BMUS / BSGE Guidance for Ultrasound Assessment of Endometriosis

Produced by the British Medical Ultrasound Society

Professional Standards Group
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Collaborators:

Dr Ruth Reeve

Development Officer (British Medical Ultrasound Society)

Clinical Specialist Sonographer (Portsmouth Hospitals University NHS Trust)

Mrs Roxanne Sicklen

Clinical Specialist Sonographer (Royal Free London NHS Foundation Trust / Kings College London)

Dr Susanne Johnson

FRCOG, Gynaecologist

BSGE diagnostics committee (member)

Dr Sue Freeman

Consultant Radiologist (Cambridge University Hospitals NHS Foundation Trust)

Mrs Rebecca Slough

Clinical Specialist Sonographer (Cambridge University Hospitals NHS Foundation Trust)

Miss Borsha Sarker

Consultant Sonographer DCR.DMU.AVS.MHSc. (Sunderland Womens Hub)

Mrs Catherine Kirkpatrick

President Elect (British Medical Ultrasound Society)

Consultant Sonographer (United Lincolnshire Teaching Hospitals)

Ms Alison Smith

Tutor Sonographer (Guys and St Thomas' NHS Foundation Trust)

Miss Elisabeth Bean MBBS BSc PhD MRCOG

Consultant Gynaecologist (Barking, Havering and Redbridge University Hospitals NHS Trust)

BSGE diagnostics committee (Chair)

Mr Joel Naftalin MBBS BSc MD MRCOG

Consultant Gynaecologist (University College London Hospitals NHS Foundation Trust)

BSGE diagnostics committee (member)

Foreword

The introduction of this guidance document on the use of ultrasound for the diagnosis of endometriosis is timely. The All-Party Parliamentary Group (APPG) on Endometriosis set out a series of recommendations in their 2020 inquiry report, many of which we have aimed to incorporate. This has been facilitated by working in tandem with members of the British Society of Gynaecological Endoscopy (BSGE) diagnostic committee. Our joint goal is to support the effective use of ultrasound in diagnosing endometriosis and, in doing so, to improve the lives of the many people affected by this complex disease.

By providing a tiered structure of expertise and a clear summary of the relevant anatomy for assessment, we hope to enable the ultrasound community to work together to reduce the current average eight-year diagnostic delay. This is a global challenge, and we hope the ultrasound community will embrace this opportunity for meaningful change and improvement.

Ruth Reeve and Roxanne Sicklen

Guideline co-chairs

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Introduction

Endometriosis is a chronic, often life-altering condition affecting up to 10–15% of women of reproductive age worldwide ([1]). Despite its prevalence, it remains notoriously underdiagnosed, with patients commonly facing delays of many years before receiving a confirmed diagnosis. [2][3] These delays stem from a range of complex sociocultural, systemic, and clinical factors, which include the normalisation of menstrual pain, limited awareness among both patients and clinicians, and a lack of consistency in imaging practices. As a result, women often experience prolonged suffering and delayed access to appropriate treatment.

Ultrasound—particularly transvaginal ultrasound (TVUS)—is increasingly recognised as a powerful and accessible diagnostic tool for the detection of endometriosis [4][6][7], especially when performed by trained practitioners using standardised protocols. However, its diagnostic accuracy is highly dependent on operator skill and experience, and until recently, systematic approaches to identifying deep endometriosis (DE) have not been widely integrated into routine practice.

BMUS Endometriosis Ultrasound Working Group, alongside members of the BSGE diagnostics committee, have developed the following guidance to address this critical gap. This guidance document is designed for all practitioners who perform and interpret gynaecological ultrasound examinations, including those working in generalist ultrasound services, community settings, and specialist endometriosis centres. Whether you are a sonographer, radiologist, or gynaecologist, this guidance provides a structured, practical framework to support consistent, high-quality ultrasound evaluation of suspected endometriosis.

This document has multiple intended uses:

- **Training**: It supports the education and upskilling of clinicians at all levels, from those new to gynaecological scanning to advanced practitioners developing subspecialty expertise.

- **Guiding Clinical Practice**: It offers clear protocols to aid in the systematic assessment of endometriosis-related pathology, incorporating current consensus recommendations such as the IDEA [4] and MUSA [5] frameworks.

