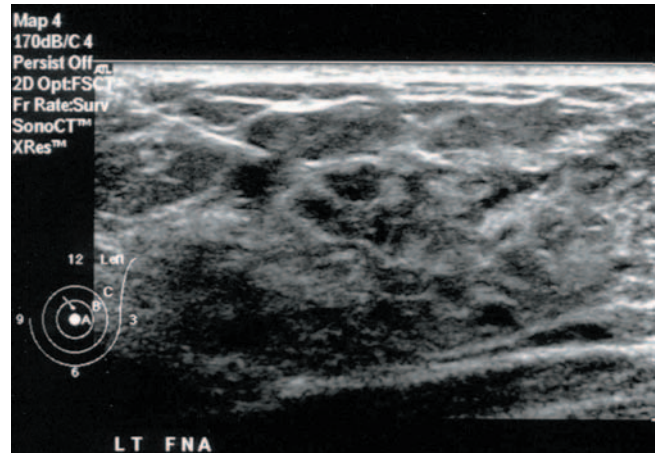
The initial diagnosis of malignancy from the fine needle biopsy was probably made for two reasons. First, on the pathology request slip, no reference to the patient's pregnant state was made. Second, these tumours grow quite rapidly and can demonstrate very similar features to malignancy such as large nucleoli and active chromatin.

There are a variety of theories as to the aetiology of this disease:

- There is relative vascular insufficiency caused by the sudden increase in breast tissue proliferation and secretory activity, which may lead to a thrombotic event, but this has only been seen in a few cases.
- Vasculitis or trauma may be the cause, though there is no data to substantiate this.
- Apoptosis or programmed cell death occurs in a normal breast during the menstrual cycle and is influenced by pregnancy and lactation due to the high level of cell turn over. The high cell proliferation and apoptosis peak at the first trimester, which could lead to the histological appearance of necrosis.

The treatment of these lesions is often administration of

Figure 3 Fine needle aspiration



bromocriptine to shrink the lesion followed by surgery. Bromocriptine is a dopamine agonist and reduces prolactin secretion by its effects on the anterior pituitary. Bromocriptine reduces the size of the tumour and may even cause it to disappear. This drug does, however, suppress lactation and the patient must be made aware of this fact prior to treatment as she may refuse the drug if she wishes to continue breast-feeding.

### Acknowledgement

Thanks to Dr Ann Finney pathologist, Mater health services, and Dr Peter Lush Queensland X-Ray.

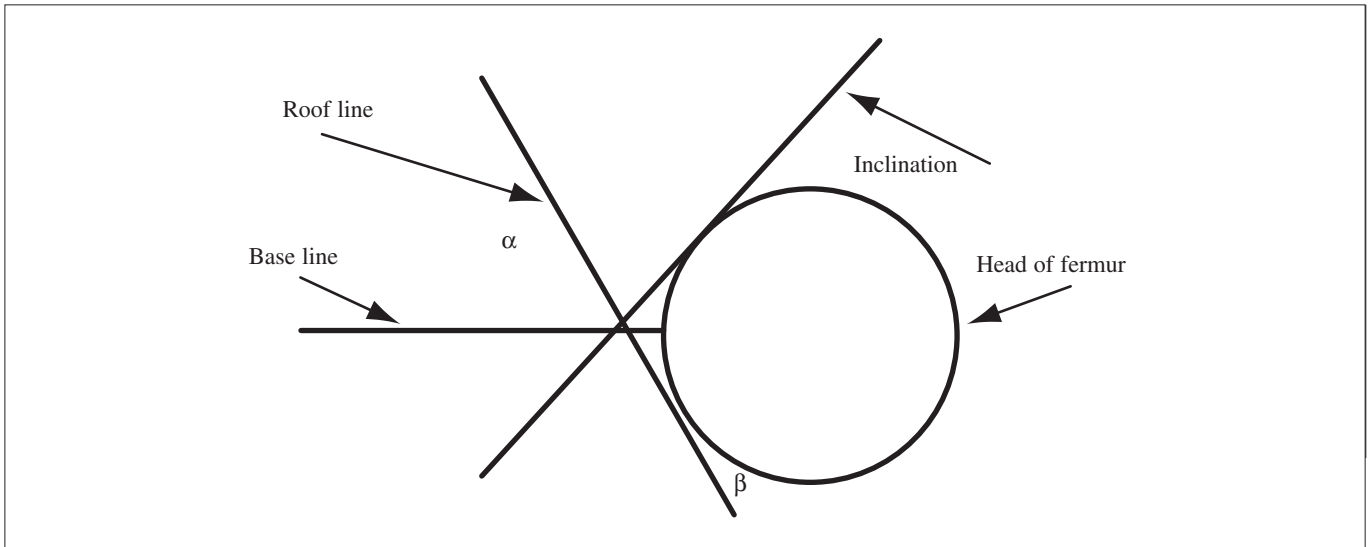
### References

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6. Correspondence.

# Neonatal Hip Ultrasound

# DRAFT WORKSHEET

NAME		
MRN		
CASE No.	Date...../...../.....	DOB...../...../.....



	$\alpha$	$\beta$	FHC %	CONCLUSION
<b>Rt HIP</b>				
<b>Lt HIP</b>				

Graf's Classification	$\alpha$	$\beta$	Consequences
Type 1	> 60	< 55	No Therapy
Type 2a	50-59	> 55	Physiological immaturity < 3 months old – Follow up
Type 2b	50-59	> 55	> 3 months – Treatment
Type 2c	43-49	< 77	Critical Zone
Type 2d	43-49	> 77	Subluxed – labrum everted
Type 3	< 43	> 77	Dislocated
Type 4	< 43	> 77	Trapped between femoral head and ilium – treatment

FHC	Consequences
> 50%	Normal
49-40%	Possible dysplasia in newborns
49-40%	Dysplasia in infants greater than 4 months
39-10%	Subluxation
< 10%	Dislocation

SONOGRAPHER
Date...../...../.....

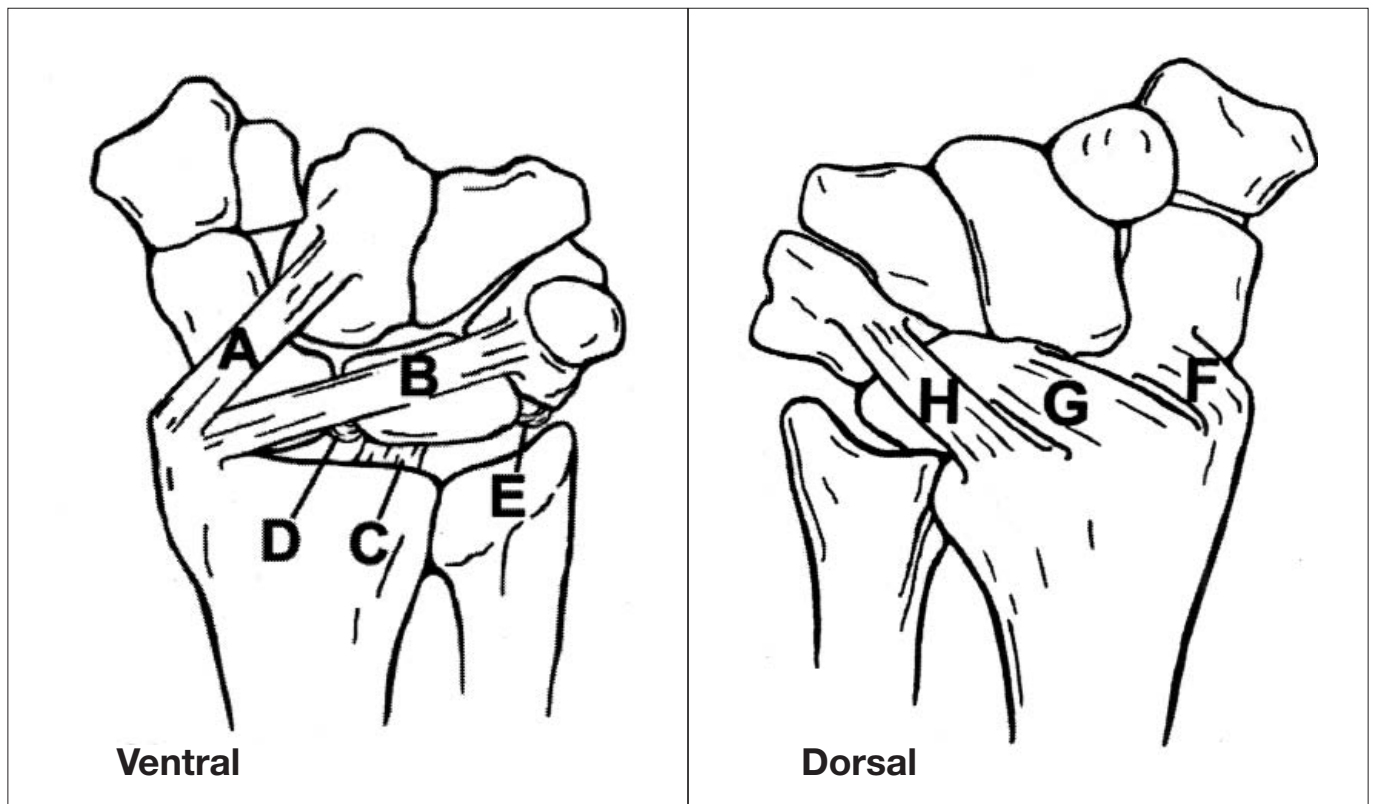
# Scapho-Lunate

# DRAFT WORKSHEET

NAME		
MRN		
CASE No.	Date...../...../.....	DOB...../...../.....

