

Start	End	Topic	Speakers
17:00	17:05	Introduction and how to perform TPFUS	Alison Hainsworth
17:05	17:25	The anterior compartment - normal and pathological anatomy on ultrasound - an integrated approach	Seyed Abbas Shobeiri
17:25	17:45	The posterior compartment - normal and pathological anatomy on ultrasound - an integrated approach	Giulio Santoro
17:45	18:00	The assessment of meshes and tapes	Riffat Cheema
18:00	18:15	Functional aspects – assessment and therapy	Lucia Berry
18:15	18:35	Break	None
18:35	19:25	Interactive case interpretations	Alison Hainsworth Giulio Santoro Lucia Berry Riffat Cheema Seyed Abbas Shobeiri Alexis Schizas
19:25	19:30	Questions	All

### **Description**

#### Background Information

Integrated total pelvic floor ultrasound (TPFUS) is endoanal, transvaginal and transperineal ultrasound which allows the dynamic assessment of the entire pelvic floor. It has recently been recommended by the American Association of Colorectal Surgeons that it should be used routinely for multicompartamental pelvic floor assessment by the multidisciplinary team. It provides both diagnostic and therapeutic value. It is user dependent and so requires training and experience. This workshop will equip you with the tools needed to begin to understand how to perform and interpret integrated total pelvic floor ultrasound.

Previously, standard pelvic floor imaging consisted of either MRI or defaecation proctography. MRI allows multicompartamental assessment but is either dynamic which underestimates posterior compartmental pathology or defaecatory which is unpleasant for the patient. MRI is not always readily available and is usually performed in a closed configuration supine scanner, which again contributes to underestimation of pathology. Defaecation proctography allows the assessment of defaecatory dynamics in the upright position and can allow visual biofeedback but assessment of the middle and anterior compartment is only possible with opacification of the bladder and small bowel.

In the era of patient centred care and where a one stop assessment clinic is a useful asset, TPFUS allows the dynamic assessment of the entire pelvic floor without necessarily performing rectal expulsion although this can be utilised depending upon the clinicians preference. In addition, TFUS can be used as a therapeutic tool to improve pelvic floor function.

The use of TPFUS includes -

- assessment and quantification of rectocele, enterocele, intussusception, cystocele, uterine descent and perineal descent,
- the identification and evaluation of pelvic meshes and tapes (position, associated sepsis),
- assessment of pelvic floor function and subsequently a therapeutic tool for visual biofeedback,
- assessment of the integrity of the anal sphincter muscles.

#### Key Learning Points

- TPFUS includes endoanal, transperineal, transvaginal and endovaginal ultrasound.
- To understand the normal anatomical appearances of TPFUS.
- The identification and measurement of rectocele and perineal descent on TPFUS.
- The identification and grading of intussusception, enterocele, cystocele and uterine descent on TPFUS.
- The identification of the anal sphincters, meshes and synthetic tapes on TPFUS.
- To locate the position of slings and meshes on TPFUS; to assess their functionality and also examine for any associated encapsulation and infection.
- The evaluation of pelvic floor function and an understanding of how this tool can be used in its' therapeutic role.

#### Workshop Description

Initially there will be some short didactic lectures to cover the basics of integrated total pelvic floor ultrasound.

1) Introduction and How to perform TPFUS – 10 mins

Miss Alison Hainsworth - UK

Integrated total pelvic floor ultrasound is a dynamic, easily accessible, cost effective and safe tool which can be used to screen for anatomical and functional abnormalities in a one stop clinic. It also enables assessment of meshes and tapes and has a therapeutic role in pelvic floor functional disorders.

It is user dependent and so requires training and experience. It can be utilised by the entire multidisciplinary team. This workshop will equip you with the tools needed to begin to understand how to perform and interpret integrated total pelvic floor ultrasound.