- **Supporting Referrals and Clinical Decision-Making**: By improving the quality and clarity of initial ultrasound assessments, the guidance can help streamline referrals, triage cases appropriately, and ensure that patients are directed to the right care pathways more efficiently.

- **Informing Local Protocols and Service Development**: It can be used as a benchmark to inform departmental policies, standardise reporting, and drive service improvements across diverse clinical settings.

As the role of ultrasound in endometriosis diagnosis continues to evolve, this guidance aims to bridge the divide between general and specialist practice. By promoting consistent standards, improving

training, and encouraging multidisciplinary collaboration, it supports earlier recognition of disease, more accurate diagnosis, and ultimately, better outcomes for patients.

This BMUS / BSGE guidance should not be viewed as prescriptive or static, but rather as a foundation upon which services can create tailored protocols that meet their local needs, while aligning with national efforts to enhance diagnostic pathways for endometriosis.

Ultrasound Equipment

Essential equipment required: At a minimum, equipment should include:

High-Quality Ultrasound System:

- Capable of high spatial and contrast resolution to detect subtle hypoechoic nodules.
- Good gray-scale sensitivity to visualise peritoneal and soft tissue interfaces.
- Ability to adjust dynamic range and image persistence.

High-Resolution Transvaginal Probe:

- Frequency: Minimum 5–9 MHz range.
- Must support Harmonic Imaging for improved resolution.

Transabdominal Probe (recommended for larger pelvic masses (ovarian endometriomas >10 cm and upper abdominal assessment e.g. kidneys for hydronephrosis):

- Frequency: 3–5 MHz convex or sector probe.

Doppler Capabilities:

- Colour, Power and Micro-vascular Doppler settings are essential

Desirable equipment:

3D Ultrasound:

- 3D acquisition and volume rendering allow detailed evaluation of uterine morphology and junctional zone for adenomyosis [5].

Linear probes:

- For abdominal wall, appendix and small bowel in expert hands.

Justification and Referrals

Referrals for ultrasound assessment in cases where endometriosis is suspected or confirmed may originate from primary care clinicians or gynaecology services. In some instances, endometriosis may not be explicitly indicated as a potential diagnosis; however, the patient's symptoms may suggest its presence.

In such cases, ultrasound practitioners should maintain a high index of suspicion for endometriosis and carefully consider the appropriate level of gynaecological ultrasound assessment required. Referrals should be triaged appropriately; this may include scheduling the patient with a specific practitioner with the necessary competency, depending on the complexity and expertise needed.

General note: Referrals must contain sufficient information from the clinical history, physical examination, and relevant laboratory investigations to support the suspected diagnosis.

Referrals should be accepted, with endometriosis considered as a differential diagnosis for patients with the following symptoms:

- Cyclical pain
- Pain the week before and after a period
- Dysmenorrhoea (painful periods)
- Dyschezia (pain during a bowel movement) during a period
- Dyspareunia (pain during sexual intercourse)
- Menorrhagia (heavy periods)

Appropriate referrals for specialist assessment:

- Patients with suspected endometriosis on Level I ultrasound report (see training levels section)
- Patients with any of the above symptoms and previous pelvic scans (often reported as 'normal')
- Patients with known endometriosis for follow up (follow up for conservative / medical management / recurrence of symptoms post-surgery)
- Patients with known endometriosis with new / increasing symptoms
- Surgical planning for endometriosis

Comprehensive Clinical History

In cases of suspected or known endometriosis, the clinical details provided on the referral form may not always reflect the patient's full range of symptoms or relevant history. Key details may have been omitted or differ from what the patient reports on the day of the scan. These details can significantly influence both the interpretation of ultrasound findings and subsequent management recommendations.

It is the responsibility of the ultrasound practitioner to obtain a thorough and targeted clinical history directly from the patient prior to commencing / during the examination. If this history diverges from the information provided by the referrer, it should be clearly documented in the ultrasound report. In addition, practitioners should review and reference any prior relevant imaging (e.g. ultrasound, MRI) or surgical history within their report.

The inclusion of a complete and detailed clinical history supports and strengthens the ultrasound findings, providing context for any recommendations regarding further management or onward referral.