<b>TECHNICAL QUALITY</b>	Poor	Good	Excellent
--------------------------	------	------	-----------

Notes: The normal scapho-lunate ligament is a hyperechoic triangular structure between the scaphoid and lunate bones.  
 A liberal amount of transmission gel should be used in place of the standoff pad.  
 The dorsal aspect of the scapho-lunate articulation is imaged in the transverse plane.  
 To identify this articulation, begin the sonographic examination in the transverse plane over the dorsal radial tubercle (Lister's tubercle), identified as hyper-echoic with posterior acoustic shadowing.  
 The transducer is advanced distally until the proximal pole of the scaphoid bone is visualized distal to the radio-carpal joint space.  
 The transducer is then moved in an ulnar direction to visualize the adjacent hyper-echoic cortex of the lunate bone.  
 The dorsal scapholunate articulation is characterized by triangular space.



Ventral perspective shows radiocarpal (extrinsic) ligaments	Dorsal perspective shows radiocarpal ligament
A = radioscapocapitate ligament	F = radioscapoid portion
B = radiolunotriquetral ligament	G = radiolunate portion
C = radiolunate ligament and intercarpal (intrinsic) ligaments	H = radiotriquetral portion
D = scapholunate ligament	
E = lunotriquetral ligament	

SONOGRAPHER
Date...../...../.....

# Book reviews

## Atlas of Chest Sonography

Editors G Mathis and KD Lessnau  
 Publisher Springer-Verlag Berlin 2003  
 Pages 179, with 256 figures and 447 illustrations  
 Cost \$A178.00  
 ISBN 3-540-44262-6

This book is intended as a pictorial atlas aimed mainly at pulmonary physicians. It is edited by two physicians, and chapters have been written by German, Austrian or Dutch internists. The stated aim of one of the editors is that 'the application of sonography will become democratised and it will be used by many trainees and practicing pulmonologists, radiologists and internists'. The same editor asks the question 'Why should the sonogram remain exclusively within the Department of Radiology . . .?' Lovers of the medical 'turf battle', read on.

Its subject is approached in four broad areas – equipment and artifacts (three chapters), thoracic regional imaging (chest wall, pleura, peripheral lung and mediastinum (four chapters), interventional chest sonography (one chapter) and clinical problem-oriented chest sonography (two chapters).

The writing style varies between chapters, some are smooth-flowing and easily readable, others are hampered by obvious translation problems, the best example being multiple references to the 'dignity' of lymph nodes in Chapter 2.

Similarly, the quality of illustrations varies, with several chapters containing beautiful images, which are clearly labelled and described, and others where mislabelling or lack of labelling is obvious. In several areas I felt this to be a major oversight, for example, in the illustrations of chest wall invasion by tumours, which need more meticulous labelling to adequately illustrate the subtle sonographic findings. The overall standard

however is high – high enough to reassure a reviewing radiologist that such images are unlikely to be obtained using a portable device in a pulmonologist's rooms plugged into an 'expansion slot' in a palm pilot (another editorial aspiration).

Several uses for ultrasound which are probably seen infrequently in Australian hospitals are discussed, including its use in diagnosing rib fractures (for which it is much more sensitive than plain films and which may prove useful in the settings of atypical chest pain and planning for surgical fixation of rib fractures) and in biopsy of mediastinal and peripheral lung lesions. My only criticism of the latter is that the literature used to promote the real-time advantages of US over CT is from the early 1990s and takes no account of the 'CT fluoroscopy' capabilities of modern multi-slice scanners.

The chapter on endoscopic ultrasound and biopsy made interesting reading, as this modality is likely to establish its place as a complementary procedure to mediastinoscopy and CT for the staging of thoracic neoplasms. Contentious assertions, such as ultrasound as first line imaging in chest pain or suspected pulmonary embolus are a welcome stimulus to 'think outside the square' and are well referenced for further reading.

Overall, the authors have achieved their main aim of illustrating the spectrum of chest disease visible with ultrasound.

This book would be useful as a reference text; it is a timely reminder that thoracic ultrasound is an underused modality and that there is nothing better than a looming turf battle to spur radiologists into remedying such a situation.

**Dr Stefan Heinze**

Consultant Radiologist  
 The Royal Melbourne Hospital

## Radiology Illustrated: Uroradiology

Author/ Editors WH Bush J Y Cho, JW Chung et al.  
 Publisher Saunders (Elsevier Science) 2003  
 Cost \$A368.00 approx

This book of 938 pages includes approximately 3000 illustrations, it is designed to be a practical illustrated guide to uroradiology. It is very good – even with the \$A368.50 price tag. It is not exclusively an ultrasound atlas, but includes all imaging modalities in appropriate proportion.

The book is well set out over 30 chapters, making it simple to locate specific topics. Each chapter begins with a brief text, which is useful to a point, but by no means comprehensive.

The real value lies in the images. Each image has a succinct legend, and the images are appropriately labelled and arrowed. The cases are generally of a very high quality in terms of subject, and are generally very good in terms of image quality.

Some fantastic examples of common and uncommon conditions are included. A minor criticism is that all the images are small, and on occasion it is difficult to see the abnormality. Each image is displayed in black and white, though the same images are also displayed in colour in a separate section (presumably this was done to reduce the cost of producing the book). Recent imaging advances are included, such as MRI, helical CT for urothelial tumours and virtual cystoscopy.

Sections on renal tuberculosis, complicated renal cysts and retroperitoneal tumours are particularly good, but no one section is below par. It is hard to find major criticisms, however the stone and renal obstruction sections don't have too many examples of non-contrast CT and the MRI of the



prostate doesn't include spectroscopy.

Overall I found this to be an excellent book covering the whole spectrum of uro-radiological imaging. It would be particularly useful for registrars approaching exams, and as a reference book in a busy department.

**Dr Rick Dowling**

Consultant Radiologist

The Royal Melbourne Hospital

**Case Review: Obstetric and Gynecological Ultrasound. Case Review Series.**

Pamela Johnson, Alfred B Krutz

Mosby 2001

ISBN 0323008607

This book is one of a series of case review volumes available from the publishers, Mosby. It is a soft cover A4 size book of 194 pages and is well priced at \$US 39.95.

It is set out in a similar fashion to the General and Vascular Ultrasound edition with 127 cases divided by increasing complexity into Opening Round, Fair Game and Challenge sections.

There are 2–3 cases per page with the answers and references on the reverse. This has the advantage of not having to continually flip to the end of the book to check the answer.

There are usually four questions per image series, and definitive answers are supplied along with a one or two paragraph comment on the case, with at least one (usually more) journal reference.

Some of the cases are quite difficult (especially those related to the fetal heart) and are not easy to determine from the images supplied. However, the quality of the images is good overall.

Each case is an excellent learning tool and the related references are extremely useful.

Overall this book would be a valuable addition to any library and especially useful to students, lecturers and others preparing for exams in the field of obstetric and gynaecological ultrasound.

**Alison Lee-Tannock**

Senior Sonographer

Mater Mothers' Hospital

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# Fetal measurements requirements

The measurements required for a fetus may seem to be a very basic skill, and common knowledge, but it must be reinforced to all students attempting DMU Practical exams.

It is vital that all ultrasound fetal measurements must be performed precisely and meticulously every time they are done. It is only in this manner that dating errors can be minimised. An over-measurement of fetal abdominal circumference and head circumference may be the difference between the measurements crossing a centile line in a later scan or fetal growth remaining within their centile line.

All images must be optimised with close attention to depth, focus and TGC, sector width, and zoom functions.

All measurements should be done at least twice.

## Abdominal circumference

First, the abdominal circumference must be ROUND. If it is oval the measurement is greater than it should be. If the image is oval then unfreeze the image and try again.

Kidneys must not be included in

the image. If you can see the kidneys then you are too low in the abdomen. Stomach must be visualised, along with the middle third of the umbilical vein. The measurement is made at the outside of the skin edge.

## Bi parietal diameter and head circumference

Bi parietal diameter and head circumference are measured at the same level.

You must see cavum septum pellucidum, thalami and falx cerebri in the image. The falx of the brain must be equidistant from the upper and lower skull, with one side of the brain a mirror image of the other. The measurement is taken above the level of the roof of the orbits, and must not include any posterior fossa. If the posterior fossa is showing in the image the head circumference is over estimated.

The measurement is performed at the widest part of the head, from outer table to inner table. (The cavum septum pellucidum appears as an empty box, the thalami resemble a butterfly and the falx is a straight white line).

## Femur length

The femur must be at 90° to the ultrasound beam, any other angle can lead to inconsistencies in the measurement.

The proximal femur must be measured; this means the femur closest to the transducer.

Do not measure the distal femur (the one furthest from the beam), this is incorrect. The shaft of the femur must cast a shadow to prove you are measuring the full length of the bone.

Do not measure the epiphysis.

Do not measure the small side lobe artifact from the end of the shaft, you can visualise where the bone ends using the shadowing from the shaft, an artifact will not cause this shadow.

## Humerus length

The same principles of measurement of the femur apply to measurements of the Humerus. Again – the humerus must be at 90° to the beam.

The measurement must be of the proximal humerus, the one closest to the transducer.

