Oral Presentations

O001  |  Professional Self Care - Do we practice what we preach?
Dr Helena Popovic

Opening Plenary: May 28, 2021, 10:00 AM - 11:30 AM

The theme of this presentation will be focusing on Professional Self Care - do we practice what we preach? She will also help us to turn stress into success to perform at our peak and provide tips on how to live a longer, stronger, healthier and happier life.

O002  |  Forefoot Ultrasound
Bridie Roche

Lecture Session 2: Musculoskeletal, May 28, 2021, 12:30 PM - 2:30 PM

Attendees will develop, through case studies, an understanding of the pathology involved in metatarsalgia and learn to recognise Freiberg disease, plantar plate pathology, Morton’s neuroma, Iselin’s disease and stress fracture. The psychomotor skills for assessment of plantar plates and webspaces are demonstrated via a short scanning video. Attendees may like to also attend the Ask the expert ‘Lower Limb 2’ workshop to practise hands-on techniques.

O003  |  Infrapatellar branch of the saphenous nerve
Jerome Boyle

Lecture Session 2: Musculoskeletal, May 28, 2021, 12:30 PM - 2:30 PM

Iatrogenic injury to the infrapatellar branch of the saphenous nerve (IPBSN) is an uncommon but important complication of both open and arthroscopic procedures causing neuropathic pain symptoms in the anteromedial aspect of the knee. Whilst the use of ultrasound in the assessment of peripheral neuropathies is well-established, sonographic knowledge in the routine assessment of the IPBSN remains poor. This presentation offers a comprehensive review of the sonographic assessment of the IPBSN, promulgating radiology’s role in providing anatomical information pertaining to the IPBSN and its relationship to adjacent anatomical structures, surgical fixations or fibrous scar tissue.

O004  |  Ultrasound guided stellate ganglion intervention in the treatment of complex regional pain syndrome of the upper limb- a case study
Mr Gary Mcculloch 1

1 Benson Radiology, Oakden, South Australia, Australia

Lecture Session 2: Musculoskeletal, May 28, 2021, 12:30 PM - 2:30 PM

Introduction: Complex regional pain syndrome (CRPS) is a condition causing chronic pain and impaired function; most commonly affecting one limb following an injury. This case study describes the use of ultrasound guided intervention to improve limb function and reduce pain in a patient with CRPS. A fifty-five year old female presented for potential guided intervention to treat CRPS of her left upper limb. She had suffered with the condition for around twelve years following failed surgery to treat a wrist injury. She presented with pain, swelling and burning of her left upper limb, with shiny skin and marked atrophy and loss of function of her left hand. She had tried many pain management options and took a high daily dose of medication.

Method: The stellate ganglion is a collection of sympathetic nerves found at the C6 – T1 level, supplying the upper extremity, neck and head. We localised the stellate ganglion overlying the longus colli muscle at level of C6 and performed an ultrasound guided stellate ganglion nerve using dexamethasone and xylocaine. Positive short-term results were indicated by the patient, so this was followed three months later by ultrasound guided radiofrequency ablation of the stellate ganglion as a more permanent treatment.

Results: Follow up after four months showed marked improvement in upper limb function and pain management. Careful ultrasound guided stellate ganglion intervention is a viable option for the treatment of CRPS, with the potential of providing improved limb function and pain management.

Conclusion: Ultrasound guided interventional procedures have an important role to play in pain chronic pain management and can potentially vastly improve quality of life.
**O005 | Grynfeltt- Lesshaft hernia**

Jenny Li

Lecture Session 2: Musculoskeletal, May 28, 2021, 12:30 PM - 2:30 PM

Synopsis unavailable at time of publication.

**O006 | Syndesmosis, Chopart and Lisfranc**

Mr Aaron Fleming

Lecture Session 2: Musculoskeletal, May 28, 2021, 12:30 PM - 2:30 PM

The acutely injured ankle is a common MSK ultrasound study. Traditionally, the emphasis is on the lateral and medial ligaments with syndesmosis and midfoot assessment often overlooked or reserved for the domain of MRI. This presentation explores the clinical significance of these injuries and offers a pragmatic and revisionist approach to include the syndesmosis, Chopart and Lisfranc joints in a routine ankle injury assessment.

**O007 | How to roll with it when your patient rolls their ankle**

Dr Colin Chong

Lecture Session 2: Musculoskeletal, May 28, 2021, 12:30 PM - 2:30 PM

Synopsis unavailable at time of publication.

**O008 | Tumour angiogenesis and CEUS**

Prof Peter Burns

Lecture Session 2: Women's Health / Obstetrics, May 28, 2021, 12:30 PM - 2:30 PM

Synopsis unavailable at time of publication.

**O009 | Endometriosis - how and where to look**

Jenna Arnold

Lecture Session 2: Women's Health / Obstetrics, May 28, 2021, 12:30 PM - 2:30 PM

Synopsis unavailable at time of publication.

**O010 | Live splenic ectopic pregnancy: A case study**

Miss Sarah Harvey, Miss Madelaine Brown

Lecture Session 2: Women's Health / Obstetrics, May 28, 2021, 12:30 PM - 2:30 PM

**Introduction:** Abdominal ectopic pregnancy accounts for 1.3% of extra-uterine gestations. Splenic ectopic pregnancy’s (SEP) are the rarest form accounting for 5% of abdominal ectopics. There have been 18 reported cases of splenic ectopic pregnancies in literature with one presenting asymptotically. None have been reported with fetal cardiac activity. SEP will result in a life-threatening haemorrhage if not recognised and acted on early. We describe an isolated case of a live SEP.

**Case Presentation:** A 32 year old G2POM1 female presented unsure of dates, with a positive bHCG. She complained of intermittent para-umbilical and left upper quadrant discomfort, but otherwise was haemodynamically stable. A diagnosis was made of a live SEP on an abdominal ultrasound after an unremarkable pelvic ultrasound. Initial laparoscopic removal failed. Subsequent blood tests showed a rising bHCG, raising concerns with differential diagnosis including a germ cell tumour or heterotopic pregnancy. After a CT and MRI was performed, a repeat abdominal ultrasound showed the live SEP still in-situ; resulting in a successful splenectomy.

**Conclusion:** SEP’s are rare; however, they carry a high risk of life-threatening complications at an early gestation. Early successful diagnosis is crucial to avoiding a life-threatening situation.

**Take home message:** The key to successful early diagnosis includes a thorough clinical and physical examination, serial bHCG’s, thorough patient history and an abdominal ultrasound in cases of pregnancies of unknown location.

**O011 | Congenital Epulis: What we can potentially miss in routine obstetric ultrasound screening**

Mrs Becky Ballantyne

Lecture Session 2: Women's Health / Obstetrics, May 28, 2021, 12:30 PM - 2:30 PM

**Introduction:** Congenital Epulis (CE) or congenital gingival granular cell tumour is a rare, benign, intraoral tumour affecting new-borns, which is rarely detected antenatally. Third trimester ultrasounds are only ordered when indicated, therefore the generally asymptomatic CE will typically go unnoticed until fetal delivery. Prenatal detection allows for paternal counselling, delivery planning and distinguishing potential risks of airway obstruction and intraoperative complications.

**Method:** A 21 year old G1P0 female, gestation 32+2 weeks presented to our practice for an assessment of fetal wellbeing after decreasing fundal height. All previous routine ultrasounds were documented as normal. A thorough obstetric 3rd trimester ultrasound was performed using a Canon Apio machine with a 10 MHz and 3.5MHz curved array transducer.
Results: A multilobulated solid mass was seen arising from the superior/upper lip. It appeared to be separate from the mandible, but closely related to the soft palate. Cardiomegaly and an increase in size of the right atrium, was also detected. Remaining fetal anatomy appeared to be within normal limits. Patient was referred to a tertiary centre, a fetal MRI performed and findings confirmed.

Conclusion: Congenital epulis is a rare, typically isolated finding. It generally goes undetected antenatally as the mass develops late in utero, emphasising the need for vigilance in all areas of late term ultrasound examinations.

Take home message: A thorough and careful fetal evaluation is required during EVERY obstetric ultrasound to diagnose abnormalities that may appear later in gestation.

0012 | Prenatal ultrasound assessment of the fetal brainstem and diagnosis of brainstem anomalies

Mrs Kate Guskich¹
¹Monash Health, Clayton, Victoria, Australia

Lecture Session 2: Women’s Health / Obstetrics, May 28, 1221, 12:30 PM - 2:30 PM

Objectives: This paper will provide a detailed anatomic sonographic description of the brainstem. Two cases of fetal brain anomalies involving the brainstem in a tertiary hospital will be presented, where prenatal ultrasound was able to define, describe and assess these pathologies and assist in diagnosis and appropriate prenatal counselling.

Background: Brainstem maldevelopment is associated with diverse significant pontocerebellar malformations. It can also be associated with cerebral anomalies such as lissencephaly and various syndromes. Prenatal ultrasound assessment of the biometry and morphological appearance of the brainstem allows for early diagnosis of pontocerebellar hypoplasia, which can facilitate the wide aetiological search necessary in these cases, including: Joubert’s syndrome, achondroplasia, and mitochondrial, genetic and chromosomal diseases.

Findings: The literature describes established and accurate growth charts for the pons, the vermis and the vermis/pons ratio. It is now recognised that prenatal ultrasound can provide a detailed assessment of the pons arch, the bulbo-protuberential sulcus, the specific echo-structure of the pons and the primary vermal fissure.

Biometry of the pons lower than the 5th percentile, with no pons arch and no bulboprotuberential sulcus, with hypoplasia of the spinal bulb, has been shown to be a reliable diagnostic indicator of pontocerebellar hypoplasia.

Conclusion: A sonographic description of the brainstem, including biometry of the pons, is achievable on prenatal ultrasound. It is a necessary extension of the neuro-sonogram, particularly in cases of cerebellar anomalies, in the search for brainstem pathologies such as pontocerebellar hypoplasia.

0013 | Pelvic Floor - urinary incontinence

Frauke Lever

Lecture Session 2: Women’s Health / Obstetrics, May 28, 1221, 12:30 PM - 2:30 PM

Synopsis unavailable at time of publication.

0014 | The impact of SARS-CoV-2 infection on pregnant women

Prof Liona Poon

Lecture Session 2: Women’s Health / Obstetrics, May 28, 1221, 12:30 PM - 2:30 PM

Synopsis unavailable at time of publication.

0015 | Carotid Doppler Plaque Characterisation utilising contrast enhanced ultrasound

Ms Rayshelle Finch

Lecture Session 2: Vascular, May 28, 2021, 12:30 PM - 2:30 PM

The sonographer has health industry leading standards and capability in the application and use of ultrasound. At The Prince Charles Hospital in Brisbane, sonographers have been performing the interventional medical procedure - Peripheral Insertion of a Central Catheter (PICC). The practice has been occurring for over 15 years. This visual presentation will include an accompanying narration that describes the PICC procedure, including:

• Pre- procedure planning - non ultrasound
• Pre- procedure planning - ultrasound
• Donning PPE & handwash
• Sterile gown and glove donning
• Preparing a procedural tray
• Local anaesthetic administration
• Modified Seldinger Technique & associated ultrasound
• Post-procedure dressing, x-ray & documentation

0016 | 3D grey-scale median and carotid plaque volume as a potential new predictor of stroke

Dr Steven Rogers

Lecture Session 2: Vascular, May 28, 2021, 12:30 PM - 2:30 PM

Carotid artery atherosclerosis causes 1/3 of ischaemic strokes, through plaque destabilisation, rupture and embolization. Carotid...
What's that knocking: A case of spontaneous superficial temporal artery aneurysm

Angela Farley

Lecture Session 2: Vascular, May 28, 2021, 12:30 PM - 2:30 PM

Introduction: Superficial temporal artery aneurysm (STAA) is an extremely rare condition. The rarity of STAA has been noted in the literature, with only 187 cases reported over a 250-year period.