Key clinical questions to consider during ultrasound assessment:

- Last menstrual period (LMP)
- Menstrual pattern and regularity
- Current contraception use
- Menorrhagia
- Intermenstrual bleeding (IMB) or postcoital bleeding (PCB)
- Dysmenorrhoea, cyclical pain and premenstrual pain
- Dyschezia
- Dysuria
- Dyspareunia
- Parity and obstetric history (including delivery details)
- Cervical smear history
- History of pelvic surgery (may need to ask specifically about LSCS or STOP)
- Any family history of endometriosis
- Relevant medical history

An example questionnaire has been provided in appendix * which may be used / adapted to facilitate the above.

Terminology/definitions

Ultrasound assessment of the pelvis for the diagnosis and exclusion of endometriosis requires evaluation of anatomical structures beyond those typically included in a standard pelvic scan. Conventional pelvic ultrasound generally includes assessment of uterine and ovarian morphology, and the pouch of Douglas solely for the presence of free fluid (although this is a common, essentially normal finding in women of reproductive age.) The uterus and ovaries are sited in the middle compartment. Comprehensive assessment for endometriosis necessitates examination of both the anterior compartment (structures located anterior to the uterus) and the posterior compartment (structures located posterior to the uterus).

To ensure consistency in training, reporting, and longitudinal monitoring of disease, it is essential that the terminology used to describe anatomy is standardised across all practitioners.

Below is a summary of the agreed terms and definitions, with accompanying reference images. Examples with different scanning orientations have been included.

Anterior Compartment:

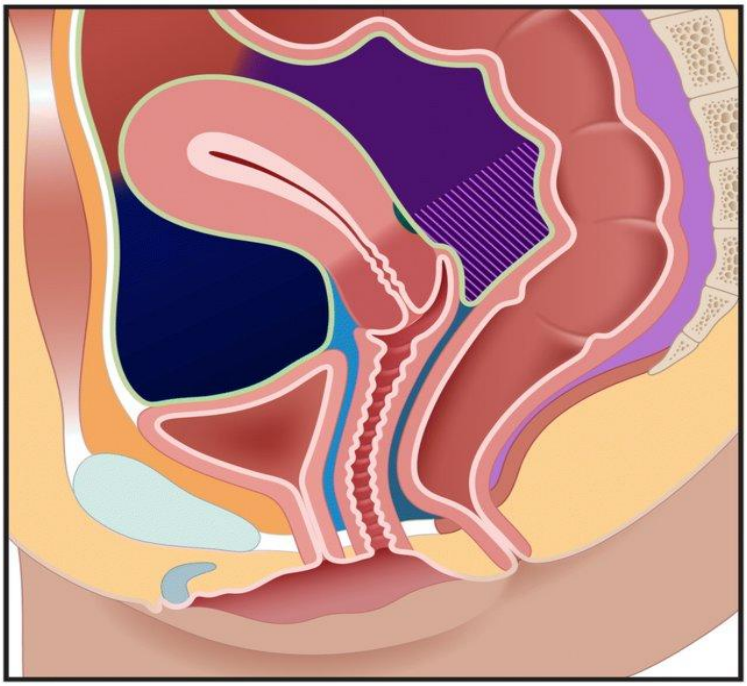
- Vesico-uterine space (pouch)
- Bladder wall
- Distal ureter

Middle compartment:

- Uterus (including the cervix)
- Ovaries
- Fallopian tubes

Posterior Compartment:

- Posterior vaginal fornix
- Rectovaginal septum
- Torus uterinus
- Uterosacral ligaments
- Rectum
- Sigmoid colon

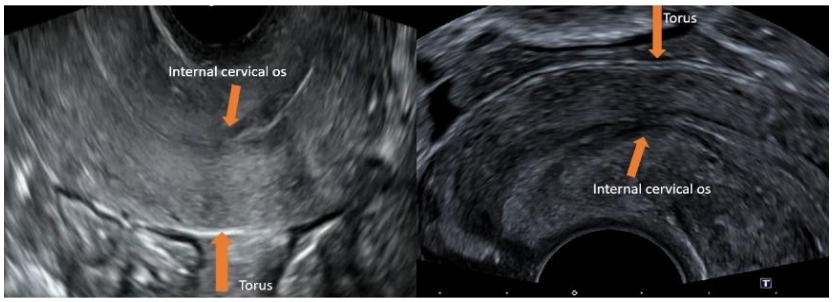


Deep endometriosis (DE): Formally known as ‘deep infiltrating endometriosis’