It is only by adhering very strictly to the measurement criteria that accurate and reproducible measurements

Figure 1 Correct abdominal circumference

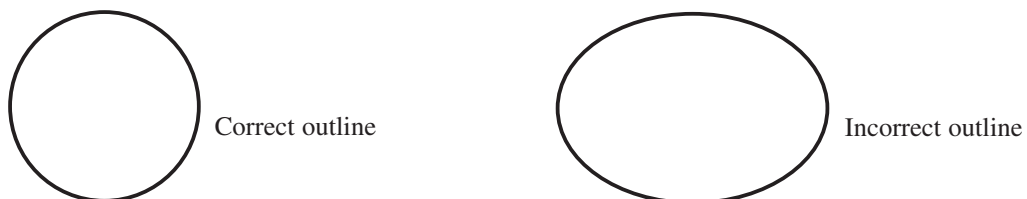


Figure 2 Correct abdominal circumference measurement

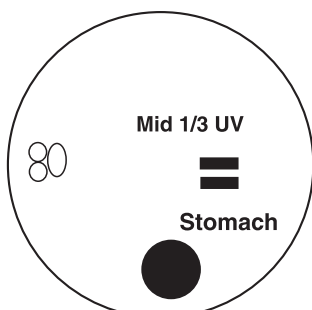


Figure 3 Ultrasound image correct circumference measurement



Figure 4 Ultrasound image of correct head image for BPD and HC measurement

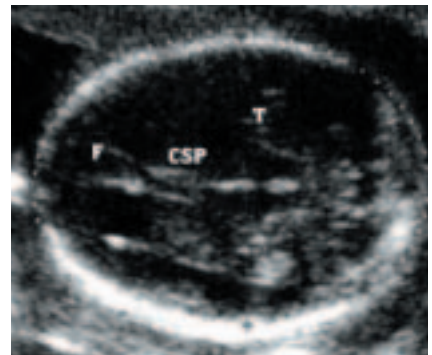


Figure 5 Correct head placement for BPD and HC measurement

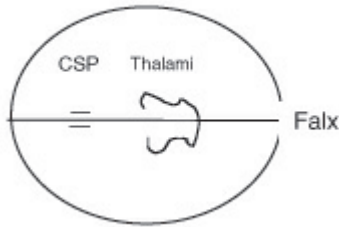


Figure 6 Graphic representation of correct femur visualisation for measurement

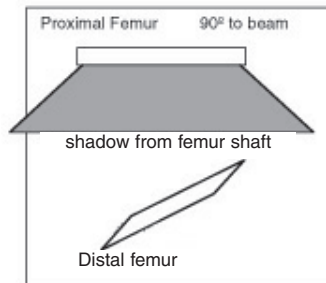
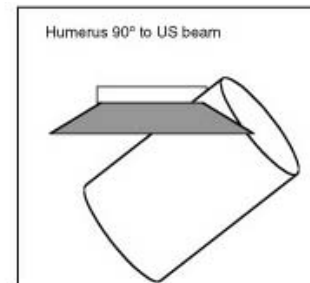


Figure 7 Graphic representation of humerus length measurement



of the fetus may be obtained. You cannot use a 'near enough is good enough' technique.

All ultrasound departments must produce comparable and accurate results. This can only be achieved by each sonographer maintaining the highest standards. Tutor sonographers must insist that all students maintain the same high standards at all times, and a quality assurance program may be helpful.

Figure 8 Ultrasound image of correct femur length measurement



Figure 9 Ultrasound image of correct humeral length measurement



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# DMU examination dates and venues

## Examination dates 2004

Part I and II Written Examinations

Saturday 31 July

Part II Objective & Standardised Clinical Examinations (OSCEs) and Oral Examinations:

Cardiac: Saturday 16 October

General: Saturday 23 October

Obstetric: Saturday 23 October

Vascular: Saturday 16 October

The DMU Board of Examiners will determine the locations for the OSCEs and Oral Examinations once the final candidate numbers, venue availability and Examiner requirements are known.

Candidates are also reminded that while the dates for the OSCE/Oral Examinations are fixed, all modalities will not necessarily be examined at every centre.

## Practical Examinations

Practical Examinations are normally conducted between 1 April and 31 October of the year in which the

candidate enrolls in the Part 2 Examination, at a time negotiated between the ASUM DMU Board of Examiners and the Clinical Practice at which the examination will be conducted.

Notification of the time and place of examination will be posted to candidates at least 18 working days prior to the Practical Examination.

The ASUM Board of Examiners will not normally accede to requests from candidates for changes to the date or time of examination.

## Venues 2004\*

Part I and II Written Examinations - Saturday 31 July 2004

Part II Objective & Standardised Clinical Examinations (OSCEs)\* and Oral Examinations

Cardiac - Saturday 16 October 2004

Venue - Brisbane (NSW, NT, NZ and Qld candidates)

Venue - Melbourne (Vic, SA and WA candidates)

General - Saturday 23 October 2004

Venue - Christchurch (NZ candidates)

Venue - Perth (WA Candidates)

Venue - Sydney (NS, Qld and Vic candidates)

Obstetric - Saturday 23 October 2004

Venue - Sydney (ALL candidates)

Vascular Saturday 16 October 2004 - Sydney

Venue - Sydney (ALL candidates)

Part II Practical Examinations:

Between August to October - Conducted at candidates' practices by Managers.

\*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.

# DDU exam dates and fees 2004

## Part I Examination Fee

A\$990.00 (includes GST) for ASUM Members A\$1,254.00 (includes GST) for Non members

## Part II Examination Fee

\$A1,760.00 (includes GST) for ASUM Members \$A2,024.00 (includes GST) for Non members

## Part II Casebook Fee

\$A330.00 (includes GST)

Application forms may be downloaded from the ASUM website at [www.asum.com.au](http://www.asum.com.au)

Fees quoted above are from July 1 2002 and may be subject to change.

## Information pertaining to the next examinations

2004 Part I The Part I Examinations for 2004 will be held on Monday 17 May 2004.

The Written Examination for Part II will be held on Monday 17 May 2004. The Oral Examination for Part II will be held on Saturday 19 June 2004 in Sydney.

The Oral Exam for Cardiology candidates will be in Melbourne on Thursday 17 June 2004.

## Results

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

The ASUM 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 Bulletin.

**Submissions are invited for the ASUM Annual Scientific Meeting contact ASUM on +61 2 9958 7655**

## WA Branch meetings

June 12/13 - Physics Weekend at RPH with Roger Gent/Mike Dadd

June 19/20 - Part 2 DMU Film Reading Weekend at RPH

June 23 - Branch Meeting RPH - Dr E Lee 'Ultrasound in First Trimester'

August 15 - Travelling Fellow Workshop in Bunbury - Venue TBA

August 17 - Travelling Fellow Workshop in Kalgoorlie - KRH

August 18 - Branch Meeting - Travelling Fellow at RPH - 'DVT Research Topic'

August 19 - Travelling Fellow at RPH - Tutorial for Part 2 Candidates

August 21 - Travelling Fellow Workshop in Broome - Venue TBA

November 22 - Xmas Branch Meeting at Lamonts (East Perth) - Dr R Hart - 'Ultrasound In Space'

For further information contact Elvie Haluszkiewicz or Marilyn Zelesco tel +61 8 9224 7076

# Giulia Franco Teaching Fellowships extends education for rural sonographers

In 2004 the Education Committee has appointed Shaun O'Regan as the Giulia Franco Teaching Fellow to Western Australia.

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 is in 2004.

Shaun O'Regan will conduct teaching clinics and/or lectures at these venues:

- August 15 – Bunbury
- August 17 – Kalgoorlie – KRH
- August 18 – Perth – Branch Meeting at RPH – 'DVT Research Topic'
- August 19 – Perth – RPH - Tutorial for Part 2 Candidates
- August 21 – Broome

The organiser contact in Western Australia is Marilyn Zelesco (marilynzelesco@rph.health.wa.gov.au).

Further details will be posted on the ASUM website [www.asum.com.au](http://www.asum.com.au)

Three Teaching Fellowships are awarded each year.

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](mailto:khenderson@asum.com.au)

Nominations and proposals should be addressed to:

**The Education Manager  
ASUM 2/181 High St  
Willoughby NSW 2068  
Australia**

and should be received before 22 November 2004.

## Chris Kohlenberg Teaching Fellowships 2004

In 2004 the Education Committee has appointed Peter Murphy as Chris Kohlenberg Teaching Fellow to New Zealand, and Dr Gary Sholler as Chris Kohlenberg Teaching Fellow to the ACT.

Further details of these programs will be published on the ASUM website: [www.asum.com.au](http://www.asum.com.au)

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.

The Fellowship has been awarded annually since 1998 to provide educational opportunities for members in New Zealand, Queensland and New South Wales, Northern Territory, Western Australia, South Australia and Tasmania.

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

Peter Murphy will conduct teaching clinics and meetings in Nelson,

Invercargill and Dunedin in November 2004. Further details will be published in the August *Ultrasound Bulletin*. The local organiser is Jillian Muirhead ([muirheadgj@xtra.co.nz](mailto:muirheadgj@xtra.co.nz)).

Gary Sholler will conduct foetal echocardiography teaching sessions at various venues in the ACT 28–30 October. The local organiser is Sue Caitcheon ([scaitcheon@cig.com.au](mailto:scaitcheon@cig.com.au)).

Further details will be published in the August *Ultrasound Bulletin* and on the ASUM website [www.asum.com.au](http://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](mailto:khenderson@asum.com.au)

Nominations and proposals should be addressed to:

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2/181 High St**

**Willoughby NSW 2068 Australia**  
and should be received before 22 November 2004.

## NZ Ultrasound Video Library

Due to the lack of a corporate sponsor, the NZ ASUM Branch Committee is now operating the Ultrasound Video Library.

To cover the cost of mailing the videos, we will be introducing a charge for ASUM members of \$10 for up to three videos for a two-week period.