STAA development can result from blunt trauma or spontaneous occurrence, with the latter occurring in only 8% of cases. Spontaneous STAA are most commonly associated with atherosclerosis.

Case Study Clinical presentation: An 82-year-old female experiencing a “knocking” sensation and shooting pain in her left preauricular region for 4 weeks presented with a referral from her general practitioner requesting an ultrasound of the temporal arteries. No history of blunt head trauma or a pulsatile mass in the left preauricular region was noted. The patient had previously been diagnosed with a spontaneous aneurysm of the right superficial temporal artery and underwent treatment 2 years prior.

Anatomy of Region of Interest: The superficial temporal artery travels anterior to the ear (in the periauricular region) and then divides into the frontal and parietal branches of the superficial temporal artery.

Method: Prior to commencing the ultrasound, a thorough patient history was taken. Questions asked included:

- What was the patient’s symptoms and exact location?
- How long had the patient been experiencing the symptoms?
- Was there a previous history of trauma to the region of interest?
- Was there a palpable, pulsatile mass present in the region of interest?
- Were any tests or investigations for the symptoms performed prior to attending for the ultrasound?
- Any other medical issues or history that may be relevant?

The information obtained from the answers the patient provided helped to provide a more directed ultrasound to ensure the region of interest was the focus for the examination.

The arterial preset was selected along with a high-frequency linear probe – 14L5. The left superficial temporal artery was scanned along with the frontal and parietal branches using transverse and longitudinal scan planes.

Colour Doppler was then applied, followed by a series of spectral Doppler traces and measurements taken of the area of interest. The contralateral right side was also scanned but comparison was difficult to obtain due to previous ligation.

Results: While scanning the mid-section of the common superficial temporal artery, a stenosis was detected due to the appearance of narrowing of the vessel and aliasing of colour flow. Atherosclerosis was observed within the vessel – a condition associated with spontaneous temporal artery aneurysms. Superior to this, during 2D scanning, an aneurysm of the artery was observed as a dilation of the vessel – this was the region in which the patient could feel the “knocking” sensation.

Conclusion: Although presenting in only 8% of STAA cases, spontaneous occurrence of this pathology can be detected using ultrasound if a thorough examination of the temporal artery and its branches is performed. Common ultrasound findings that can indicate that an aneurysm is present include:

- Atherosclerosis
- Stenosis
- Turbulent colour and spectral Doppler flow
- Widening of the vessel at the region of aneurysm

These ultrasound findings, combined with a thorough patient history, will assist the novice sonographer in performing an examination of the temporal artery and its branches and ensure that an aneurysm is identified when present. This will result in timely referral for treatment and improve patient outcomes.

Take home message: spontaneous superficial temporal artery aneurysms are rare and for this reason can be easily overlooked by an inexperienced sonographer.
By asking the patient focused questions to obtain a thorough clinical history, understanding the anatomy of the temporal artery and its branches and having a consistent scanning routine in place, temporal artery aneurysms will not be missed during an ultrasound examination no matter the patient presentation.

**O018  |  Temporal arteritis**

**Mr Peter Russell**

Lecture Session 2: Vascular, May 28, 2021, 12:30 PM - 2:30 PM

Temporal arteritis (TA) is a potentially serious vascular condition that may affect the older population. Being a variation of giant cell arteritis (GCA), it is an inflammatory disease of the arterial walls. GCA can affect any large aortic branch with Takayasu’s arteritis being one of the better known manifestations; however, when the condition affects the temporal, occipital, ophthalmic and central retinal arteries it is known as TA.

This presentation will discuss the anatomy, physiology, pathological appearances and sonographic technique in identifying Temporal Arteritis.

**O019  |  Does the location of sample site effect the blood volume measurements with ultrasound? And how does this compare to the gold standard, Transonic®?**

**Mr Ignatius Pereira¹, Mr Peter Coombs¹, Mr Greg Curry¹, Ms Claire O’Reily¹**

Lecture Session 2: Vascular, May 28, 2021, 12:30 PM - 2:30 PM

**Introduction:** Haemodialysis through an arteriovenous fistula (AVF) is a lifeline for patients with end stage renal failure (ESRF). The health of an AVF can be quantified by assessment of its blood volume flow (BVF) using either Transonic® (gold standard) during dialysis or with ultrasound (US). Ultrasound has the advantage of being readily available. There is evidence however that US has considerable intra and interobserver error, questioning its value.

**Objective:** To compare the measurement of AVF BVF with US to flow measured at dialysis in different anatomical locations to improve the accuracy of this technique.

**Methods:** BVF was measured in 50 dialysis patients at three locations with US (elbow, mid upper arm, supraclavicular) independently by two sonographers (S1, S2). This was compared to the BVF at dialysis measured by the Transonic®. The level of the brachial artery bifurcation was also recorded.

**Results:** The highest correlation (Pearson’s correlation coefficient (r)) by S1 was seen in the mid subclavian artery (r=0.71). 2cm from the elbow crease in the brachial artery was the highest correlation for S2 (r=0.72). The inter-operator error showed strongest correlation 10cm from the cubital crease (r=0.95). The level of the brachial artery bifurcation was not significant.

**Conclusion:** Correlation with the Transonic® was variable between sonographers and at the anatomical locations. The best correlation between US and Transonic® was 10cm superior to the cubital crease.

**Take home message:** Minimising US error measurements of BVF in AVF’s presents challenges. Using 10cm from the cubital crease provides the best accuracy.

**O020  |  Ovarian vein ultrasound - single tertiary hospital experience**

**Mr Greg Curry¹**

Lecture Session 2: Vascular, May 28, 2021, 12:30 PM - 2:30 PM

**Introduction:** Ovarian vein embolisation for management of primary and recurrent lower limb varicose veins and pelvic congestion syndrome is a well-established intervention. Various imaging techniques to investigate pelvic venous reflux are described in the literature including transabdominal and transvaginal ultrasound.

At our institution, vascular surgical referrals to assess ovarian vein incompetence are common and usually prompted by non-saphenous reflux patterns on CVI ultrasound. Trans-abominal ultrasound is used with the goal of measuring the diameter of the left ovarian vein (LOV) and assessing for reflux. The right ovarian vein, internal iliac veins and para-uterine veins are also assessed. This paper presents results of a local clinical audit from our tertiary hospital network.

**Method:** The hospital RIS was used to perform a report search of ovarian vein ultrasound studies for five years. The PACS was used to collect the data points. These included patient demographics, vessel diameters, presence of demonstrable reflux and study limitations.

**Results:** Visualisation of the LOV was shown to be 93%. The average size of the left ovarian vein when reflux was demonstrated was 7.0mm and 3.2mm when normal antegrade flow was demonstrated. 26% of the reflux group went on to have left ovarian vein embolisation at our institution.

**Discussion:** Our clinical audit demonstrates that using a standardised transabdominal technique and protocol can give reliable visualisation of the ovarian veins and other relevant pelvic vessels.

**O021  |  Pelvic Congestion Syndrome**

**Dr Russel Price**

Lecture Session 2: Vascular, May 28, 2021, 12:30 PM - 2:30 PM

Synopsis unavailable at time of publication.
**O022 | Educating Australia's future sonographers**

**Ms Ling Lee**¹, **Dr Lori Leach**², **Assoc Prof Ann Quinton**³, **Assoc Prof David Hewett**³, **Prof Bernadette Watson**⁴

¹Faculty of Medicine, University Of Queensland, St Lucia, Queensland, Australia, ²School of Psychology, University of Queensland, St Lucia, Queensland, Australia, ³School of Health, Medical and Applied Sciences, CQUniversity, Sydney, New South Wales, Australia

Lecture Session 3: Professional Topics - Clinical Supervisors, May 28, 2021, 3:00 PM - 5:00 PM

**Introduction:** There is a recognized on-going workforce shortage of sonographers with an increase in clinical demand. This has resulted in the introduction of a new educational pathway for the sonography profession - described as “direct entry” in the ultrasound education literature in the United Kingdom, to allow a greater pool of prospective students. This study aims to discover the understanding, opinions and perceptions of the current practising workforce regarding this change of practice.

**Method:** This study adopts a mixed-methods approach, whereby a survey is designed (via Qualtrics software) to collect quantitative and qualitative data. A series of questions are designed to collect data on the understanding of the new educational pathway and comment boxes are provided for the survey respondents to express their views. The survey is distributed via e-newsletters by ASA and ASUM, to maximise the size of the dataset.

**Result:** The background data collected (i.e. advantages, concerns, salary, etc) serve as evidence of differences in opinions regarding the new educational pathway. It represents an insight into the opinion of our profession towards this change of practice, specifically from two main groups, students and accredited sonographers. The result uncovers the perceptions of the two main groups and further unpack the intergroup relationship between them. Thematic analysis is used to analyse the qualitative data collected.

**Conclusion/Take home message:** Change in education and professional practice is challenging. By seeking opinions and understanding from all parties, strategies can be produced to promote a more conducive, team-based working environment.

**O023 | The teaching experience- A tutor’s perspective**

**Mrs Debbie Slade**¹

¹Hig, Maitland, New South Wales, Australia

Lecture Session 3: Professional Topics - Clinical Supervisors, May 28, 2021, 3:00 PM - 5:00 PM

**Introduction:** “The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires.”

William Arthur Ward. Aspiring to this quote is a goal for many ultrasound tutors and many appreciate that supporting students during their learning experience is an honour. Fortunately, as a tutor for a number of years I have had the pleasure of assisting students through their journey and hopefully have helped prepare them for lifelong learning and fulfilling careers.

**Method:** The adult student should guide their own learning depending on their preferred learning style while being supported by the tutor who should encourage the student's responsibility for the patient, examination and their own learning experience.

**Results:** This is achieved by structured learning, instilling a sense of self-worth and confidence and most importantly mutual respect and trust between student and tutor.

Conversely, training can be a daunting haphazard experience for both student and tutor if the tutor as well as the student are ill-prepared while attempting to juggle patient care and safety with student’s needs.

**Conclusion:** This presentation outlines different learning styles, guidelines, techniques and training “tips and hints” that I have learnt during my own learning journey as tutor.

**Take home message:** Passion for the profession and the ‘strive’ for excellence are attributes that should be encouraged in the learner.

**O024 | Dealing with Challenging Students**

**Deanne Chester**

Lecture Session 3: Professional Topics - Clinical Supervisors, May 28, 2021, 3:00 PM - 5:00 PM

Synopsis unavailable at time of publication.

**O025 | Virtual reality in sonographic practical skill acquisition: Enhancing student learning**

**Assoc Prof Ann Quinton**¹, **Ms Sharon Meng**², **Mr Brendan Goode**³, **Mr Darryl Clare**⁴, **Assoc Prof Delma Clifton**²

Lecture Session 3: Professional Topics - Clinical Supervisors, May 28, 2021, 3:00 PM - 5:00 PM

**Introduction:** Teaching clinical sonography skills at a university using blended learning requires novel techniques to introduce students to ultrasound machines, patient and transducer positioning and ultrasound appearances of anatomical structures. Students can be introduced to these techniques via online 2D scanning videos (2DSV). Recent technology has enabled the use of high definition virtual reality (HDVR) recording. The aim of this work was to assess teaching effectiveness of HDVR recordings compared with 2DSV, evaluate student learning and acceptance with the use of these techniques.
Method: Year 2 and 3 undergraduate sonography students were assigned, using a randomised cross-over design, to watch the 2DSV or HDVR recordings of a limited right shoulder ultrasound. Focus groups assessed student experience and perceptions of usefulness of the two types of videos for learning new ultrasound skills. Time to complete a scan was measured.