Integrated total pelvic floor ultrasound can be performed using a standard ultrasound machine. Transvaginal ultrasound scan and endovaginal or endoanal scanning is performed using a rotating single crystal probe. Transperineal ultrasound is performed using a conventional curved array probe with frequencies of 3 – 6 MHz and a field of view of at least 70 degrees. We will outline how to set up and use the ultrasound machine though we recommend that you engage your local ultrasound machine representatives to go through the optimal settings for integrated total pelvic floor ultrasound with you. We will include a video outlining the assessment process.

2) The anterior compartment - Normal and pathological anatomy on ultrasound – an integrated approach – 15 minutes

Dr Abbas Shobeiri - US

3) The posterior compartment - Normal and pathological anatomy on ultrasound – an integrated approach – 15 minutes

Professor Giulio Santoro - Italy

Both of these lectures will provide an explanation of the normal and pathological anatomical appearances when performing integrated total pelvic floor ultrasound.

### Transvaginal Ultrasound

**Anterior Views:** An anterior transvaginal view allows anatomical visualisation of the bladder, muscle layers of the bladder (usually < 5mm), bladder neck, urethra, rhabdosphincter and pubic bone. The bladder neck is a highly reflective, hyperechoic funnel and the urethra is hypoechoic, which contrasts sharply with the surrounding peri-urethral tissue. The pubic symphysis is consistently seen (identification rate 100%) as a hypoechoic oval in front of the bladder reflecting the fibro-cartilagineous disc which connects the bony structures of pubic arch. During Valsalva manoeuvre the bladder neck should not descend more than 2 cm in relation to the pubic symphysis.

**Posterior Views:** Posterior transvaginal ultrasound enables visualisation of the following structures in the midline: the rectum, anorectal junction and anal canal, the posterior midline portion of the puborectalis sling muscle (a hypoechoic bundle of fibres lying behind the anorectal junction) and the perineal body (a hypoechoic structure anterior to the anal canal).

**Three-Dimensional Cross Sectional View:** The four anatomical levels demonstrated by transvaginal scanning are as follows. At the highest level the rectum lies posteriorly and bladder neck sits anteriorly. As the scan moves caudally the upper part of the urethra (anterior) and levator ani (lateral) are visualised. The pubic bone comes in to sight at 12 o'clock and is attached to the levator ani, which runs laterally in continuity with the puborectalis muscle sling muscle in the posterior portion. The levator ani are visible as a multi-layer hyperechoic sling at this level. The most caudal portion of the scan reveals the superficial perineal muscles, the perineal body and lower anal canal. Alignment of the pelvic organs (bladder neck or urethra, vagina and rectum or anal canal) indicates that the levator plate is intact and the arched symmetrical appearance pubic bone is a useful landmark to check that scan has been performed in a neutral position.

### Transperineal Ultrasound

Sagittal transperineal scanning allows simultaneous visualisation of the anterior (pubic symphysis, urethra and bladder), middle (vagina, uterus, perineal body) and posterior (rectovaginal septum, rectum, anorectal junction) compartments in the midline. The anorectal angle is measured between the posterior wall of the rectum and the longitudinal axis of the anal canal and should open during straining.

### Endoanal Ultrasound

Endoanal ultrasound allows visualisation of the internal and external anal sphincters.

4) The assessment of meshes and tapes – 10 minutes

Dr Riffat Cheema – Sweden

This lecture will outline the key aspects of mesh and tape evaluation when initially starting to perform ultrasound in your practice.

Ultrasound allows assessment of the position of synthetic meshes and tapes. In an era where we encounter patients who have undergone previous pelvic floor surgeries we are bound to encounter patients with these present in our daily practice. It is important to understand their appearances on ultrasound, be able to evaluate their position and function and to highlight any concerns regarding migration or associated sepsis.