Deep endometriosis typically appears as hypoechoic tissue invading below the peritoneum or adjacent structures. Deep endometriosis may be well-defined hypoechoic nodules or plaques which can cause anatomical distortion of the following anatomy:

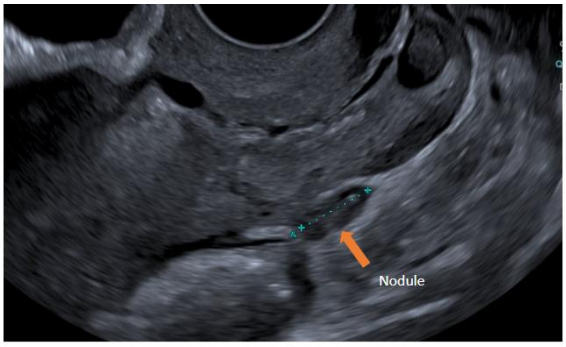
Torus uterinus:

A small transverse anatomical thickening on the posterior wall of the cervix, located at the level of the internal os, where the uterosacral ligaments insert.



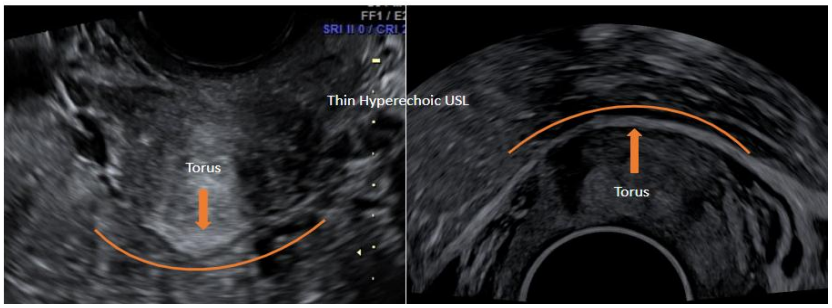
Torus uterinus nodules:

The torus uterinus (or uterine torus) is a common site for endometriotic nodules which are often adherent to the bowel or ovary.



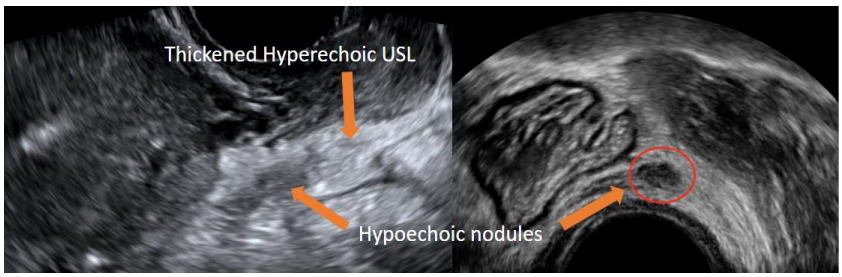
Uterosacral Ligament:

The uterosacral ligaments run posterolaterally, connecting the back of the uterus (at the torus uterinus) to the sacrum.



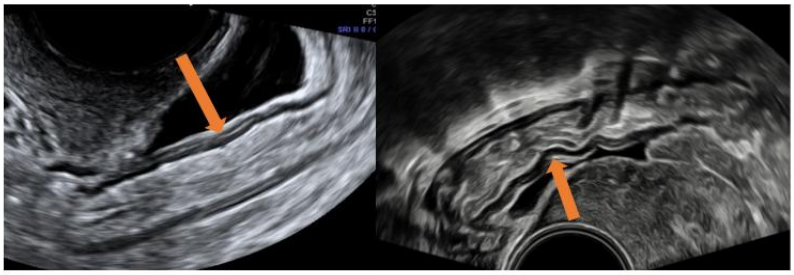
Uterosacral Ligament Nodule:

A hypoechoic nodule growing on / infiltrating the uterosacral ligaments, which often appear hyperechoic and thickened due to inflammation. Nodules in the uterosacral ligaments are often adherent to the bowel or ovary.