Results: Instruction via HDVR resulted in faster completion of the ultrasound which 18/31 students considered superior for learning, interesting, engaging and realistic. Physical constraints identified included discomfort with the HDVR device with prescription lenses and lack of portability on public transport.

Conclusion: Enhanced student learning could be incorporated into online learning platforms to reduce the time taken to teach clinical skills to beginner sonographers face to face. Further research with larger numbers, different body parts and students from differing sonographic educational institutions is needed to assess the generalisability of HDVR in teaching clinical sonography skills.

Take Home Message: HDVR can be successfully used to teach the novice sonographer clinical skills.
experience and minimise the risk of cross infection by facilitating the EPAS in the ultrasound department, thus obviating the need for women to wait for prolonged periods in the higher risk emergency departments.

**Methods:** Key personnel from obstetrics, emergency and imaging departments were engaged to provide a COVID-19 solution. The sonography team led the formation of a new integrated model of care. Women with low level symptoms were diverted directly to imaging to be provided with a combined early pregnancy bleeding review and ultrasound imaging (when necessary).

**Results:** Key outcomes were, shorter wait times for women, easier access to ultrasound, up-skilling of sonographer counselling, and increased obstetric registrar ultrasound training. This provided integrated imaging and counselling which gave patients clear follow up pathways. Importantly due to the lack of time in emergency, there was also a reduced infection risk through lack of exposure to potential COVID-19 patients.

**Conclusion:** The COVID-19 pandemic triggered the creation of an EPAS in ultrasound resulting in an improved experience for women and staff. The sonographers were integral in the creation of the service and support of women in this service.

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**O033 | Transabdominal cervical measurement <35mm: Rationale and quality assurance outcomes in a large tertiary hospital**

Ms Julie Thwaites

1Monash Health, Melbourne, Victoria, Australia

Lecture Session 3: Obstetrics, May 28, 2021, 3:00 PM - 5:00 PM

**Introduction:** Cervix length is one of the best predictors of preterm delivery. Sonographers routinely incorporate the transabdominal cervix measurement as a screening tool for identifying the shortened cervix at the morphology scan. When the cervix measures < 35mm transabdominally a transvaginal scan is recommended. Understanding why we use this specific measurement as a cut off is an essential part of appreciating the importance of accurate TA measurements.

**Methods:** A literature review was performed evaluating the protocols regarding transabdominal cervix measurement at morphology and values used to trigger progression to transvaginal imaging. Assessment of the anticipated range of cervical length at morphology was also investigated. Results from audits on cervical measurements at a large public hospital were then correlated.

**Results:** Literature validates current measurement protocols. Various authors present a variable prospective on the protocols used to trigger progression to transvaginal scanning. Audit results reflect a pattern of behaviour that identifies a trend to normalise above 35mm effecting numbers assessed transvaginally.

**Conclusion:** Audit results demonstrate a dissidence between established protocols and sonographer behaviour, reinforcing the need to maintain the 35 mm cut off as a safe parameter when scanning the morphology patient. Whilst assessing the cervix at morphology sonographers need to adhere strictly to protocols and proceed to transvaginal imaging where indicated to maintain quality of assessment.

**Take home messages:**
1. Quality cervical assessment allows appropriate management of patients at increased risk of preterm birth.
2. Auditing ensures awareness and education with the goal of increasing best practice in cervical assessment at morphology.

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**O034 | Can shear wave elastography of the cervix be of use in predicting imminent cervical insufficiency and preterm birth?**

Ms Sandra O’Hara, Ms Marilyn Zelesco3, Prof Zhonghua Sun2

Lecture Session 3: Obstetrics, May 28, 2021, 3:00 PM - 5:00 PM

**Introduction:** The onset of cervical insufficiency is strongly associated with spontaneous preterm birth. Ultrasound shear wave elastography can be used to assess the stiffness of tissues. This work investigates the use of a transabdominal ultrasound approach to obtain shear wave measurements in the cervix for the prediction of cervical insufficiency.

**Methods:** This is a cross-sectional study of participants presenting for their mid-trimester ultrasound examination. Ethics approval was from the Curtin University Human Research Ethics Committee. All data has been collected at sites of SKG Radiology in Perth, Western Australia. Using a trans-abdominal ultrasound approach shear wave speed measurements were acquired at the external and internal os anterior and posterior portions. Participants who subsequently received vaginal progesterone treatment, cervical cerclage or induced preterm labour were removed from statistical analysis.

**Results:** Between September 2016 and June 2019, 504 women agreed to participate in the study. The anterior portion of the internal os showed a significant correlation between shear wave speed and time until birth following the scan R2 Linear = 0.025 (p=0.001). A ratio of the anterior portion of the internal os/external os showed a significant correlation to the time till birth following the scan R2 Linear = 0.011 (p=0.030)

**Conclusion:** A non-invasive transabdominal technique can be used to identify a reduction in shear wave speeds in women who have a subsequent preterm birth.

**Take home message:** Shear wave speed measurements of the cervix may be able to identify imminent cervical insufficiency prior to a reduction in cervical length.
NIPT - the not so well known facts about the recent advances

Dr Joseph Thomas

Lecture Session 3: Obstetrics, May 28, 2021, 3:00 PM - 5:00 PM

The advent of non-invasive prenatal testing (NIPT) in 2010 as a screening test for the common trisomies was revolutionary, with sensitivity, specificity and detection rates unmatched by the combined first trimester screening programs. NIPT was found to achieve a detection rate for Down syndrome of 99.7%, with a false positive rate of 0.04%. However, some NIPT providers now additionally offer extended panels and low resolution whole genome sequencing (WGS) including sex chromosome aneuploidies, rare autosomal aneuploidies, and subchromosomal deletions, duplications and recurrent microdeletions. This comes at a cost of a higher false positive rate and lower positive predictive value. Moreover, the expanded panels and WGS NIPT raise issues of clinical utility and ethical concerns which is explored by Dr Thomas in this presentation (Med J Aust 2021; 214 (4); doi: 10.5694/mja2.50928)

Shining a light on IUGR

Mrs Siobhan Clery

Lecture Session 3: Obstetrics, May 28, 2021, 3:00 PM - 5:00 PM

Introduction: A G1P0 patient presented for ultrasound at 28 weeks before undergoing amniocentesis. Previous ultrasound examination had demonstrated IUGR, oligohydramnios, and the patient reported recent decreased fetal movement. The morphology at 19 weeks showed no abnormality and the patient had a low risk NIPT at 10 weeks gestation.

Method: A transabdominal 2D ultrasound technique was used. Biometry and PW Doppler was performed to assess growth and wellbeing. No cause for IUGR and oligohydramnios was seen during the examination. CVS was performed instead of amniocentesis due to oligohydramnios and no chromosomal abnormality was detected. Fetal brain MRI was recommended due to a poorly defined cavum and abnormal MCA Doppler trace.

Discussion: MRI showed a bilateral supratentorial parenchymal destructive process, likely to have occurred 10-20 days prior on the background of a brain that appeared structurally normal for gestational age. At this point the pregnancy was terminated. Post-mortem stated fetus was positive for cytomegalovirus.

Conclusion: Fetal brain MRI is a useful adjunct to ultrasound. While the spatial resolution is inferior, it is not position or window dependent. Cytomegalovirus is the most common in utero infection occurring in about 1% of all pregnancies. It is usually asymptomatic and spreads through bodily fluids. Transmission can occur during labour and delivery or postnatally through breast milk with little to no consequence. Prenatal transmission occurs by crossing the placenta, which may result in serious damage to the developing fetal brain.

Take home message: Congenital infections of pregnancy may be asymptomatic, catastrophic and an unexpected finding.

Measurement of the fetal renal parenchyma to assess the effects of fetal growth restriction on the developing kidney

Dr Sonja Brennan, Dr David Watson¹, Prof Michael Schneider³, Assistant Prof Donna Rudd²

Lecture Session 3: Obstetrics, May 28, 2021, 3:00 PM - 5:00 PM

Background: Fetal growth restriction (FGR) can adversely impact kidney development resulting in a reduced nephron number and increased risks for hypertension and chronic kidney disease. To date, no study has explored the development of the fetal renal parenchyma as a surrogate for nephron numbers. The aim of this study was to compare the renal parenchymal thickness between FGR and appropriately grown (AGA) fetuses during pregnancy.

Methods: A longitudinal, observational study was conducted between May 2017 to February 2019. Mixed-risk women with a singleton pregnancy underwent an ultrasound scan at least every four weeks between 16 and 38-weeks. Renal parenchymal thickness, renal artery Doppler and fetal biometry were assessed in AGA and FGR fetuses and were analysed using mixed-effects modelling.

Results: We recruited 102 AGA and 30 FGR fetuses. The renal parenchymal thickness was found to be significantly thinner in FGR compared to AGA fetuses (LR=21.06, p=<0.0001). FGR fetuses were found to have a thinner parenchyma than an AGA fetus, regardless of head circumference (LR=8.9, p=0.0028) and had a slower growth trajectory. This supports the principle that FGR fetuses preferentially shunt blood towards the brain. The renal artery blood flow between the two groups showed no significant difference.

Conclusions: Our study demonstrates that FGR negatively influences nephron numbers as it is associated with a thinner parenchyma and slower growth trajectory.

Take home message: Measurement of the renal parenchymal thickness has the potential to identify newborns with a possible reduced nephron endowment, facilitating monitoring and early intervention to reduce future kidney disease.

Artifacts in anatomic imaging

Prof Frederick Kremkau

Lecture Session 3: General, May 28, 2021, 3:00 PM - 5:00 PM

The most common artifacts in two groups: 1. Propagation group 2. Attenuation group How to recognize and manage artifacts when encountered.
**O039 | CEUS Bosniak Cyst Classification**
**Prof Paul Sidhu**

Lecture Session 3: General, May 28, 2021, 3:00 PM - 5:00 PM

The ability to delineate the malignancy of a complex renal cyst has been CT based for a number of years. This is a robust method for triaging complex renal cysts, but CT has limitations. Magnetic resonance imaging has drawbacks, with expense a consideration. The ability to use a contrast examination in ultrasound is an attractive alternative, with safety, ease of examination and accuracy a consideration. This lecture presents the findings of the EFSUMB position paper on the utility of CEUS in assessing and classifying a complex renal cyst according to the CT based Bosniak classification.

**O040 | Ultrasound of the appendix**
**Ms Erin Nugent**

Lecture Session 3: General, May 28, 2021, 3:00 PM - 5:00 PM

**Introduction:** Ultrasound of the appendix requires a dedicated and skilled technologist to provide reliable information to the radiologist. In light of this fact, it is crucial to provide sonographers with the techniques and skill set necessary to aid the radiologist in making an accurate diagnosis. By clarifying anatomy, technique and pathology, excellent and consistent results can be achieved.

**Method:** Comprehension of right lower quadrant anatomy, particularly bowel anatomy, is a cornerstone of successful appendix scanning. This presentation will discuss appendiceal location and reflect on anatomical variations that can affect this. Considerations such as probe choice, windows and landmarks will be discussed. Techniques will be presented to guide sonographers in localising the cecal pole, a critical step in ultimately finding the appendix. Common pathologies of the appendix will also be reviewed, particularly their key findings on ultrasound.