#### 4) Functional aspects – assessment and therapy – 10 minutes

Dr Lucia Berry – UK

This lecture delves into the innovative use of integrated total pelvic floor ultrasound in physiotherapy, highlighting its role as a dynamic visual biofeedback tool. Traditionally employed for diagnostic purposes, pelvic floor ultrasound is now emerging as a pivotal therapeutic technique in pelvic floor rehabilitation. This session will elucidate how real-time ultrasound imaging empowers patients and therapists alike, providing immediate feedback for optimizing pelvic floor muscle exercises and treatments. The talk will also touch upon the practical integration of this technology in clinical settings, supported by relevant case studies and research findings. Attendees will gain insights into the transformative impact of ultrasound-guided therapy in enhancing patient outcomes and advancing physiotherapeutic practices.

Break 30 minutes

Interactive session - all – 60 minutes

We will run four workstations and delegates will rotate through each to practice image interpretation with multiple examples of the following scans –

- Transperineal
- Anterior and posterior transvaginal
- Endovaginal
- Endoanal

This will include the following pathological findings –

- Rectocele
- Enterocoele
- Intussusception
- Perineal descent
- Cystocele
- Uterine descent
- Sphincter disruption from obstetric anal sphincter injury
- Dyssynergy
- Meshes and tapes

Take Home Messages

- Integrated total pelvic floor ultrasound (TPFUS) includes endoanal, transperineal, transvaginal and endovaginal ultrasound.
- TPFUS allows the dynamic assessment of the entire pelvic floor and evaluation of both anatomical and functional aspects. It should be used as a routine screening tool for pelvic floor assessment.
- TPFUS also has therapeutic value for functional aspects.

Additional References

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### **Aims of Workshop**

A multidisciplinary, interactive and hands on workshop focused on the use of integrated total pelvic floor ultrasound (dynamic endoanal, vaginal, perineal) by all members of the multidisciplinary team for the assessment of the entire pelvic floor. This will include the assessment of structural abnormalities (identification and measurement of rectocele, enterocele, intussusception, perineal descent, cystocele, uterine descent) and identification of functional pelvic floor dysfunction with the use of ultrasound as a rehabilitative tool. The standards taught will be in keeping with international consensus statements and delivered by a panel of experts.

### **Educational Objectives**

Integrated total pelvic floor ultrasound allows the dynamic assessment of the entire pelvic floor in a one stop clinic and has both diagnostic and therapeutic value. It is relevant to all members of the multidisciplinary team and evidence has shown that it should now be used as a core investigation of pelvic floor dysfunction as standard practice. However, it requires expertise and training before it can be used reliably.

This workshop allows delegates to practice image interpretation and is provided by experts from the whole multidisciplinary team and will therefore be relevant to all disciplines. As well as image interpretation for the diagnosis of anatomical and functional defects, the use of ultrasound as a therapeutic tool will also be covered, ensuring all aspects of this vital tool is covered.

### **Learning Objectives**

1. Understand the equipment used for integrated total pelvic floor ultrasound and how to perform the tests.
2. Understand the interpretation of images from integrated total pelvic floor ultrasound for the identification of structural abnormalities (rectocele, enterocele, intussusception, perineal descent, cystocele, uterine descent, identification of mesh).
3. Understand the interpretation of images from integrated total pelvic floor ultrasound for functional abnormalities and how it can be used for rehabilitation of the pelvic floor.

### **Target Audience**

Urology, Urogynaecology and Female & Functional Urology, Bowel Dysfunction, Conservative Management

### **Advanced/Basic**

Intermediate

### **Suggested Learning before Workshop Attendance**

Consensus Definitions and Interpretation Templates for Dynamic Ultrasound Imaging of Defecatory Pelvic Floor Disorders  
Proceedings of the Consensus Meeting of the Pelvic Floor Disorders Consortium of the American Society of Colon and Rectal Surgeons, the Society of Abdominal Radiology, the International Continence Society, the American Urogynecologic Society, the International Urogynecological Association, and the Society of Gynecologic Surgeons.

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