This charge includes return postage. For non-ASUM members the charge will be \$NZ20. Please make cheques payable to NZ ASUM.

We will be offering an amnesty until 1 June 2004 on any videos that are currently outstanding. We would appreciate their return, no questions asked, so other sonographers may benefit from them. In future any borrowers who do not return videos will receive an account for the replacement cost.

We wish to thank Schering for their generous support of the library over the past five years. Please email your video requests to:

**Jo McCann**  
[jujo@clear.net.nz](mailto:jujo@clear.net.nz)

The NZ video library may be viewed at <http://www.asum.com.au>

# ASUM invites scientific papers and posters for ASUM 2004

You are invited to submit abstracts for consideration by the Organising Committee for presentation at ASUM 2004. The program will include both scientific papers and posters. The Organising Committee encourages registrants to submit either or both.

Scientific papers will be of 15 minutes duration including 5 minutes discussion time.

Poster presentations are an extremely effective way to present information at a scientific meeting. It is an ideal way to present research papers and case studies and has proved to be a popular alternative to an oral presentation. The advantages are that

posters allow delegates to consider the material in their own time and are free to discuss any point informally with the presenter.

## Abstracts

Abstracts must be submitted no later than Friday 4 June 2004 and must follow the guidelines for abstract submissions as set out on the Meeting website. On-line submission is the meeting's only method for receipt of abstracts. Please visit the meeting website [www.icms.com.au/asum2004](http://www.icms.com.au/asum2004) for instructions on how to submit. Abstracts will be reviewed by the Meeting Scientific Committee.

Accepted abstracts will be presented in either oral or poster sessions and authors will be notified of abstract acceptance and the form of presentation six weeks after submission closure.

## Prizes

Papers submitted by registrants are generally eligible for a range of generous prizes offered by our corporate sponsors

## Registration rebate

Delegates who have a paper or poster accepted will receive a rebate of \$110 off their full registration.

# Adjudication of prizes and awards at the ASUM Annual Scientific Meeting

Due to the generosity of ASUM Corporate Members a range of prizes and awards are offered for proffered presentations at the Annual Scientific Meeting. Prizes and awards are for specifically designated purposes as described on the published list of prizes and awards.

Adjudication of the prizes and awards is undertaken by an Adjudication Panel, under the auspices of the ASUM Education Committee. The Adjudication Panel is normally chaired by the Chairman of the Education Committee and has, as its members, persons selected by the Chairman, in consultation with others as required. Selection of panel members is based on considerations including professional expertise, geographical location to ensure a balance of representation, a balance of sonologist, sonographer and scientist members, and willingness to participate.

In order to conduct the adjudication of prizes and awards in the most objective and equitable way guidelines for adjudication and scoring sheets are used by the panel.

The stated purpose of the prize or award is a major factor in determining the eligibility of contributions for a particular prize or award.

For the purpose of prizes and awards, contributions to the scientific program are broadly categorised into 4 groups:

### 1 Oral presentation of a descriptive clinical or literature review type

These may include a case study description, the description of a new technique or a literature based review of a particular topic.

### 2 Oral presentation of original research

This type of presentation will typically describe the methodology, results and conclusions of scientifically conducted, original research.

### 3 Poster presentation of a descriptive clinical or literature review type

These may include a case study description, the description of a new

technique or a literature based review of a particular topic.

### 4 Poster presentation of original research

This type of presentation will typically describe the methodology, results and conclusions of scientifically conducted, original research.

Eligibility for particular prizes and awards is based on the nature of the presentation, professional category of the presenter and other criteria as described in the relevant prize or award description. In submitting a presentation for consideration for prizes and awards, contributors are advised to read the list of prizes and awards, and their descriptors, determining the eligibility of contributions for a particular carefully

### Adjudication guidelines

The following lists the components of a presentation that are considered by the adjudicators during assessment. The categories and suggested weighting of each component are guides only may be modified as appropriate by the adjudicators.

# Adjudication guidelines

## 1 Oral presentation of a descriptive clinical or literature review type

### Introduction

*Suggested weighting 5%*

Acknowledges Chair and audience  
Sets the scene, why topic was chosen  
Aims/ hypothesis/ purpose clearly stated

### Content

*Suggested weighting 50%*

Describes the problem/ issue/ technique in detail  
Discussion relates to, and is supported by relevant literature  
Literature is appropriate and current  
Comprehensive coverage  
Relates topic/ issues to local context/ conditions

### Conclusion

*Suggested weighting 5%*

Summary of discussion/ major points  
Outlines recommendations for future work

### Presentation

*Suggested weighting 10%*

Clear and audible  
Systematic structure, references cited appropriately  
Slides well sequenced, relate to verbal text and easily viewed  
Well timed

### Originality/ Value of topic

*Suggested weighting 30%*

The topic shows an originality of approach  
The topic is relevant and beneficial to the profession

## 2 Oral presentation of original research

### Introduction

*Suggested weighting 5%*

Acknowledges Chair and audience  
Sets scene – refers to literature and – work already done in the field

### Methodology

*Suggested weighting 10%*

Describes the materials and methods used  
Describes study design  
Describes sampling methods  
States any variables

### Results

*Suggested weighting 20%*

Presented clearly and concisely  
Appropriate use of statistics  
Results are valid

### Discussion

*Suggested weighting 20%*

Outlines limitations of study  
Original thought/ analysis of results is evident

Relates to, and is supported, by relevant literature

### Conclusion

*Suggested weighting 5%*

Summary of findings  
Outlines any recommendations for future work/ action

### Originality/ Value of research

*Suggested weighting 30%*

The topic displays an originality of topic/ approach  
The research is relevant and beneficial to the profession

### Presentation

*Suggested weighting 10%*

Clear and audible  
Systematic structure, references cited appropriately  
Slides well sequenced, relate to verbal text and easily viewed  
Well timed

## 3 Poster presentation of a descriptive clinical or literature review type

### Introduction

*Suggested weighting 5%*

Sets scene – refers to literature and work already done in the field

### Content

*Suggested weighting 50%*

Indicates why topic was chosen  
States aim clearly  
Describes the problem/ issue/ case in detail

Approach to problem/ issue/ technique is valid

Discussion relates to, and is supported by, current literature

Original thoughts on topic are evident

### Conclusion

*Suggested weighting 5%*

Presents summary of findings  
Outlines any recommendations for future research/ action

### Design

*Suggested weighting 10%*

Logical, easy to follow  
Information presented concisely, references cited appropriately  
Text eye catching and easily viewed  
Important points well illustrated

### Originality/ Value of topic

*Suggested weighting 30%*

The topic displays originality of topic/ approach  
The research is relevant and beneficial to the profession

## 4 Poster presentation of original research

### Introduction

*Suggested weighting 5%*

Sets scene – refers to literature and work already done in the field  
Indicates why topic was chosen  
States aim/ hypothesis clearly

### Content

*Suggested weighting 50%*

Methods clearly outlined  
Results clearly presented with appropriate and valid use of statistics  
Outlines limitations of study method  
Original thought/ analysis of results is evident

Discussion relates to, and is supported by, relevant literature

### Conclusion

*Suggested weighting 5%*

Presents summary of findings  
Outlines any recommendations for future research/ action

### Design

*Suggested weighting 10%*

Logical, easy to follow  
Information presented concisely, references cited appropriately  
Text eye catching and easily viewed  
Important points well illustrated

### Originality/ Value of topic

*Suggested weighting 30%*

The topic displays originality of topic/ approach  
The research is relevant and beneficial to the profession

### Best sonographers research presentation award

Value \$2000

Sponsored by Philips Medical Systems

To be awarded for the best proffered research paper by a sonographer

### Best research presentation award

Value \$1500

Sponsored by Siemens

To be awarded for the best proffered research paper

### Best clinical presentation award

Value \$1000 plus a shield

Sponsored by Siemens

To be awarded for the best clinical presentation proffered as a paper or poster

## BERESFORD BUTTERY TRAVEL GRANT RANZCOG RESEARCH FOUNDATION

*The Beresford Buttery Travel Grant for further training in obstetrical and gynaecological ultrasound has been provided from donations to the Beresford Buttery Trust Fund, to commemorate the outstanding contribution of the late Beresford Buttery to the development of obstetrical and gynaecological ultrasound.*

**Conditions of the award** The Fellowship shall be in the form of a grant to assist the successful applicant to travel to any country for the purpose of making a particular study of any scientific, research or clinical subject relating to the practice of obstetrical or gynaecological ultrasound. It shall not be awarded for the purpose of assisting the applicant to gain a postgraduate degree.

**Eligibility** The travel grant is open to medical graduates who are committed to a career providing obstetrical and/ or gynaecological ultrasound services in Australia or New Zealand, and who are normally resident in Australia or New Zealand.

**Tenure** There is no requirement as to a period of tenure for the overseas visit.

**Application** Applications are to be submitted using the RANZCOG Research Foundation Application Form. The date for receipt of applications is 30 June 2004. Applications must be accompanied by two written references commenting on the personal, clinical and scientific suitability of the candidate to undertake the proposed visit; and confirmation of the study visit placement from the supervisor for the placement. Applications are assessed by the Scholarship Selection Committee of the RANZCOG Research Foundation, with input from the Australasian Society for Ultrasound in Medicine.