**Results:** At a large Canadian tertiary care centre, the past decade has seen an exponential increase in ultrasounds for appendicitis. This corresponds directly with increased confidence in ultrasounds ability to quickly and accurately assess the both the normal and abnormal appendix. Patients experience decreased wait times and fewer unnecessary tests and procedures.

**Conclusion:** Providing sonographers with the tools to confidently scan the appendix makes an enormous contribution to patient care. Ultrasound is free of ionising radiation and unparalleled in spatial and temporal resolution, making it the ideal modality for patients of all demographics.

**Take home message:** Finding and assessing the abnormal and normal appendix on ultrasound is not only possible but highly probable with right tools.

**O041 | Is 6 hours of fasting necessary? The effect on image assessability and dilation of the gallbladder with 3 hours fasting prior to an abdominal sonography examination**
**Ms Debbie Kang**

Lecture Session 3: General, May 28, 2021, 3:00 PM - 5:00 PM

**Introduction:** Currently the most common protocol adopted by imaging departments for an abdominal ultrasound examination is a minimum 6 hours fasting nil by mouth. From understanding, three studies have been conducted in relation to abdominal anatomy obscurity with non-fasting, but no study has been designed to explore the impact on assessability of the diagnostic images of reduced fasting time has on gallbladder alone.

**Methodology:** Sample size of 25 participants were recruited with two observations per participants. Four gallbladder images were obtained at 3 and 6 hours postprandial observations. The Fisher’s exact test was used to analyse sonographic evaluation of the assessability of the gallbladders with the bases of p-value equal or greater than 0.05 being considered adequate. Ellipsoid method was used to calculate fasted gallbladder volume at 6 and 3 hours postprandial.

**Results:** Significant differences were presented between the 3 and 6 hours postprandial images at fundus (p=0.008) section but there were adequate results for the neck (p=0.056) and body (p=0.098). The mean fasted gallbladder volume at 6 hours postprandial (24.97cm^3) was significantly larger in comparison to 3 hours postprandial (9.40cm^3).

**Conclusion:** Study showed duration of fasting time did influence visual representation of the gallbladder when using ultrasound for diagnostic purposes.

**Take home message:** Calorie calculated uniform meal composition and time management for participants could providing uniformity in future research.

**O042 | Assessment of fatty liver disease: looking beyond fibrosis utilising advanced imaging techniques**
**Dr Matthew Bastian-Jordan**

Lecture Session 3: General, May 28, 2021, 3:00 PM - 5:00 PM

A short review of epidemiology and assessment of fatty liver disease, current technology and future software tools that will help assess for fibrosis, fat infiltration and inflammatory change.
A discussion of the mechanisms of interaction of ultrasound with biological tissue, acoustic output of sonographic instruments, the thermal index, the mechanical index and the ALARA principle.

CEUS has proven to be an extremely effective imaging modality in the detection, visualisation and classification of endoleaks in comparison to CDU and CTA. CEUS is a sensitive adjunct to unenhanced ultrasound and is an extremely useful imaging modality in patients where CTA is contraindicated. CEUS is an accurate and minimally invasive way to interrogate these endografts and has demonstrated statistically significant improvements in the detection of endoleaks. The aim of this study was to evaluate the clinical effectiveness of CEUS in detecting the presence of endoleaks after EVAR and to compare the diagnostic accuracy with other imaging modalities.

CEUS significantly enhances the visualisation of endoleak characteristics and has enabled sub-categorisations of type II endoleaks based on their flow dynamics. Additional sub-categorisations have shown initial benefit in determining an “at risk” type II endoleak. The aim of this study was to evaluate the behaviour of type II endoleaks, determine the endoleak origin, communication with branch vessels and to categorise endoleak behaviour based on underlying haemodynamics as a tool for interventional decision making.

Clear imaging of below-knee and foot arteries is essential to plan distal reconstructions. Contrast-enhanced tomographic 3-D ultrasound (CETUS) is novel and entirely safe with no exposure to ionising radiation or nephrotoxic contrast. We calculated inter- and intra-observer agreement of CETUS and compared it with below knee angiography. In the same week as CT, MR or catheter angiography, CETUS was performed using intravenous 1.2mL bolus injections of Sonovue with a maximum of 5mL administered/patient. CETUS was reported by a vascular scientist blinded to the angiograms reported by a consultant radiologist. We compared images using a modified Society of Vascular Surgery (SVS) run-off score. We recruited 181 PAD patients where 20 were excluded from analysis as they either withdrew consent, could not be cannulated or their images were undiagnostic. In the remaining 161 patients there were 175 comparative patient images split into two groups. 81 had calf imaging and 94 had pedal imaging representing 405 and 198 imaged arteries respectively. Weighted quadratic Kappa/ICC values for intra- and inter-observer agreement were excellent (k/ICC = .83 to .95) and had narrow confidence intervals in both groups. When comparing angiography and CETUS, weighted quadratic Kappa/ICC agreement was moderate with acceptable confidence intervals in both groups ([Calf k/ICC = .54], [Pedal k/ICC = .53]). Agreement decreased from popliteal to pedal vessels as diameter decreased. Agreement between CETUS and DSA was best and CTA the weakest. CETUS is a novel imaging modality with strong observer agreement that achieves clear peripheral and foot images without ionising radiation exposure or nephrotoxic X-ray contrast media. CETUS enhances visualisation of run-off vessels which may play a role in planning of limb salvage or targeted assessment.

CEtUS enhances visualisation of run-off vessels which may play a role in planning of limb salvage or targeted assessment.

An introduction to virtual beamforming, a comparison with conventional pulse-echo imaging and a presentation of the advantages of the former.

Introduction: Monash Health performs more than 50 mesenteric artery ultrasounds per year. The current velocity criteria used in our
Protocol often leads to discrepancy between the PSV recorded and the B-mode and colour Doppler findings.

**Method:** A 2012 study by AbuRahma et al. correlated the findings between duplex ultrasound peak systolic velocities to angiography in the diagnosis of superior mesenteric artery (SMA) and coeliac artery (CA) stenosis. They established new velocity criteria as a result and we aimed to replicate this study with our own data. The 40 most recent studies with an SMA stenosis on ultrasound and that had a mesenteric angiogram within the last 3 months of each other, was selected from the Monash Health PACS system for analysis. The head vascular radiologist blindly calculated the % stenosis on the angiogram and these were correlated to the ultrasound findings of the sonographer.

**Results:** Using the old criteria 67% correlated with the radiologist % stenosis estimation. With the new criteria, 81% correlated with the radiologist % stenosis estimation.

**Conclusion:** We have formal adjusted our velocity criteria for the SMA stenosis based on the AbuRahma paper and our internal audit.

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**O049 | Inflammatory breast**

**Frauke Lever**

Lecture Session 4: Women’s Health, May 29, 2021, 9:00 AM - 10:30 AM

Synopsis unavailable at time of publication.

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**O050 | The Patient and Mammography in Breast Ultrasound**

**Margaret Gockel**

Lecture Session 4: Women’s Health, May 29, 2021, 9:00 AM - 10:30 AM

Breast ultrasound is not a stand-alone modality in breast imaging. Techniques will be presented to assist sonographers in using other imaging modalities to assist in the scanning of the breast. The patient, their emotions and communication with the patient during a breast ultrasound exam will also be presented.

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**O052 | A comparison of breast shear wave elastography and contrast enhanced digital mammography**

**Mrs Natalie Clements**

Lecture Session 4: Women’s Health, May 29, 2021, 9:00 AM - 10:30 AM

Introduction: Ultrasound commonly identifies and differentiates mass lesions. Breast non-mass lesions (NML’s) are regions of altered breast tissue architecture that do not form a discrete mass. Advanced ultrasound imaging quality aids identification of these subtle changes and to identify regions of suspicious microcalcifications that have been previously the domain of mammographic biopsy. These findings may be of benign and malignant changes, commonly identified on mammography and MRI. There is a necessity for the correct detection and characterisation of such lesions utilising ultrasound for more accurate disease management and facilitate simpler biopsy procedures.

Content: Review of recent literature on Ultrasound of MRI and Mammography detected NML’s. Techniques will be discussed to aid in identification of these NML’s with case studies of clinical, mammographic, MRI and ultrasound findings.

Non mass lesions of the breast may represent:

- Fibrocystic change
- Radial scar
- Focal fibrosis
- Atypical ductal hyperplasia
- Sclerosing adenosis
- Ductal carcinoma in situ – low to high grades
- Microinvasive ductal carcinoma
- Lobular carcinoma – both in situ and invasive
- Invasive mixed lobular and ductal carcinoma

Ultrasound findings of malignancy may include:

- Ductal ectasia
- Ductal/parenchymal microcalcifications
- Increased vascularity of parenchyma
- Subtle shadowing
- Variable echogenicity
- Subtle ill-defined regions
- Abnormal region only visible in one plane

Take Home Message: Identification of non-mass lesions with ultrasound is an important element in the breast sonographer’s arsenal to detect often subtle abnormalities that need further investigation to prove their aetiology.
**Introduction:** This is a report into breast shear wave elastography (SWE) and contrast enhanced digital mammography (CEDM) to diagnose breast pathology, both benign and malignant.

**Method:** For each patient the ultrasound shear wave speed measurements were obtained at the lesion and in the fat adjacent to the lesion, for a ratio measurement. These measurements were used to ascertain benign or malignant lesions against the WFUMB guidelines for breast elastography. The mammogram images and reports have been reviewed to ascertain the prediction of benign or malignant lesions using the BI-RADS criteria.

**Results:** CEDM of the majority of the malignant breast lesions showed an increase in contrast agent uptake. When using the breast SWE results and the CEDM results there was an increase in the sensitivity as well as significant reduction in the false negatives.

**Conclusion:** SWE of the breast and CEDM can be used to characterise and differentiate benign and malignant breast lesions. Both modalities help to evaluate the equivocal breast lesions and to define the proper management of the patient into either a biopsy or follow up pathway. The additional use of these modalities has also been of value in the evaluation of women with dense breasts and those that have a higher risk of breast cancer.

**Take home message:** There is a positive benefit in the use of the non-invasive technique of breast SWE and the CEDM to assess breast lesions to determine if benign or malignant.

**O053 | Localising breast lesions using Magseed**

**Dr Marcus Ong**

Lecture Session 4: Women’s Health, May 29, 2021, 9:00 AM - 10:30 AM

Synopsis unavailable at time of publication.

**O054 | Magseed – sonographer perspective**

**Mrs Natalie Clements**

Lecture Session 4: Women’s Health, May 29, 2021, 9:00 AM - 10:30 AM

A sonographer perspective of the recently introduced localisation device. Magseed uses 5.1mm paramagnetic steel and iron oxide cylindrical seed that is readily visible on mammography and ultrasound.

**O055 | Title TBC**

**Dr Umesh Shetty**

Lecture Session 4: Paediatrics, May 29, 2021, 9:00 AM - 10:30 AM

Synopsis unavailable at time of publication.

**O056 | PRESENTATION TBC**

Lecture Session 4: Paediatrics, May 29, 2021, 9:00 AM - 10:30 AM

Synopsis unavailable at time of publication.