**Stipend and allowances** The grant shall be used towards air travel/ accommodation to and from the place of study to the value of \$A3000.00

### Report on the Fellowship

The successful applicant shall agree to submit a report on his/ her work within three months of his/ her return. The report is to be submitted to the Research Foundation and the Australasian Society for Ultrasound in Medicine. This report will be reviewed by the Board of Directors and the Scholarship Selection Committee of the RANZCOG Research Foundation. The Beresford Buttery Travel Grant provided by the RANZCOG Research Foundation/ ASUM is to be acknowledged in any publication or thesis resulting from work undertaken during the period of study by stating that the author was the recipient of the Beresford Buttery Travel Grant during a particular year. A copy of any published article arising from research carried out under the Beresford Buttery Travel Grant is to be submitted to the RANZCOG Research Foundation and the Australasian Society for Ultrasound in Medicine when available.

**Details of the Beresford Buttery Travel Grant and the application form are available on the RANZCOG website at:**

[www.ranzcog.edu.au](http://www.ranzcog.edu.au)

or contact Carmel Walker

tel +61 3 9412 2926 or +61 3 9417 1699

fax +61 3 9415 9306

**RANZCOG RESEARCH FOUNDATION**

(incorporating the Arthur Wilson Memorial Foundation)

c/o The Royal Australian and New Zealand College of Obstetricians and Gynaecologists

254-260 Albert Street East Melbourne 3002 Australia



**THIS GRANT IS DISTINCT FROM THE ASUM BERESFORD BUTTERY OVERSEAS TRAVEL GRANT FOR DETAILS SEE BELOW**

## 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) or have been awarded the DDU or DMU (or equivalent) within the last 10 years (since 31 December 1993).
- 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; and
- 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 25 June 2004** to:

**GE Beresford Buttery Overseas Traineeship  
Australasian Society for Ultrasound in Medicine  
2/ 181 High Street  
Willoughby NSW 2068 Australia**



**GE Medical Systems  
Ultrasound**



# Chris Kholenberg Teaching Fellowship report 2003

It was a thrill and honour to be awarded the Chris Kholenberg Teaching Fellowship for 2003. To speak and work with sonographers in rural South Australia was an excellent opportunity to experience the daily referral base in busy remote hospitals.

Visiting both Mt. Gambier and Whyalla hospitals gave me a better appreciation of what sonographers do on a day to day basis, with at times limited information and resources to call upon.

The sonographers I had the pleasure of working with in both areas have a good work ethic and the ability to do everything from OBGYN, general MSK and vascular.

They know that those patients with positive diagnoses will eventually go to the bigger tertiary hospitals, however to get the initial diagnosis right is a source of great satisfaction and achievement. My goal was to give a

little extra vascular information to what I found was a good knowledge base to start with.

On a personal note, I would like to thank Lyn Muir and staff at Mt. Gambier, Leanne Murphy and staff at Whyalla Hospital for their warm hospitality and to the sonographers who travelled from outside those areas to come to my lectures and workshops. Thank you also to Stephen Bird, Rosie Franklin and Ian Murphy (GE) for their hospitality and organisation while in Adelaide.

The lectures in Adelaide were well attended despite SA school holidays with a chance to share current vascular practices with the locals.

A special thank you also to GE for their continued support of this award, to keep the Chris Kholenberg passion for education a 'reality' and not just a memory.

## New jobs for Hassall and Pemble

Commencing Monday 24 May 2004 Ms Lynette Hassall will be appointed as Lecturer in the School of Physical and Chemical Sciences, Faculty of Science, QUT.

Lynette's role is as Program Coordinator and Lecturer in the post-graduate Diploma of Medical Ultrasound programs run by QUT from the Gardens Point Campus in Brisbane.

Dr Lucia Pemble who currently holds this position will be Senior Lecturer at Griffith University at Nathan. Lucia has been appointed Program Convenor of the Postgraduate Masters of Science in Clinical Physiology and Undergraduate Convenor for Human Physiology within the School of Biomolecular and Biomedical Science.

Both Lynette and Lucia will continue clinical sonography and are involved heavily with ASUM in the society's academic and examination activities; Lynette as a Practical Examiner and Lucia as Secretary of the ASUM DMU Board of Examiners.

We wish them well.

### ASUM Chris Kohlenberg Teaching Fellowships 2004 and 2005 Sponsored by GE Medical Systems Ultrasound

In 2004 the Education Committee plans programs in the Western Australian and New Zealand branches for the Chris Kohlenberg Teaching Fellows. Further details of these programs will be published in the Ultrasound Bulletin and on the ASUM website: [www.asum.com.au](http://www.asum.com.au)

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 to provide educational opportunities for members in New Zealand, Queensland, New South Wales, Northern Territory, Western Australia, South Australia and Tasmania. It is named to commemorate Dr Chris Kohlenberg, who died while travelling to educate sonographers.

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](mailto:khenderson@asum.com.au)

Nominations and proposals should be addressed to:

**The Education Manager  
ASUM 2/ 181 High St  
Willoughby 2068 NSW  
Australia  
Submissions should be received by  
22 November 2004**



GE Medical Systems  
Ultrasound

### ASUM Giulia Franco Teaching Fellowships 2004 and 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 is in 2004.

Further details are on the ASUM website [www.asum.com.au](http://www.asum.com.au)

Three Teaching Fellowships are awarded each year.

Nominations and proposals should be addressed to:

**The Education Manager  
ASUM 2/ 181 High St  
Willoughby 2068 NSW  
Australia  
Submissions should be received  
by 22 November 2004**

**TOSHIBA**

# DDU/DMU Preparation Course 2004

University of New South Wales: 4–8 February



Instruction to reading ultrasound images

The 2004 DDU/DMU Prep Course was held over five days at the Matthews Building at the University of New South Wales from 4–8 February.

The DDU program was particularly full, given that this section of the Preparatory Course runs for only three days. The increased attendance numbers is encouraging and reflects the growing interest in the program.

There was a strong emphasis on ultrasound physics. In response to the high demand for more Q & A sessions, extra time was programmed for interactive sessions between candidates and lecturers. The final outcome was a good mix of theory lectures and tutorials and examination preparation Q & A sessions where individual concerns and enquiries were discussed and resolved. The course evaluations were almost unanimous in recommending this approach.

DDU candidates sought more physics content and were extremely appreciative of the extra time that the physics lecturers, Roger Gent, Mike Dadd and Dave Carpenter, were able to volunteer. Evaluations reflected this and requested that in future preparatory courses there be a greater representation of DDU Examiners with Part

One experience. Overall, the DDU candidates appeared satisfied with the program as presented and recommended the course as a necessary part in their examination preparation.

The DMU Preparatory Course, run over five days, was also well attended by cardiac and general candidates. A modified Vascular Part I and Part II program was run but the numbers did not justify the full round of lectures.

There was the usual interest in the perennial favourite of physics, but 2004 will see the introduction of Legal and Ethical Issues and it was this section of the program that was most well attended. Part II candidates will be examined in legal and ethical issues as part of the Written Examination. All Part II candidates will answer a compulsory legal and ethical section as part of their first essay question and those who attended the Preparatory Course are now in a better position to address this new content in their examinations.

The DMU Preparatory Course provides candidates with a valuable opportunity to clarify their examination preparation and foundations upon which to build for further study. The anecdotal evidence suggests that the candidate pass rate is significantly

higher for candidates attending the Preparatory Course than those who do not.

Cardiac numbers were up this year and Louise Morris, Cardiac Convenor, put together a full and varied program.

Special thanks must go to GE Ultrasound who made available their latest cardiac machine for the course duration along with the expert services of Danika Southwell who assisted the cardiac lecturers.

The General and Vascular Convenors, in acquiring the assistance of Toshiba, were able to provide a comprehensive and full program for their respective candidates. A special thank you goes to Toshiba who generously provided an Aplio 80 and the services of Rod Pry for the duration of the Prep Course to assist the general and physics lecturers.

Cardiac, general and vascular candidates were given the opportunity to fully explore the physical anatomy and pathological aspects of their respective syllabi as well as being fully grounded in the pertinent aspects of physics, clinical anatomy and learning styles and study skills.

The services of Danika and Rod were greatly appreciated by all the candidates. Their professional demonstrations of their respective machines and generously giving of their time to answer candidates' questions and in assisting lecturers with demonstrations and 'Knobology' lectures was greatly appreciated. Without the generous support of lecturers, examiners, sonographers, participating medicos, machine manufacturers (such as GE and Toshiba) and the dedication of the convenors and ASUM staff, events such as the DDU/DMU Preparatory Course would not be possible.

A special thank you must go to the Convenors, Margaret Condon (general and obstetric), Louise Morris (cardiac) and Lucy Taylor-Turner (vascular), whose unstinting generosity and attention to detail made the 2004 DDU/DMU Preparation Course such a valuable education experience for preparing candidates.

# 400 attend successful Gold Coast Multidisciplinary Workshop

*Roslyn Savage*



**Dr Liliith Valentin**

The 2004 Multidisciplinary Workshop was held in conjunction with the Annual Obstetrics and Gynecology Symposium at Conrad Jupiter's Hotel on the Gold Coast. The meeting commenced with the Nuchal Translucency course on Thursday 4 March and was attended by about 420 delegates.

Dr Stephen Sinnot convened the very interesting and educational Obstetrics and Gynecology Symposium. The keynote speaker – Prof Lil Valentin from Sweden headed a faculty of excellent local speakers covering a wide variety of subjects including 3D ultrasound.

A workshop such as this cannot be successful without a number of willing patients. We thank Sue and Tony Davies and Sally Ashwin from the Australian Institute of Ultrasound for giving their time to coordinate their group of patients throughout the meeting. They even found a patient with a Morton's neuroma for the MSK session.

I would also like to thank the coordinators for each of the disciplines.