**O057 | Outcomes of an equivocal scan result in the ultrasound assessment for hypertrophic pyloric stenosis**

**Mr Keith VanHaltren**

Lecture Session 4: Paediatrics, May 29, 2021, 9:00 AM - 10:30 AM

**Synopsis unavailable at time of publication.**

**Introduction:** Ultrasound assessment of the pyloric length, wall thickness and passage of fluid are all used to make the diagnosis of hypertrophic pyloric stenosis (HPS). The use of these multiple parameters with variable accuracy leads to a subgroup that are neither clearly normal or abnormal (i.e. equivocal). The objectives of this audit were to identify the causes and to investigate the outcomes of the patients diagnosed with an equivocal HPS.

**Methods:** We identified all paediatric ultrasound reports with the words “pyloric stenosis” or “pylorus” performed between July 2009 and June 2019. The outcome of each ultrasound examination was allocated as “Positive,” “Negative,” or “Equivocal” based on the conclusion of the report. The ultrasound measurements and the reason for each equivocal result were also recorded.

**Results:** 717 examinations were performed in the audit period of which 45 (6.3%) had an equivocal outcome. The most common reason for an equivocal result was overlying gas limiting assessment (14/45). Borderline ultrasound measurements (7/45), borderline ultrasound measurements combined with poor transit of fluid (7/45) and suboptimal technique (8/45) also led to equivocal results. Of the equivocal studies that had a follow up scan, 6 (27%) progressed to HPS with the majority of these equivocal initially due to borderline measurements with little or no transit of fluid through the pylorus.

**Conclusion:** Equivocal outcomes based on borderline ultrasound measurements or a combination of borderline ultrasound measurements with poor transit of fluid warrants repeat ultrasound assessment.

**Take home message:** Equivocal pylorus examinations with borderline measurements requires follow up.

**O058 | The role of ultrasound in anti-NMDA receptor encephalitis - A tertiary paediatric hospital experience**

**Ms Jessica Alford**

Lecture Session 4: Paediatrics, May 29, 2021, 9:00 AM - 10:30 AM

**Synopsis unavailable at time of publication.**
**Introduction:** Anti-NMDA receptor encephalitis is an autoimmune encephalitis which predominantly affects young women. Research suggests that in up to 60% of these women, ovarian teratomas may be present. This review set out to audit the data on anti-NMDA receptor encephalitis cases within a tertiary paediatric centre and the prevalence of ovarian teratoma within this cohort.

**Method:** A review was made of all reports over a 20 year time frame, citing terms such as “NMDA encephalitis”, “psychosis”, “teratoma”, “ovarian teratoma”, and “encephalitis”. Cases that did not include both a presentation of encephalitis AND ovarian teratoma as a potential cause were excluded (eg sacrococcygeal teratomas; EBV encephalitis, etc).

**Results:** Over a 20 year period, 21 cases presented to the radiology department for investigation of encephalitis. Approximately half were positive for anti NMDA antibodies. Of those, only two patients were found to have ovarian teratomas.

**Conclusion:** In a tertiary paediatric setting, the incidence of ovarian teratomas in patients with anti-NMDA receptor encephalitis is lower than the reported literature.

**References:**

1. Jo Johnson, Mrs

**Institution:** Women’s and Children's Hospital in Adelaide

**Lecture Session 4: Paediatrics, May 29, 2021, 9:00 AM - 10:30 AM**

**Abstract:**

Ultrasound has an important role in the early diagnosis and management of pancreatitis in paediatric patients.

**Take home message:**

Ultrasound has an important role in the early diagnosis and management of pancreatitis in paediatric patients.
fellowship, the clinician follows experts in the field with a view to become comprehensively trained in a subspecialty. In 2013, the ultrasound leadership of a large public hospital network identified the need for specialist sonographers even though they had a group of highly trained generalist sonographers. They also recognised that to compete in the ultrasound staffing marketplace, they need to provide role extension, professional development, and a nurturing environment for future leaders. From this, evolved a “Fellowship Program” for sonographers.

**Method:** All fellows were partnered with a mentor sonographer expert in a subspecialty area. A set of aspirational goals were established to create sonographer fellowships. These were to:

- Grow and develop specialist sonographers to meet the demands of subspecialty imaging,
- Give staff additional meaning and attachment to the workplace,
- Provide a structure/opportunities for quality management,
- Create a stronger clinical focus among the leaders by developing them as mentors,
- Have a greater professional profile through presentation and publication.
- Improve patient outcomes through improved quality

**Results:** The first iteration of the program (2014) was ambitious with 17 sonographers involved across 10 disciplines. This proved too ambitious and unsustainable despite being well received. Since this time, fellowships have been offered in paediatrics, obstetrics/ fetal diagnosis, vascular and women’s health ultrasound. The program has provided excellent clinical outcomes, staff engagement and leaders of the service. Participants consistently report that finding time for the academic component of the program is a challenge.

**Conclusion:** Sonographer fellowships provide benefits for the patient, imaging services, sonographers, and a future possible professional pathway for the sonography profession.

**O064 | Radiology across borders**

**Mrs Catherine Scott**
Lecture Session 5: Obstetrics, May 29, 2021, 11:20 AM - 12:50 PM

Radiology Across Borders is a recognised charity which focuses on teaching key clinical skills to radiologists, doctors and medical imaging staff around the world to ensure health professionals have the knowledge and training to save their patient’s lives.

Our projects aim to drive sustainable change, assisting clinicians to become more competent in both fundamental and cutting edge skills and to share their expanding knowledge with their peers locally.

Our presentation today will cover the history, achievements and direction of Radiology Across Borders

**O065 | Panel Discussion: Career Pathways for sonographers - beyond scanning**

**Catherine Scott**, Deb Carmody, Julie Cahill, Erin Geeves
Lecture Session 5: Obstetrics, May 29, 2021, 11:20 AM - 12:50 PM

**O066 | Taking the pain out of neural assessment of the foot and ankle**

**Jerome Boyle**
Lecture Session 5: Obstetrics, May 29, 2021, 11:20 AM - 12:50 PM

‘Listen to your patient, they are telling you the diagnosis.’ Yet in many instances neural pathology remains overlooked or missed during the routine foot and ankle ultrasound. With an emphasis on clinical presentation and the relevant neural distributions I will take you on a journey through the nerves of the foot and ankle. This presentation
will cover expected sonographic findings through case studies validating that pathology in these neural distributions remains common when one knows what to look for.

O067 | Greater trochanteric pain syndrome

Michael Truloff

Lecture Session 5: Musculoskeletal, May 29, 2021, 11:20 AM - 12:50 PM

Although ‘Trochanteric bursitis’ has historically been implicated as the cause of lateral hip pain, recent advances in knowledge have demonstrated a multitude of causes. As such, Greater Trochanteric Pain Syndrome is currently the accepted clinical diagnosis to describe lateral hip pain with focal tenderness over the greater trochanter. This presentation will explore ‘Greater Trochanteric Pain Syndrome’ with a focus on anatomy and the underlying pathologies associated with this condition. The incidence of common pathologies will be discussed.

O068 | Ultrasound of the calf muscles

Dr Mark Cresswell

Lecture Session 5: Musculoskeletal, May 29, 2021, 11:20 AM - 12:50 PM

Review of the anatomy and normal sonographic features of the gastrocnemius - soleus complex (calf muscles), why these muscles are prone to injury and what the pattern of injury looks like. Review other pathology that may mimic acute calf muscle tears.

O069 | Muscles and Musculotendinous Units focusing on Hamstrings

Dr Colin Chong

Lecture Session 5: Musculoskeletal, May 29, 2021, 11:20 AM - 12:50 PM

Synopsis unavailable at time of publication.

O070 | Shear-wave elastography is a valid and reliable tool to quantify scar tissue stiffness

Ms Marilyn Zelesco, Ms Helen DeJong1,2,3, Mr Steven Abbott4, Prof Fiona Wood2,3,4,5

Lecture Session 5: Musculoskeletal, May 29, 2021, 11:20 AM - 12:50 PM

Introduction: Shear-wave elastography (SWE) is a tool to evaluate biomechanical properties of tissue in organs. However, it has not been validated for use in burn scar assessment. Following a burn, pathological scars demonstrate increased stiffness which is associated with restricted movement, pain, chronic itch and psychological distress. Clinical methods to quantify scar stiffness are currently inadequate, therefore the aim of this research was to evaluate the reliability and validity of SWE to quantify burn scar stiffness.

Method: 35 participants with 61 scars and 50 matched contralateral skin sites were evaluated with SWE and two clinical scar assessment scales. Inter-rater, intra-rater and test retest reliability of SWE was evaluated with intraclass correlation (ICC). Concurrent validity was assessed between SWE and clinical assessments using Spearman’s Rho.

Results: ICC for all forms of reliability were high. High correlations were found between shear wave velocity and the clinical scar scales. Regression analysis demonstrated differences between the female and males. Body location and Fitzpatrick skin type was significantly associated with scar velocity.

Conclusion: SWE was found to provide valid and reliable measures of skin and burn scar stiffness.

Take home message: SWE provides unique information enhancing the evaluation of burn scar assessment.

O071 | Are atrial appendages identifiable on the four-chamber view at 17-22 weeks gestation?

Dr Narelle Kennedy, Dr Ann Quinton1,2,3

Lecture Session 5: Professional Topics, May 29, 2021, 11:20 AM - 12:50 PM

Introduction: The atrial appendages of the heart have a different shape and appearance that are easily detected postnatally. Identification of appendages is key to identifying atrial morphology in some cardiac anomalies such as heterotaxy syndromes. A paucity of research in fetal atrial appendage imaging, suggests, atrial situs could be achieved antenatally. We ask, can the atrial appendages be demonstrated on routine antenatal ultrasound?

Methods: Retrospective study, using stored images/cine loops of the fetal heart at 17-22 weeks gestation. Fetal anatomy scans performed from July 2018 – June 2019 at a tertiary hospital were reviewed. Maternal age, gestation, body mass index (BMI), fetal lie, type of image (still/cine) and frequency of the left atrial appendage (LAA) or right atrial appendages (RAA) visibility were recorded.

Results: Preliminary findings on 210 randomly selected fetal anatomy ultrasounds. Women had a mean age 29.6(5.3) years, BMI 27.9(6.7). Mean gestation was 19.5(0.8). The right atrial appendage (RAA) was demonstrated in 163/210(77.6%) and the left atrial appendage (LAA) in 125/210(59.5%). The RAA 162/163(99.4%) were demonstrated in systole, 25/163(15.3%) on still images, 83/163(50.9%) on cine loops and 54/163(33.1%) both, whilst LAA 123/125(98.4%) were systole, 18/125(14.4%) still images, 78/125(62.4%) on cine loops and 29/125 (23.2%) both. The fetus was in the anterior-posterior position, in
101/163 (61.9%) RAA and 81/125 (64.8%) LAA, the remaining were either right/left lateral decubitus position and one was prone.

**Conclusion:** Atrial appendages can be demonstrated on routine fetal heart ultrasounds with a cine loop being the best method of detection.

**Take-home message:** There is potential to identify atrial appendages in stored cine loops which may increase detection of cardiac anomalies.

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**O072 | Characterisation of fetal cardiac function in fetuses at risk of cardiac dysfunction due to maternal diabetes mellitus**

Ms Alison Lee-Tannock, Dr Karen Hay, Prof Sailesh Kumar

1Monash Health, Moonee Ponds, Victoria, Australia

Lecture Session 5: Professional Topics, May 29, 2021, 11:20 AM - 12:50 PM

**Introduction:** Complications of diabetes in pregnancy include structural fetal anomalies and an increased risk of perinatal mortality and morbidity, including stillbirth. Epidemiological studies have shown increase in cardiac impairment in offspring. Current management and monitoring includes optimising glycaemic control, ultrasound surveillance (growth and Doppler scan) and planning delivery from 38 weeks gestation. There is very limited evidence regarding longitudinal cardiac function in fetuses from women with diabetes. Is there a measurable difference between fetal heart function in pregnancies complicated by diabetes and uncomplicated pregnancies? Could other types of ultrasound surveillance be more sensitive in assessing the effects of maternal diabetes on the fetus?