Bonita Anderson and Cathy West organised and presented most of the Cardiac sessions. Yvonne Butcher put



**Attendance at presentations was excellent**

together a program of presentations and workshops on a wide variety of vascular topics. Deb Moir coordinated the women's health sessions which included two presentations by Dr Colin Furnival, who gave the surgeon's perspective on sentinel nodes and treatment of early breast cancer.

The Pediatrics presentations were well attended thanks to the excellent presentations by Allison Holley and Roger Gent.

The musculoskeletal sessions were mostly hands-on, covering shoulder,

hand, wrist and elbow, groin, and ankle and foot ultrasound.

Martin Necas gave several presentations, including two interesting talks on managing electronic teaching files and multimedia presentation of ultrasound images and videos as well as introducing the new ASUM On-line Handbook.

We were privileged to have two international guests at the meeting. Dr Daniel Makes, President of the Indonesian Society of Ultrasound in Medicine attended as a guest of ASUM, taking the opportunity to meet with The President and Council to discuss joint initiatives with ASUM. Dr Liliith Valentin attended as an invited speaker.

The meeting was organised and run by the ASUM staff. I would like to

thank Caroline Hong, Keith Henderson, Marie Cawood and James Hamilton for the considerable work that went into managing the meeting program, speakers, sponsorship, promotion and venue, and who were 'on deck' throughout the meeting ensuring that everything ran smoothly.

A meeting such as this would be possible without the sponsors of the meeting: Toshiba,

Siemens, Phillips and GE Ultrasound. Their support through the contribution of equipment and expert staff added a significant dimension to the workshop program.

The 2005 Multidisciplinary Workshop will be held in Melbourne providing members from the south with the opportunity to be involved either as a presenter or registrant.

**Roslyn Savage**  
Convenor



## New Year New Career

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## SOUTH WESTERN SYDNEY AREA HEALTH SERVICE

Applicants are to ensure that they satisfy the necessary registration/licensing requirements for appointment to the position. Please ensure that application addresses the essential and desirable criteria of the position and includes the names of three (3) referees. Criminal record checks will be conducted for all positions.

Please visit the Area's webpage at [www.swsahs.nsw.gov.au](http://www.swsahs.nsw.gov.au)

### LIVERPOOL HEALTH SERVICE

## SONOGRAPHER

(MRS LEVEL 4) F/T OR P/T

Inviting senior sonographer to join Feto-Maternal Unit Team at Liverpool Health Service. Three referees required of which two should be sonography related & less than 2 years old. Undertake provision of tertiary level specialised ultrasound services in High Risk Obstetrics & Gynaecology Unit along with 2 staff specialists, 2 midwives & 1 fellow.

**Essential:** Recognised Diploma or Graduate Certificate in Diagnostic Ultrasound. Post graduate experience in Obstetric Ultrasound. ASAR Accreditation (Sonographer). Demonstrate good communication skills.

**Desirable:** Experience in High Risk Obstetric and Gynaecological Ultrasound. Experience/interest in performing Fetal anomaly ultrasound. Interest in research. Computer literacy

**Enq:** Dr John Smoleniec (02) 9828 5694.

**Email:** John.Smoleniec@swsahs.nsw.gov.au

**Closing Date:** Friday, June 04, 2004. **Readvertised Ad No:** LV.012/1

**Applications quoting Ad No. to: Employee Services Manager, Liverpool Health Service, Locked Bag 7103, Liverpool BC NSW 1871. Or email: [empservices.liverpool@swsahs.nsw.gov.au](mailto:empservices.liverpool@swsahs.nsw.gov.au)**

### Editor-in-Chief Ultrasound in Medicine and Biology

The World Federation of Ultrasound in Medicine and Biology (WFUMB), the world's largest ultrasound association, announces the search for Editor-in-Chief of the journal *Ultrasound in Medicine and Biology*.

The Editor-in-Chief will provide editorial direction and overall guidance for the Journal, including ensuring quality review of all manuscripts and adherence to an orderly editorial process and schedule, as well as offering recommendations regarding publishing options, such as translations and electronic delivery.

A doctoral degree, experience in ultrasound or acoustics, and experience serving on the editorial board of a peer-reviewed scientific journal are desired. Candidates must have demonstrable leadership ability, a record of academic excellence, superb editorial judgment, and a high degree of integrity.

The new Editor will officially assume the position in July 2006 and will work with the current Editor during a transitional phase from July 2006 to 1 January 2007.

Applications for this prestigious position are currently being accepted. For confidential consideration, send your curriculum vitae and a letter of interest to:

**Beryl Benacerraf MD**  
Chair – Editor Search Committee  
Diagnostic Ultrasound Associates  
333 Longwood Avenue  
Boston MA 02115  
USA  
email [Journalsearch@aol.com](mailto:Journalsearch@aol.com)  
fax +1 617 738 6703

### Breast Imaging Victoria SONOGRAPHER (Part-time to full-time)

We are seeking a sonographer to join our dedicated team at Breast Imaging Victoria.

Hours are negotiable and attractive terms and conditions are offered.

Previous experience in breast imaging is necessary.

The Unit is dedicated to the diagnosis of breast disease and operates in a pleasant patient focused environment.

**For further details contact**

**Dr Cathy Galbraith**

**Clinical Co-ordinator**

tel 03 9419 6766 fax 9419 6416

email [breastimaging@breastimaging.com](mailto:breastimaging@breastimaging.com)

## DMU (ASIA) SONOGRAPHER LECTURER POSITION BASED in KUALA LUMPUR, MALAYSIA

Vision College invites ASUM DMU qualified sonographers to apply for the position of lecturer on the Teaching Faculty for DMU (Asia).

Vision College, the first Asian Centre of Excellence in Ultrasound will be offering the DMU (Asia) qualification to candidates from Malaysia and Asia, for practice in Asia. The DMU (Asia) is based on the DMU (ASUM) syllabi and curriculum through a licencing agreement approved by the Australasian Society for Ultrasound in Medicine (ASUM).

This will be an exciting opportunity to work overseas, enjoy the culture and life in an Asian country and continue to maintain your professional skills while contributing to the introduction of sonography in the region.

The Sonographer shall be experienced in general and O & G sonography, provide lectures and clinical supervision to students, broadly based on similar syllabus to the DMU.

Expect a life of diversity, interesting challenges and fun.

Remuneration is competitive – one year contract, up to RM \$140,000.00 pa (approximately \$A53,000 pa), including condominium accommodation, private healthcare, travelling and other benefits. \$A1.00 is approximately equivalent to Ringgit Malaysia RM\$2.60.

It is anticipated that this position will commence in August 2004.

**Expressions of interest and applications are to be addressed in the first instance to:**

**Dr Caroline Hong ASUM CEO**

**email [carolinehong@asum.com.au](mailto:carolinehong@asum.com.au)**

**tel +61 2 9958 7655 or fax +61 2 9958 8002**



## Expressions 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 2004.

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:

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

Please apply in writing with attachments (noted above) to:

**Chairperson, DMU Board of Examiners  
2/181 High Street  
Willoughby NSW 2068**

**All Practical Examiners from 2002 and 2003 have already been invited and need not reapply.  
Practical Examiners from previous years and other members are invited to apply.**

# ASUM Society groups and branches 2004

**Reproduced from the ASUM Constitution and printed for information to members who have enquired about the functions and roles of the Society groups and branches. Clause 102 to 104 refers:**

**102** The Council has the power to establish and maintain groups and branches of members within the Society for the purpose, directly or indirectly, of furthering the objects of the Society as set forth in this constitution, and to make regulations not inconsistent with this constitution as to the establishment, functions, powers and privileges, regulation, administration and dissolution of groups and branches and the appointment, removal, qualification, disqualification, duties, functions, powers and privileges of the officers and members of groups and branches.

**103** The groups and branches of the Society consist of:

- (a) the New South Wales Branch;
- (b) the Victorian Branch;
- (c) the Queensland Branch;
- (d) the Australian Capital Territory Branch;
- (e) the Tasmanian Branch;
- (f) the South Australian Branch;
- (g) the Western Australian Branch;
- (h) the New Zealand Branch; and
- (i) such other groups and branches as may from time to time be established by the Council pursuant to clause 1+61 2.

**104** Any regulations made by the Council in relation to a group or branch pursuant to clause 1+61 2 must specify the members or classes of members of the Society entitled to be members of it, and must provide, inter alia, that:

- (a) it must hold an Annual General Meeting of its members once at least in each calendar year, and each member thereof is entitled to receive not less than four weeks written notice of each Annual General Meeting;
- (b) it must at its Annual General Meeting in each year elect a president and secretary, and their names must be notified to the Secretary of the Society forthwith thereafter;
- (c) the Honorary Treasurer of the

Society is ex officio its treasurer, but it may, with the approval of the Council, have a separate bank account, and the Honorary Treasurer of the Society may, if he or she deems it necessary, require that it elect an assistant treasurer to assist him or her in dealing with its financial affairs;

(d) if it fails to hold its Annual General Meeting in any year, it is thereupon taken to have been dissolved; and

(e) its members must in all respects conform with the provisions of this constitution.

## State Branches

The Society's head office is in Sydney with Branches in all States of Australia (except Northern Territory) and a Branch in New Zealand. The main activities of the Branches involve education and liaison with state government and education authorities.

## Contacts

### Australian Capital Territory

#### Chairman

Iain Duncan  
tel 0408 865 966  
fax +61 2 6286 7552  
email Iain.Duncan@cig.com.au

#### Secretary

Ian Dalziel  
tel +61 2 6201 6140  
fax +61 2 6201 6145  
email ian.dalziel@calvary-act.com.au

### New South Wales

#### Hunter Sub Branch

Chris Abel  
tel +61 2 4921 3000  
fax +61 2 4946 1949  
email abel.zoo@hunterlink.net.au

#### North East Coast Sub Branch

Barry Lennon  
tel +61 2 6622 2288  
fax +61 2 6622 1534  
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### New Zealand

#### Chairman

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#### Secretary

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#### Secretary

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#### Chairman

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#### Secretary

Michelle Pedretti  
tel +61 8 9400 9030  
fax +61 8 9400 9033  
email pedrets@aol.com

# New members January to March 2004

## New members January 2004

### Full members

Alana Akacich Qld  
 Saeeda Albalooshi NSW  
 Timothy Alchin NSW  
 Lay Hoon Patricia Ang  
 Mary Atkinson Qld  
 Martin Bennie NSW  
 Lucy Boden Qld  
 Julie Bowles Qld  
 Annette Brennan Qld  
 Samantha Brewer NSW  
 Samantha Brooks Qld  
 Michael Burke NSW  
 Timothy Cain SA  
 Andrew Cary Qld  
 Chi Wang Chan HK  
 Trevor Chan NZ  
 Wei Yee Chan WA  
 Kerrie Child NZ  
 Mary Collins NZ  
 Rizza Deleon Vic  
 Donna Elphick NSW  
 Alison Fawcett NSW  
 Robert Federer Qld  
 Martha Finn NT  
 Maha George-Haddad NZ  
 Tanya Glynn NSW  
 Robyn Grant SA  
 Janet Gray Qld  
 Marion Hails NSW  
 Jacqueline Harding Qld  
 Barbara Hochstein NZ  
 Peter Holt Qld  
 Lesa Hollier NSW  
 Laura Horton NZ  
 Kristine Hunot NSW  
 Jennifer Jepson Qld  
 Kelly Johnson Qld  
 Fiona Jones Qld  
 Yvonne Lake NZ  
 Marion Lane NZ  
 Louisa Siu Fong Lau NSW  
 Bonita Le Fevre WA  
 Sheree Lloyd NZ  
 Jackie Mann Qld  
 Elizabeth Marshall NZ  
 Tanya McCahon Tas  
 Barry Mennim NZ  
 Stephanie Miller Qld  
 Anne Mysko WA  
 Darren Paff Qld  
 Brynley Parry Tas  
 Christine Paxton SA  
 Michelle Perkovic SA  
 Janelle Podlich Qld  
 Fleur Rakuns NSW  
 Mark Ready Qld  
 David Robinson Vic  
 Peter Ross Qld

Kylie Rowse SA  
 Praneal Sharma NSW  
 Shunil Sharma Qld  
 Sue Simpson Vic  
 Medha Sule UK  
 Donna Traves Qld  
 Kim Ung Vic  
 Brigid Van Der Kroon NZ  
 Sylvia Walker NZ  
 Angus Watts Qld  
 Gary Williams Qld  
 Amanda Wright NZ  
 Alison Zahra Qld

### Associate members

Sean Allwood Qld  
 Fiaalii Arasi NSW  
 Lucy Berwick NZ  
 Jane Bucholz NZ  
 Carolyn Burley Qld  
 Julie Cahill Qld  
 Ryan Castillo NSW  
 Vivaganagie Chetty NZ  
 Adam Di Camillo WA  
 Priscilla Gaffur NZ  
 Louisa Hale NZ  
 Glenn Hastings Vic  
 Levona Hay NZ  
 Tanya Hennessy Vic  
 Minh-Thu Ho SA  
 Nilesh Kumar NZ  
 Bridget Lawson NZ  
 Xuesen Liu NZ  
 Katherine McGlynn UK  
 Joanne Mewes NZ  
 Ross Meyer NSW  
 Sarah Milne NZ  
 Chau Nguyen NSW  
 Marilyn Noye NZ  
 Gabrielle O'Grady NZ  
 Shawn O'Leary NZ  
 Dipti Patel NZ  
 Leanne Purdy NSW  
 Dorothy Santos Vic  
 Sarah Shortus NSW  
 Paul Stoodley NSW  
 Barbara Symes NZ  
 Jeneen Tattersall NSW  
 Kirsty Thys NSW  
 Daniel Traves Qld  
 Lucienne Velvin NZ  
 Claire Walker Vic

### Trainee members

Allison Newey NSW  
 Katrina Timmins Vic

## New members February 2004

### Full members

Jane Barbary SA  
 Gerard Bensoussan Qld  
 Brenda Biggs Qld  
 Rebecca Chalmers Vic  
 Mark Cohen NSW  
 Ramesh Cuganesan NSW  
 Kim Elliot Qld  
 Sharan Fergie ACT  
 Margaret Field NSW  
 Susan Forden Qld  
 Jillian Gibson Qld  
 Zarah Inwood SA  
 Len Kliman Vic  
 Jim Lai NSW  
 Chhaya Mehrota NZ  
 Peter Muller SA  
 Chris O'Callaghan Vic  
 Wendy Parker NZ  
 Thierry Somville Qld  
 Graham Standen Tas  
 Kevin Tay NSW  
 Kate Tod NSW  
 Andrea Walker NSW  
 Sharon Watson NSW  
 Len Yared Qld

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 Arong Saemi Bae WA  
 Erin Baumgartel WA  
 Susan Berman WA  
 Michael Cartmill Qld  
 Faith Casley-Porter Vic  
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 Stacey Day NZ  
 Louise Deshon WA  
 Warren Forgas WA  
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 Justin Hanrahan Vic  
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 Yukari Newman Vic  
 Marnie Peacock WA  
 Hanh Phan NSW  
 Adrian Poulton Vic  
 David Scicluna Vic  
 Natalie Smith ACT  
 Ariana Sorensen NZ  
 Craig Thomson Qld  
 Antoinette Van Rensburg WA  
 Melanie Wagner NSW  
 Andrew Yeadon NZ

### Trainee members

Faraz Shakibaie NSW  
 Thodur Vasudevan NZ

# Corporate Members 2004

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## I-Med Limited

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## Toshiba (Aust) Pty Ltd Medical Division

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## CORPORATE NEWS

# Philips launches iU22 system

Philips Medical Systems Australia has unveiled the Philips iU22 system, designed to reduce workplace injuries for sonographers and ensure more accurate diagnostic results.

In a survey conducted in 1999, 95.4% of Australian sonographers surveyed reported musculoskeletal pain and discomfort since starting scanning while 80% reported experiencing it during work duties, 25% of whom reported decreased ability to perform work duties as a result of the pain and discomfort.

The Philips iU22 system addresses these challenges with a simpler, easy-to-use interface, hands-free voice command, one-button automated optimisation controls for quick and consistent image acquisition between users of varying skill levels, and sophisticated data management that

allows for more complete patient information, reporting and trending.

The result is a 'smart' system that delivers revolutionary performance with the latest breakthroughs in high definition imaging and diagnostic capability.

The iU22 is the first premium ultrasound system to have fully integrated 2D, 3D and real-time 4D imaging modes, as well as multiplaner reconstruction (MPR) resolution that rivals acquired 2D plane definition.

"Ultrasound is the imaging modality of choice for obstetric and women's pelvic imaging," said Melbourne Obstetrician and Gynaecologist, Dr Andrew Edwards following the release of the new Philips iU22 in Australia in March.

"Ultrasound assessment of the endometrium has now reached a level

where many women can avoid surgical procedures for investigation of suspected endometrial pathology."

The transducers are lightweight and ergonomically designed, alleviating pressure on the wrist and thus reducing the incidence of RSI. Its adjustability and monitor clarity also reduce neck, eye and wrist strain.

"The advanced ergonomic design is a stand-out feature of the iU22. The system allows sonographers to manipulate the system into whatever position is most comfortable to them.

"The control panel is fully adjustable to suit each user and each type of scan. The system is smaller, lighter and more mobile than conventional ultrasound machines," Dr Edwards said.



2004

**Sat 5 Jun – 4 days XVth Congress of the European Federation of Societies for Ultrasound in Medicine and Biology**  
Zagreb, Croatia  
website [www.euroson2004.com](http://www.euroson2004.com)

**Mon 7 Jun – 5 days Mastering Improved Clinician Performance – ARCHI (Vic) Workshops presented by Dr Mark O'Brien from the Cognitive Institute**  
Melbourne, Ballarat, Traralgon, Glen Waverley  
Contact ARCHI National office  
tel +61 2 4985 3165, website [www.archi.net.au](http://www.archi.net.au)

**Sat 12 Jun 2004 – 2 days, Physics Weekend with Roger Gent/Mike Dadd**  
RPH, Western Australia  
Contact Elvie Haluszkiewicz or Marilyn Zelesco tel +61 8 9224 7076

**Thur 17 Jun DDU Part II Oral Examination – Cardiology only**  
Melbourne  
Contact DDU Coordinator  
tel +61 2 9958 7655, email [ddu@asum.com.au](mailto:ddu@asum.com.au)

**Sat 19 Jun DDU Part II Oral Examination**  
Sydney  
Contact DDU Coordinator  
tel +61 2 9958 7655, email [ddu@asum.com.au](mailto:ddu@asum.com.au)

**Sat 19 Jun – 4 days American Institute of Ultrasound in Medicine (AIUM) 2004 Annual Convention**  
JW Marriott Desert Ridge Resort & Spa, Phoenix, Arizona, USA  
Contact Brenda Kinney, AIUM  
tel +1 301 498 4100, email [bkkinney@aium.org](mailto:bkkinney@aium.org), website [www.aium.org](http://www.aium.org)