**Method:** Prospective observational cohort study. 126 participants in the normal cohort, 50 participants in the diabetic cohort. Fetal cardiac function assessment every 4 weeks from enrolment (18-28 weeks) to term as well as standard biometry and Doppler assessment. Biomarker of cardiac dysfunction measured at birth from cord blood.

**Results:** Normal reference ranges produced for TAPSE and MAPSE and strain and strain rate of right and left ventricles and other measured parameters produced. Differences found between several ultrasound parameters between the two cohorts. Differences in measured biomarkers of cardiac dysfunction in cord blood between the normal and diabetic cohorts. Normal reference ranges produced for TAPSE and MAPSE and strain and strain rate of right and left ventricles and other measured parameters produced. Differences found between several ultrasound parameters between the two cohorts. Differences in measured biomarkers of cardiac dysfunction in cord blood between the normal and diabetic cohorts.

**Conclusion:** Maternal diabetes in pregnancy has a measurable affect on fetal cardiac function.

**Take home message:** Assessing fetal cardiac function could provide additional information in managing women with diabetes in pregnancy.

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**O073 | Fetal Cardiac scanning**

Dr Narelle Kennedy

Lecture Session 5: Professional Topics, May 29, 2021, 11:20 AM - 12:50 PM

The first trimester Nuchal Translucency screening is the ideal time for early screening for structural abnormalities and congenital heart defects. Despite the increasing uptake of prenatal cell free DNA testing, it cannot replace the value of early screening of the fetus for these anomalies. In this talk the recommended views and approach for screening early fetal hearts and detection rates will be discussed. Followed by several cases of early congenital heart defects.

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**O074 | Prediction and prevention of preeclampsia**

Prof Kypros Nicolaides

Lecture Session 5: Professional Topics, May 29, 2021, 11:20 AM - 12:50 PM

Synopsis unavailable at time of publication.

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**O075 | Isolated LBCV - Should we be concerned?**

Mrs Joanne Logan

Lecture Session 5: Professional Topics, May 29, 2021, 11:20 AM - 12:50 PM

**Introduction:** The value of the cardiac 3-vessel view in diagnosing cardiac anomalies is well established. Examination of the vessels superior to the 3-vessel view is becoming more common place. In this view, the left brachiocephalic vein (LBCV) is seen coursing posterior to the thymus and anterior to the aortic arch. There are several documented variations in the course of the brachiocephalic vein. Intrathyamic(LBCV is diagnosed by assessing the fetal thymus, which is seen bordered by the mammary vessels. An intrathyemic LBCV will course anteriorly, through the thymus.

**Methods:** In this retrospective study we reviewed the outcomes of 15 fetuses with an isolated intrathyemic course of the brachiocephalic vein, diagnosed at the time of the morphology scan. Fetuses with additional abnormal findings were excluded from our study. The cardiac findings were confirmed by follow up with a paediatric cardiologist. Birth outcomes were reviewed.

**Results/Conclusion:** Isolated intrathyemic left brachiocephalic vein is a common finding (1 - 3% or pregnancies). In the absence of additional abnormalities (cardiac or otherwise), it should be considered a normal variant.
Take home message: Examination of the vessels superior to the 3 vessel view is more common with improved machine resolution. Greater diagnosis of variants to cardiac anatomy, such as intrathymic LBCV, would prompt a larger study of fetal outcomes and could assist with patient counselling and reassurance.

O076  |  First trimester fetal brain
Lisa Clarke

Lecture Session 6: Head and Neck, May 29, 2021, 2:00 PM - 3:30 PM
This presentation will focus on normal fetal brain anatomy encountered during obstetric ultrasound examination, in the late first trimester. Numerous ultrasound images along with relevant literature review will be presented. There will also be some sonographic examples of malformations.

O077  |  The changing face of Head and Neck Cancer
Dr Matthew Magarey

Lecture Session 6: Head and Neck, May 29, 2021, 2:00 PM - 3:30 PM
Synopsis unavailable at time of publication.

O078  |  TIRADS - helping surgeons manage thyroid cancer
Dr Matthew Magarey

Lecture Session 6: Head and Neck, May 29, 2021, 2:00 PM - 3:30 PM
Synopsis unavailable at time of publication.

O079  |  Sonography of the tongue - The Fiona Stanley Hospital (FSH) experience
Mrs Kirstin MacIennan1, Mrs Marilyn Zelesco2, Mr Steven Abbott1

Lecture Session 6: Head and Neck, May 29, 2021, 2:00 PM - 3:30 PM
Introduction: The human tongue forms a major part of the upper airway and has important roles in physiological functions such as respiration, speech and swallowing. Abnormalities of the upper airway function are common and may result in disorders such as obstructive sleep apnea (OSA), speech impairment and dysphagia. In the late 1980's, authors began to describe sonography of the tongue and floor of mouth for the purpose of tumour staging; or for the evaluation of tongue movement during phonation and in the sleep cycle. Staging a tongue tumour is important for clinicians since size and site of a lesion greatly influences therapeutic management.
Method: Transcervical and intraoral approaches are utilised in sonography of the tongue. This talk examines the value of tongue sonography, reviewing standard technique and corresponding sonographic anatomy.
Results: Patients with oral pathology may find a clinical examination uncomfortable. Compared to CT/MRI, ultrasound can resolve soft tissue structures making it ideal for screening purposes. The distinctive ultrasound advantage is that it can display cross-sectional anatomy and tissue motion in real-time.
Conclusion: At FSH, sonography has proven to be a useful clinical adjunct in the imaging of the tongue and floor of mouth.
Take home message: Imaging departments should consider sonography as the first line assessment modality for intraoral pathology.

O080  |  Metastatic papillary carcinoma: A case study demonstrating the importance of extending the examination
Mrs Emma Godrik

Lecture Session 6: Head and Neck, May 29, 2021, 2:00 PM - 3:30 PM
Introduction: Patient presented for a parotid ultrasound for the investigation of a nontender lump on the left cheek that was slowly enlarging.
Method: Ultrasound of the patient's lump was performed in the first instance to confirm the presence of a mass and its location within the left parotid gland. A thorough scan of the remainder of the parotid gland including comparison with the asymptomatic side and submandibular glands was also performed. Due to the nature of the sonographic findings of the mass, extension of the examination to include the thyroid and carotid sheath was performed.
Results: The patient's presenting lump was identified as a large solitary hypoechoic mass with punctate calcifications and internal vascularity within the left parotid gland. Within the left lobe of the thyroid, a solid hypoechoic mass with punctate calcifications and capsular extension was seen. Two additional lymph nodes in the carotid sheath with microcalcifications were also present.
Conclusion: The above findings suggested papillary carcinoma of the thyroid with the presence of metastatic lymph nodes. Parotid glands often have lymph nodes within them and the presence of multiple microcalcifications within the parotid mass should prompt extension of the examination to include the thyroid.
Take home message: Punctate calcifications (microcalcifications) have a high indicator for malignancy in the thyroid with the most common being papillary carcinoma. Metastasis to the lymph nodes can occur with lymph nodes having similar ultrasound characteristics. A thorough scan of the entire neck must be performed in the presence of any mass.
O081 | US guided needle biopsies - are they all the same?

Dr Matthew Magarey

Lecture Session 6: Head and Neck, May 29, 2021, 2:00 PM - 3:30 PM

Synopsis unavailable at time of publication.

O082 | Taking the “Kik” out of Kikuchi-Fujimoto Disease: A Case Study

Mrs Debbie Slade

Lecture Session 6: General/Men’s Health, May 29, 2021, 2:00 PM - 3:30 PM

Introduction: Kikuchi-Fujimoto disease, more commonly known as Kikuchi’s disease or Histiocytic Necrotizing Lymphadenitis, is a rarely encountered, widely misunderstood usually benign pathology that involves unusual swelling of the lymph nodes. The purpose of this presentation is to rectify a shortfall in available literature describing this disease. This case study describes a 42-year-old Caucasian woman who presented with a unilateral neck swelling and describes etiology, ultrasound appearances, cytology, diagnosis, and treatment.

Method:
- Ultrasound examination was performed in the region of concern using a Canon (Toshiba) XG unit and 12 MHz linear array transducer.
- Transverse, longitudinal, and hilar measurements of the enlarged lymph node were documented. Borders, internal echogenicity and architecture were assessed. Power Doppler was utilized to assess vascularity.
- Insonation of the entire neck was performed looking for evidence of additional abnormal lymph nodes or malignancy.
- Ultrasound appearances were compared with common lymph node pathology.
- Ultrasound guided FNA was performed as was surgical excision in an effort to achieve diagnosis.

Results:
- Ultrasound examination was performed in the region of concern using a Canon (Toshiba) XG unit and 12 MHz linear array transducer.
- Transverse, longitudinal, and hilar measurements of the enlarged lymph node were documented. Borders, internal echogenicity and architecture were assessed. Power Doppler was utilized to assess vascularity.
- Insonation of the entire neck was performed looking for evidence of additional abnormal lymph nodes or malignancy.
- Ultrasound appearances were compared with common lymph node pathology.
- Ultrasound guided FNA was performed as was surgical excision in an effort to achieve diagnosis.

Conclusion:
- FNA results were inconclusive.

- Definitive diagnosis of Kikuchi disease was achieved only with excisional node biopsy.

Take Home Messages: Consider Kikuchi disease as an ultrasound differential diagnosis for enlarged lymph nodes. Definitive diagnosis of Kikuchi disease can only be made by excisional node biopsy.

[Correction added on 03 June 2021, after first online and print publication: The content of the abstract O082 has been replaced.]

O083 | The Future of Ultrasound

Prof Peter Burns

Lecture Session 6: General/Men’s Health, May 29, 2021, 2:00 PM - 3:30 PM

Synopsis unavailable at time of publication.

O084 | The prostate

Dr John Yaxley

Lecture Session 6: General/Men’s Health, May 29, 2021, 2:00 PM - 3:30 PM

Synopsis unavailable at time of publication.

O085 | It started with a dart board! A patient’s journey through male breast cancer

Paula Gillam

Lecture Session 6: General/Men’s Health, May 29, 2021, 2:00 PM - 3:30 PM

A patient with male breast cancer, sonographic features of the disease and patient journey from diagnosis to treatment.

O086 | Erectile Dysfunction

Mr Peter Russell

Erectile Dysfunction (ED) has been described as the inability to obtain or maintain an erection sufficient for penetrative intercourse. ED has been reported to affect up to 39% of men at 40 yrs of age and around 52% at 40 – 70 yrs of age. Causes may be many and varied, and may include psychogenic, hormonal, neurogenic, pharmacologic, vasogenic and systemic.

This presentation will discuss the anatomy, physiology, pharmacology and sonographic findings involved in the investigation of ED.
**O087 | Ultrasound of the coracoid area**

Prof Carlo Martinoli

Lecture Session 6: Musculoskeletal, May 29, 2021, 2:00 PM - 3:30 PM

**O088 | Ultrasound of the subacromial bursa - anatomical and clinical review**

Mr Greg Lammers

Lecture Session 6: Musculoskeletal, May 29, 2021, 2:00 PM - 3:30 PM

**Introduction:** Shoulder ultrasound is a very commonly used investigation to find the cause of shoulder pain and assess anatomy where trauma has occurred. The subacromial bursa is assessed as part of any shoulder ultrasound where thickening of the bursa can be visualised as well as effusions and bursal bunching noted on dynamic assessment. A common conclusion when seeing these findings is a diagnosis of bursitis.

**Methods:** The subacromial bursa anatomy has recently undergone more detailed study with more modern anatomical study techniques and in the modern internet connected world, literature reviews. This presentation will look at the latest studies and reviews, both anatomically and pathologically. It will relate these back to what we see in an ultrasound exam and discuss some of the findings.

**Results:** Recent anatomical studies and literature reviews continue to accurately describe the subacromial bursa but with more detailed descriptions than perhaps an ultrasound exam does. More work is required to look at nerve supplies and understanding of pathological change, especially when interpreting what bursal thickening on ultrasound means.

**Conclusion:** This presentation demonstrates that the subacromial bursa is a more detailed structure than what is described in routine ultrasounds. That bursal thickening does not always indicate bursitis.

**Take home message:** Assessment of the subacromial bursa by ultrasound needs a change in our thinking in how we scan it and interpret our observations.

**O089 | Ultrasound of the elbow**

Dr Mark Cresswell

Lecture Session 6: Musculoskeletal, May 29, 2021, 2:00 PM - 3:30 PM

**O090 | Ultrasound of the hand, wrist, elbow and shoulder: A clinical perspective**

Jennifer Mathias and Cherie Smith

Lecture Session 6: Musculoskeletal, May 29, 2021, 2:00 PM - 3:30 PM

This presentation will focus on common hand and upper limb conditions which may be presented for MSK ultrasound and subsequent hand/upper limb management. This includes diagnosis of common conditions of the hand, wrist, elbow and shoulder. Having insight into a therapist's involvement in the rehabilitation process will shed light on the importance of diagnostic tools and clinical treatments, which typically involve close collaboration with a hand or upper limb surgeon. Much of the diagnostic process from a therapist's perspective utilises traditional physical testing such as ROM, gauging pain tolerance, physical appearance, etc, however imaging is requested in many cases to provide irrefutable evidence of the injury type and which assists in guiding the most appropriate form of treatment. As such this presentation seeks to elucidate the vital role of ultrasound in the clinical evaluation of hand and upper limb injuries.

**O091 | A Sonographers side quest: Research**

Dr Narelle Kennedy

Lecture Session 7: Professional Topics - Research/WHS, May 29, 1621, 4:00 PM - 5:30 PM

According to google the word “research” is derived from the Middle French “recherche”, which means “to go about seeking”, and is performed to advance learning and improve life for all. Human participation in research historically has been burdened with an unethical ethos this continues even to modern publications. To guide sonographers on a quest for research armed with the appropriate tools, this talk covers the history and importance of ethics in research and provides some guidance of the expectations of the ethics forms.

**O092 | Research development and design: Considerations for clinical research**

Prof Marie Williams

Lecture Session 7: Professional Topics - Research/WHS, May 29, 1621, 4:00 PM - 5:30 PM

Sonographers have an incredible suite of technical and critical thinking skills- well the ones I’ve worked with have! Yet similar to other allied health professions, relatively few of the profession translate these abilities/skills into driving or leading clinical research (am I wrong?). This session will present a range of ideas for practical strategies for thinking about clinical research from coming up with research ideas, smart ways of embedding habitual research practices within the clinical workplace through to formal pathways for research training.
O093 | Development of a questionnaire

Celia Tinetti

Lecture Session 7: Professional Topics - Research/WHS, May 29, 1621, 4:00 PM - 5:30 PM

While a list of competency standards exists for Australian sonographers, specific attributes of professionalism are not provided. Yet these attributes are important if sonographers are to meet the standards required for professional practice. This presentation reports the results of the first two exploratory phases of the larger study investigating professionalism in sonography, and the development of a questionnaire on professionalism in sonography.

Phase 1 involved face-to-face focus group interviews with experienced and early-career sonographers to identify attributes of professionalism within the context of sonography. Attributes identified in phase 1 were used to frame survey questions for phase 2. Members of the public who had an ultrasound examination in 2020 and other healthcare team members were asked to rate the attributes using Likert-type responses, and to provide additional comments at the end of each category. Respondents had the opportunity to add attributes not mentioned in the survey.

Content analysis of the Phase 1 interview data identified 27 professional attributes organised into seven categories. Phase 2 descriptive statistical analysis indicated that only a few attributes were rated as not important or not applicable by participants. Iterative analysis and referring back to the literature lead to a comprehensive list of attributes that was used to construct the questionnaire for phase 3.

Due to the complexities around a clear definition of professionalism within the context of sonography, this study is highlighting the need for a comprehensive list of attributes to identify the meaning of professionalism in sonography. These initial findings are currently being explored further via questionnaires with sonography students and sonographers, including those facilitating on-site clinical training of entry-level sonographers and university students. Final outcomes will inform standards for the profession and sonographer education programs.

O094 | Where to from here?

Mrs Aarti Bajaj

Lecture Session 7: Professional Topics - Research/WHS, May 29, 1621, 4:00 PM - 5:30 PM

Introduction: A sonographer generally works from 8 am to 5 pm, performing ultrasound examinations from anywhere between 16 to 22 patients per day. Dealing with anxious patients, running the appointment lists on time, attending emergency patients, finishing paper work for each patient, waiting for appointed radiologists to attend the cases whenever needed, a sonographer fits all of the listed duties in there 8 to 5 job. Like most medical professionals, despite of performing their duties diligently, they become subject of patients’ ill behaviour on regular basis. Whether the patient has reached late for the appointment due to bad traffic, or has been incorrectly booked for their ultrasound examination, had to spend out of pocket for a scan or just dealing with their own anxieties related to scans and the outcomes, sonographers are always at the receiving end. Despite all that, when patient walks out of the examination room, they have all the rights to put in a complaint without having to prove the legitimacy of their statement. And the sonographer on the other hand has next no rights to do the other way.

Methods: Five different incidences will be presented about patient complaints regarding the service provided by the sonographer not being up to their expectations.

Results: Impact of complaints on sonographer’s professional, mental and emotional well-being.

Conclusion: Should there be better ways to protect sonographers.

O095 | The role of AI in reducing sonographer injury

Dr Rebecca Perry

Lecture Session 7: Professional Topics - Research/WHS, May 29, 1621, 4:00 PM - 5:30 PM

Synopsis unavailable at time of publication.

O096 | Fertility scan please. What do they want to know?

Dr Jackie Chua

Lecture Session 7: Women’s Health, May 29, 2021, 4:00 PM - 5:30 PM

Synopsis unavailable at time of publication.

O097 | Scoring system in ovarian torsion for sonographers

Mr Greg O’Connor

Ovarian torsion can occur at any age from intrauterine fetus to post-menopausal women. A practicing sonographer is faced with the potential diagnosis of ovarian torsion based on clinical findings in combination with sonographic features. Knowing the diagnosis of ovarian torsion will lead patient management towards surgery, a simple scoring system is proposed by the author to aid the sonographer in the final diagnosis. The benefit of a scoring system could lead to earlier intervention with the intention of limiting delayed diagnosis. A low score could also aid in avoiding unnecessary surgical intervention.
Diagnosing adnexal torsion under ultrasound – How accurate are we...and how accurate could we be?

Ms Sarah Joy Muirhead

Lecture Session 7: Women's Health, May 29, 2021, 4:00 PM - 5:30 PM

Introduction: Adnexal torsion (AT) occurs when there is a partial or complete rotation of the ovary and/or the fallopian tube about the infundibulopelvic ligament. Although this often causes some level of vascular compromise, this is not always the case. Other signs must be used if the sonography industry is to be accurate in diagnosing AT.

Methods: As part of a Masters unit project, rates of ultrasound accuracy in diagnosing AT were assessed through a literature review of studies (both Australian and internationally) on the topic. Accuracy in diagnosing AT under ultrasound varies widely. Described are the ultrasound signs of AT, which, when taken together, have made some tertiary institutions highly accurate in AT diagnoses when compared to the broader industry. These signs include: ovarian size, presence of a mass, engorgement, free fluid, abnormally located ovary, whirlpool sign and clinical presentation.

Results: While the overall accuracy for ultrasound in surgically proven AT cases appears to be low (21-66%), some institutions have raised this accuracy to nearly 100%, because they have taken into account these multiple different signs of AT. Vascular flow is highly specific but not highly sensitive.

Conclusion: When all known signs are assessed, ultrasound can have an accuracy of nearly 100%. This is not currently the case in the industry.

Take Home Message: It is hoped that this presentation may encourage sonographers to look broadly at the multiple known ultrasound signs of AT and take them into consideration when assessing for torsion, leading to a higher level of accuracy.

Abnormal uterine bleeding

Dr Jackie Chua

Lecture Session 7: Women's Health, May 29, 2021, 4:00 PM - 5:30 PM

Synopsis unavailable at time of publication.

Pelvic floor – Prolapse and sphincter tears

Frauke Lever

Lecture Session 7: Women's Health, May 29, 2021, 4:00 PM - 5:30 PM

Synopsis unavailable at time of publication.

Contrast enhanced ultrasound of the liver lesions

Jane Keating

Lecture Session 7: General/Abdominal, May 29, 2021, 4:00 PM - 5:30 PM

Imaging of liver lesions provides a persistent diagnostic challenge, due to similar imaging characteristics and extensive differential diagnosis. Contrast enhanced ultrasound (CEUS) extends the diagnosis beyond basic lesion detection to enable characterisation, and in some cases leads to definitive diagnosis that eliminates the need for additional imaging. This presentation will give a comprehensive overview of contrast enhanced ultrasound features of various liver lesions including haemangiomas, adenomas, focal nodular hyperplasia, hepatocellular carcinoma and liver metastasis. Contrast enhanced ultrasound has been shown to be accurate for evaluation of benign and malignant liver tumours, and dramatically extends the role of ultrasound of liver lesions.

Establishing an Ultrasound Screening Protocol for Chronic Liver Disease with a Hand-Held Device: A Pilot Project in Southern Ethiopia

Mr Peter Coombs

1Monash Health, Moonee Ponds, Australia

Lecture Session 7: General/Abdominal, May 29, 2021, 4:00 PM - 5:30 PM

Introduction: Chronic liver disease (CLD) presents significant challenges in the developing world. The prevalence and the health burden to the local health services is often not well understood. Diagnosis and monitoring of CLD is difficult. Liver biopsy, shear-wave elastography and premium ultrasound is often not available. Progressive miniaturisation with technological advancement has resulted in transducers that connect directly to a phone or tablet. This technology presents considerable opportunity to provide access to imaging in these remote areas. The aims of this project were to develop an efficient, evidence-based ultrasound protocol for the assessment of CLD using a hand-held ultrasound device and; to assess the prevalence of CLD in a remote rural community at high risk of CLD. The community identified is from the Konso-zone in southern Ethiopia who consume Cheka as the main drink in their diet placing them at higher risk of CLD.

Method: A community based cross-sectional study design was used. A detailed scan protocol was devised to assess the liver for Hepatic Steatosis, fibrosis, and for sonographic markers of Portal Hypertension using the Philips Lumify® Ultrasound system. Mean
examination time was calculated dividing the length of the ultrasound session by the number of examinations performed.

Results: 92 examinations (57 male, 35 female) were performed across 2 days. The time of each examination was approximately 6 minutes. Sonographic markers for chronic liver disease were uncommonly seen in this study.