**Sun 20 Jun – 7 days Third World Congress and the Advanced Course in Fetal Medicine**  
Limassol, Cyprus  
website [www.fetalmedicine.com](http://www.fetalmedicine.com)

**Fri 25 Jun – 4 days New Zealand ASUM Branch Meeting, preceded by an OSCE preparation session on Thur 24 June**  
Rydges Hotel Christchurch, New Zealand  
Contact Rex De Ryke  
email [rdrl1@xtra.co.nz](mailto:rdrl1@xtra.co.nz)

**Wed 23 Jun 2004 WA Branch Meeting – Dr E Lee 'Ultrasound in First Trimester'**  
Radiology Tutorial Room, Radiology Department, RPH, WA  
Contact: Elvie Haluszkiewicz or Marilyn Zelesco tel +61 8 9224 7076

**Sat 31 Jul 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](mailto:dmu@asum.com.au)

**Sun 15 Aug 2004 Travelling Fellow Workshop**  
Bunbury, Western Australia  
Contact Elvie Haluszkiewicz or Marilyn Zelesco tel +61 8 9224 7076

**Tue 17 Aug 2004 Travelling Fellow Workshop**  
KRH, Kalgoorlie, Western Australia  
Contact Elvie Haluszkiewicz or Marilyn Zelesco tel: +61 8 9224 7076

**Wed 18 Aug 2004 WA Branch Meeting Travelling Fellow 'DVT Research Topic'**  
RPH, Western Australia  
Contact Elvie Haluszkiewicz or Marilyn Zelesco tel: +61 8 9224 7076

**Thu 19 Aug 2004 Travelling Fellow Tutorial for Part II Candidates**  
RPH, Western Australia  
Contact Elvie Haluszkiewicz or Marilyn Zelesco tel +61 8 9224 7076

**Sat 21 Aug 2004 Travelling Fellow Workshop**  
TBA, Broome, Western Australia  
Contact Elvie Haluszkiewicz or Marilyn Zelesco tel +61 8 9224 7076

**Tue 31 Aug 2004 – 4 days 14th World Congress on Ultrasound in Obstetrics and Gynaecology**  
Stockholm, Sweden  
Contact S Johnson tel +44 20 8725 2505  
fax +44 20 8725 0212 email [johnson@sghms.ac.uk](mailto:johnson@sghms.ac.uk)

**Wed 8 Sep 2004 WA Branch Meeting**  
Radiology Tutorial Room, Radiology Department, RPH, WA  
Contact Elvie Haluszkiewicz or Marilyn Zelesco on tel +61 8 9224 7076

**Sat 11 Sep 2004 – 2 Days Weekend Workshop**  
Bruce Hunt Lecture Theatre, RPH, WA  
Contact Elvie Haluszkiewicz or Marilyn Zelesco tel +61 8 9224 7076

**Tue 31 Aug – 4 days 14th World Congress on Ultrasound in Obstetrics and Gynecology**  
Stockholm, Sweden  
Contact S Johnson, ISUOG, 3rd Fl, Lanesborough Wing, St Georges Hospital Medical School, Cranmer Terrace, London SW 17 ORE, UK  
tel +44 20 8725 2505, fax +44 20 8725 0212, email [johnson@sghms.ac.uk](mailto:johnson@sghms.ac.uk)

**Sat 4 Sept – 5 days ASUM-ANZSVS 2004**  
Rotorua, New Zealand  
Contact David Ferrar  
email [vascular@clear.net.nz](mailto:vascular@clear.net.nz), or see ASUM website [www.asum.com.au](http://www.asum.com.au)

**Thur 23 Sept – 4 days ASUM 2004 34th Annual Scientific Meeting of the Australasian Society for Ultrasound in Medicine**

**Sat 16 Oct DMU Part II Objective & Standardised Clinical Examinations (OSCEs) and Oral Examinations – Cardiac**  
Contact James Hamilton DMU Coordinator  
tel +61 2 9958 0317, fax +61 2 9958 8002, email [dmu@asum.com.au](mailto:dmu@asum.com.au)

**Sat 16 Oct DMU Part II Objective & Standardised Clinical Examinations (OSCEs) and Oral Examinations – Vascular**  
Contact James Hamilton DMU Coordinator  
tel +61 2 9958 0317, fax +61 2 9958 8002, email [dmu@asum.com.au](mailto:dmu@asum.com.au)

**Sat 23 Oct DMU Part II Objective & Standardised Clinical Examinations (OSCEs) and Oral Examinations – General**  
Contact James Hamilton DMU Coordinator  
tel +61 2 9958 0317, fax +61 2 9958 8002, email [dmu@asum.com.au](mailto:dmu@asum.com.au)

**Sat 23 Oct DMU Part II Objective & Standardised Clinical Examinations (OSCEs) and Oral Examinations – Obstetric**  
Contact James Hamilton DMU Coordinator  
tel +61 2 9958 0317, fax +61 2 9958 8002, email [dmu@asum.com.au](mailto:dmu@asum.com.au)

**Fri 5 Nov 2004 – 2 days ASUM Asia Link Program: Joint meeting in Malaysia**  
Kuala Lumpur, Malaysia  
Registration information available at [www.asum.com.au](http://www.asum.com.au)  
To register your interest in attending this meeting as a delegate or as a sponsor email [carolinehong@asum.com.au](mailto:carolinehong@asum.com.au)

**Mon 22 Nov 2004 WA Xmas Branch Meeting – Dr R Hart 'Ultrasound in Space'**  
Lamonts, East Perth, Western Australia

Contact Elvie Haluszkiewicz or Marilyn Zelesco tel +61 8 9224 7076

**Wed 8 Dec – 3 days 36th BMUS Annual Scientific Meeting and Exhibition**  
Manchester, UK  
Contact The British Medical Ultrasound Society  
tel +44 20 7636 3714, email [secretariat@bmus.org](mailto:secretariat@bmus.org)

2005

**Mon 31 Jan Applications due for ASAR Student Status**  
Contact James Hamilton DMU Coordinator  
tel +61 2 9958 0317, fax +61 2 9958 8002, email [dmu@asum.com.au](mailto:dmu@asum.com.au)

**Tues 1 Mar DMU Part I and Part II Application Deadline**  
Contact James Hamilton DMU Coordinator  
tel +61 2 9958 0317, fax +61 2 9958 8002, email [dmu@asum.com.au](mailto:dmu@asum.com.au)

**Thur 17 Mar Nuchal Translucency Course (Tentative)**  
Contact ASUM, 2/ 181 High Street, Willoughby, NSW, 2068  
tel +61 2 9958 7655 fax +61 2 9958 8002, email [education@asum.com.au](mailto:education@asum.com.au)

**Fri 18 Mar – 2 days ASUM Multidisciplinary Workshop involving interactive programs in Obstetric, Gynaecological, Musculoskeletal, Vascular, Cardiac, Small Parts and Breast Ultrasound.**

**Fri 18 Mar – 2 days ASUM Vascular Workshop held in conjunction with the ASUM Multidisciplinary Workshop**

**Fri 18 Mar – 2 days ASUM O&G Workshop held in conjunction with the ASUM Multidisciplinary Workshop**  
Contact ASUM, 2/ 181 High Street, Willoughby, Sydney, NSW 2068, Australia  
tel +61 2 9958 7655, fax +61 2 9958 8002, email [education@asum.com.au](mailto:education@asum.com.au)

**Fri 18 Mar – 2 days ASUM Musculoskeletal Workshop held in conjunction with the ASUM Multidisciplinary Workshop**

**Sun 19 Jun – 3 days 2005 AIUM Annual Convention**  
Walt Disney World, Swan and Dolphin, Orlando, FL USA  
Contact Brenda Kinney, AIUM  
tel +1 301 498 4100, email [bkkinney@aium.org](mailto:bkkinney@aium.org), website [www.aium.org](http://www.aium.org)

**Sat 30 Jul 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](mailto:dmu@asum.com.au)

**29 Sept – 4 days ASUM 2005 35th Annual Scientific Meeting of the Australasian Society for Ultrasound in Medicine**  
Adelaide Convention Centre, Adelaide  
Contact ASUM, 2/ 181 High Street, Willoughby, Sydney, NSW 2068, Australia  
tel +61 2 9958 7655, fax +61 2 9958 8002, email [asum@asum.com.au](mailto:asum@asum.com.au)

2009

**Thurs 5 Sept – 4 days ASUM hosts WFUMB 2009 World Congress in Sydney**  
Sydney Convention and Exhibition Centre  
Contact Dr Caroline Hong, ASUM CEO email [carolinehong@asum.com.au](mailto:carolinehong@asum.com.au) or [asum@asum.com.au](mailto:asum@asum.com.au)  
ASUM, 2/ 181 High Street, Willoughby, Sydney, NSW 2068, Australia

# 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 in length. 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 in the *Ultrasound Bulletin*.

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 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.

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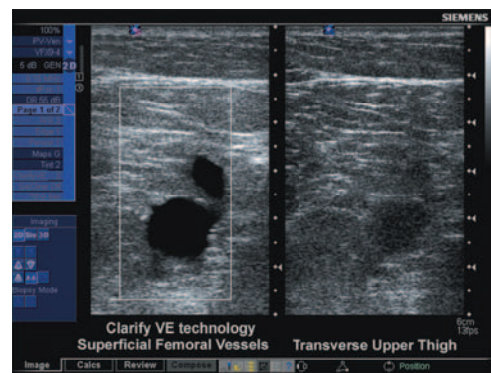
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