Conclusion: A detailed, evidence-based procedure for the assessment of CLD was performed on-site in a small rural community in Ethiopia. The pilot study provides a structure and benchmark for similar remote projects.

O103 | Does hepatic artery Doppler have a role in patients with cirrhosis?

Ms Marilyn Zelesco1, Mr Steven Abbott1, Mrs Jackie Saunders1

1Fiona Stanley Hospital, Perth, Western Australia, Australia

Introduction: Chronic liver disease (CLD) is a world-wide problem with rising rates of the disorder, particularly due to non-alcoholic steatohepatitis (NASH). Irrespective of the foundation disease, increasing fibrosis leads to the development of portal hypertension, hepatic insufficiency or hepatocellular carcinoma (HCC). B Mode ultrasound, Doppler and shear wave elastography (SWE) have become established imaging tools in the grading of liver disease, with a move to differentiating between compensated advanced chronic liver disease (cACLD) and clinically significant portal hypertension (CSPH) in the cirrhotic patient. Many Doppler criteria have been proposed, and recently the role of the hepatic artery (HA) resistive index (RI) in the prediction of portal hypertension has been proposed.

Methods: A retrospective review of HA RI in 119 patients with known cirrhosis, 59 of which had portal hypertension, was conducted. This data was benchmarked against a control group of 30 patients.

Results: The data did not demonstrate a statistically significant change in the HA RI between the control group and patients with cACLD. However, the HA RI was a promising tool comparing cACLD and CSPH.

Conclusion: HA RI cannot be used to predict cACLD, but may differentiate between cACLD and CSPH.

Take home message: HA RI may reflect hemodynamic changes in the splanchnic circulation in portal hypertension.

O104 | Ultrasound of the appendix

Paula King

Introduction: How does it happen that we are now in search of appendices with ultrasound?

In this presentation I will take us through some accepted criteria for identifying the appendix with ultrasound. We can look at CT comparisons and change our ultrasound criteria for the address of the appendix to match the more reliable anatomical approach of CT anatomical references.

Once tied down it becomes an easier task to apply our criteria to the diagnosis of acute appendicitis. When is 7mm the ultimate number? What is bright mesentery?

Let’s finish off by spending some time delving into quoted figures in relation to a successful identification of the appendix with ultrasound in a range of patient groups.

O105 | Get scrubbed, The insertion of PICC lines by Sonographers

Christopher Gilmore, Iain Franklin

Lecture Session 7: General/Abdominal, May 29, 2021, 4:00 PM - 5:30 PM

Synopsis unavailable at time of publication.

O106 | Shear wave dispersion imaging of the liver

Mrs Andrea Mould1, Mrs Marilyn Zelesco1, Mr Steven Abbott1, Mr Christopher Welman1

Lecture Session 7: General/Abdominal, May 29, 2021, 4:00 PM - 5:30 PM

Introduction: Despite limitations, shear wave elastography (SWE) is now in widespread clinical use. A limitation of SWE is the assumption that the liver is a perfectly elastic tissue i.e. shear wave speed is constant regardless of the shear wave frequency. The liver is however not perfectly elastic and hence the shear wave speed varies depending on the shear wave frequency i.e. shear wave dispersion (SWD). This is due to the effect of liver viscosity.

Method: Reviewing several liver diseases reported to impact on liver viscosity, such as non-alcoholic steatohepatitis (NASH), non-alcoholic fatty liver disease (NAFLD), acute hepatitis and other systemic diseases (particularly those with necro-inflammatory activity) and how SWD is altered.

Results: A variety of clinical cases will be used demonstrating the implementation of SWD in a tertiary hospital environment and its role as an adjunct tool in the setting of acute or chronic liver presentations.

Conclusion: Dispersion has a role to play alongside SWE and has opened a further window in the sonographic assessment of liver disease.

Take home message: This talk discusses the potential role of SWD as an adjunct tool in the setting of acute or chronic liver assessment.
O107 | Ultrasound of the hand (excl. wrist and fingers)

Prof Carlo Martinoli

Lecture Session 8: Musculoskeletal, May 30, 2021, 9:00 AM - 10:30 AM

O108 | Ultrasound of the fingers

Prof Carlo Martinoli

Lecture Session 8: Musculoskeletal, May 30, 2021, 9:00 AM - 10:30 AM

O109 | Buzzwords: Contemporary sonographic technology features

Prof Frederick Kremkau

A discussion of the principles of harmonic imaging, panoramic imaging, spatial compounding and elastography.

O110 | Advanced shoulder anatomy with ultrasound correlation

Sumi Shrestha Taylor

With the continual improvement of ultrasound technology, more anatomical structures are identifiable today than before. Knowing what more is possible and how to assess these new structures on ultrasound will allow sonographers to provide more valuable input to the patient management. Main highlights will be glenohumeral ligaments, coracohumeral ligament, rotator interval capsule, sub-coracoid bursa and more. Although this lecture is designed for advanced level shoulder scans, some basics will also be covered. Therefore, this will be beneficial for MSK sonographers of all skill levels. Some unique case studies will be included as a reminder to look outside the box.

O111 | Doppler principles – How sharp are you?

Prof Frederick Kremkau

An interactive Q&A self-evaluation of Doppler principles as applied to detection, measurement and presentation of motion and flow information.

O112 | Non-saphenous sources of reflux

Mrs Marresa Houle

Familiarity of the saphenous veins has grown exponentially over the last 20 years. Increased knowledge of this area of study has increased treatment results and patients quality of life. Non-saphenous sources of reflux has emerged as an important avenue to investigate. This presentation will cover the anatomy and presentation of these vessels along with scanning techniques on how to optimise the image of these vessels.

O113 | How to clinically assess patients presenting with venous disease

Mrs Marresa Houle

Venous ultrasound can be extremely complicated and filled with surprises. Being able to clinically assess your patients accurately is essential to accurately diagnose these patients and contribute to improvement of their quality of life. This presentation will cover the most current CEAP classifications released last year. Comorbidities will be covered along with common differential diagnoses. The calf muscle pump mechanism will be discussed along with how poor function impacts venous disease severity.

O114 | Post radiofrequency/venaseal ablation scanning – sonographers' tips and tricks and how to avoid common pitfalls

Mr Daniel Rae

In recent years the development of radiofrequency and Venaseal ablation of the saphenous veins has revolutionised the treatment of saphenous vein incompetence. As these procedures become more popular with surgeons and patients there is going to be an increasing reliance on general sonographers to perform these post-operative studies. This presentation will cover:

• The principle behind the treatment of radiofrequency/Venaseal ablation
• Normal/abnormal findings of the treated saphenous veins at 1-5 weeks and at 1 year post operatively
• EHIT classifications
Other appearances worth noting
How to report sonographic findings

By the end of the presentation, you should have an idea of how to approach and execute scanning of this region, avoid common pitfalls and effectively report your findings.

O115  |  A family's journey with DDH

Jason Cotter

Lecture Session 8: TBC, May 30, 2021, 9:00 AM - 10:30 AM

“The diagnosis of Developmental Dysplasia of the Hip (DDH) often brings up more questions than answers for the parents of the baby due to the wide spectrum of dysplasia and a plethora of treatment options. This can be a very difficult time for new parents, as they navigate misconceptions regarding the condition as well as the on-going concern of their child’s prognosis. This presentation will focus on the parent’s journey from diagnosis to surgical treatment of DDH through the lens of parents who have both an ultrasound and a paediatric physiotherapy background.”

O116  |  Paediatric vascular anomalies

Michael Guandalini

Lecture Session 8: TBC, May 30, 2021, 9:00 AM - 10:30 AM

Children with vascular anomalies are an ever increasing cohort presenting for ultrasound assessment. This presentation will briefly discuss the most common subtypes, ultrasound characteristics and management options of this group of complex conditions. Ultrasound offers excellent lesion characterisation which guides treatment planning and is often the modality of choice for initial evaluation of these lesions.

O117  |  TBC

TBC

Lecture Session 8: TBC, May 30, 2021, 9:00 AM - 10:30 AM

Synopsis unavailable at time of publication.

O119  |  Foetal Echo with a focus on the Trachea and Aorta

Stephen Bird

Lecture Session 9: Obstetrics, May 30, 2021, 11:30 AM - 1:00 PM

Synopsis unavailable at time of publication.

O120  |  First trimester screening in the era of NIPT

Prof Jon Hyett

Lecture Session 9: Obstetrics, May 30, 2021, 11:30 AM - 1:00 PM

Synopsis unavailable at time of publication.

O121  |  Cervical ultrasound assessment – Why, who and when

Prof Jon Hyett

Lecture Session 9: Obstetrics, May 30, 2021, 11:30 AM - 1:00 PM

Synopsis unavailable at time of publication.

O122  |  From ultrasound room to delivery room – ultrasound in high risk pregnancy

Dr Elisha Broom

Lecture Session 9: Obstetrics, May 30, 2021, 11:30 AM - 1:00 PM

Ultrasound is a key adjunct to obstetric care, and high quality ultrasound optimises outcomes for both high risk mothers and high risk fetuses. This session aims to provide a sound bite of the most common high risk obstetric presentations: pre-eclampsia, fetal growth restriction, diabetes and in recognising and targeting ultrasound to best aid management decisions.

O123  |  Ultrasound of cervical nerves

Prof Carlo Martinoli

Lecture Session 9: Musculoskeletal, May 30, 2021, 11:30 AM - 1:00 PM

Synopsis unavailable at time of publication.
O124 | Ultrasound of peripheral nerves
Dr Mark Cresswell

Synopsis unavailable at time of publication.

O125 | Ultrasound of the inguinal canal
Matthew Vogels

Review sonographic imaging of the peripheral nerves from the brachial plexus through to the hand and the pelvis through to the foot. Understanding what the normal nerves look like sonographically and how to identify them reliably. Review common sites of neural entrapment and the ultrasound appearances.

O126 | MSK interventional ultrasound
Dr Mark Cresswell

Review the basics of ultrasound guided intervention, the principles of why and when to intervene, the existing understanding of what interventions work, the drugs we use and why, and also to review the most common sites and types of intervention.

O127 | Iliofemoral vein obstructions
Mr Daniel Rae

Iliofemoral DVT accounts for up to 20-25% of all lower limb DVTs. Delayed diagnosis can lead to a higher risk of limb ischemia in the acute setting and post thrombotic syndrome in the chronic setting. Imaging of the iliofemoral region can be technically challenging, however understanding the direct and indirect sonographic signs can be helpful in recognising these obstructions. This presentation is going to cover:
- Venous anatomy of the iliofemoral region
- Different types of iliofemoral vein obstructions
- Clinical presentations in the acute and chronic setting of venous obstruction
- Higher-risk patients
- Scan techniques of technically challenging areas
- Common sonographer pitfalls in assessing this region
- Case studies demonstrating varying clinical presentations of iliofemoral vein obstructions.

Sonographers will hopefully gain some useful tools to be able to approach the scanning of this area and have a greater understanding of the haemodynamic principles behind venous obstruction and the clinical symptoms they cause.

O128 | Unusual pathology post carotid endarterectomy
Rebecca Hetherington

Patch repair following carotid endarterectomy is a common procedure, often referred for ultrasound surveillance post intervention. Rarely, complications such as infection of a synthetic patch following endarterectomy can occur. This report outlines the changes that can be detected with duplex ultrasound when the repair starts to fail.

O129 | Study on standing vs reverse trendelenburg
Mrs Marresa Houle

O130 | Principles tune-up: How sharp are you?
Prof Frederick Kremkau

An interactive Q&A self-evaluation of sonographic principles as applied to 2D and 3D gray-scale anatomic imaging.