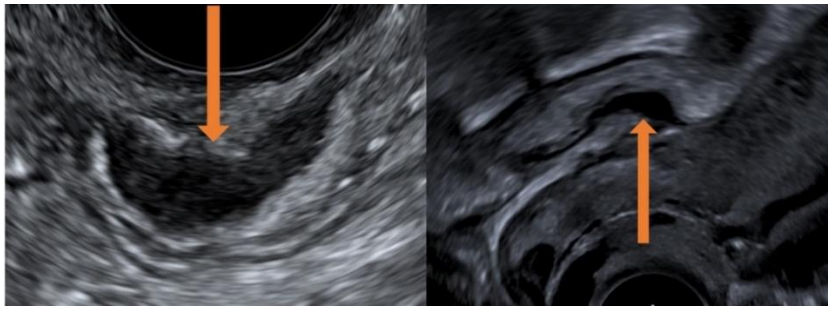
Normal bowel:

This image demonstrates normal rectosigmoid appearances with a thin, hypoechoic muscularis layer.



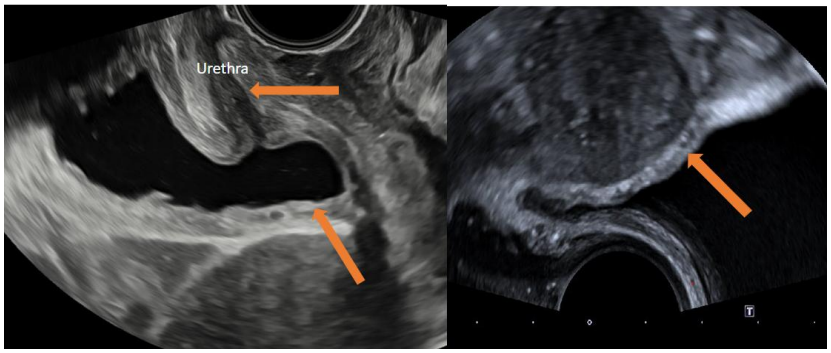
Bowel Nodule:

Well-defined hypoechoic lesion causing focal widening of the muscularis layer of the rectum or distal sigmoid. The lesions are typically tapered at the edges and may be held into a C-shape by fibrosis or adhesions.



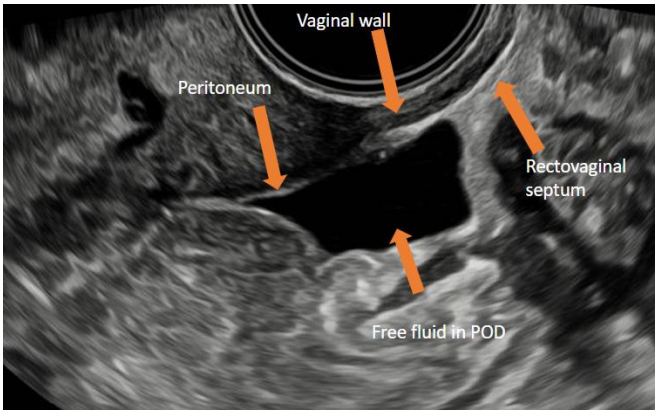
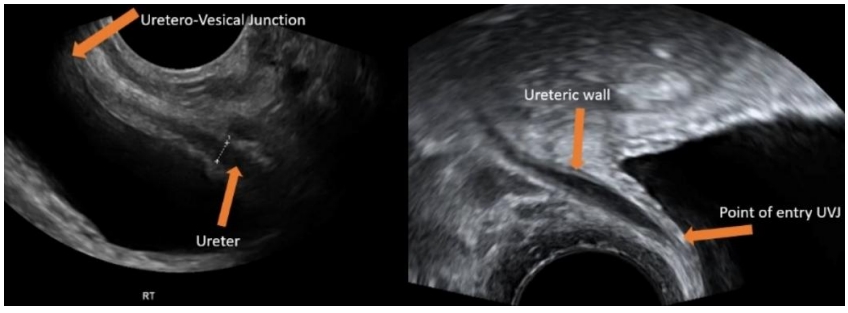
Bladder:

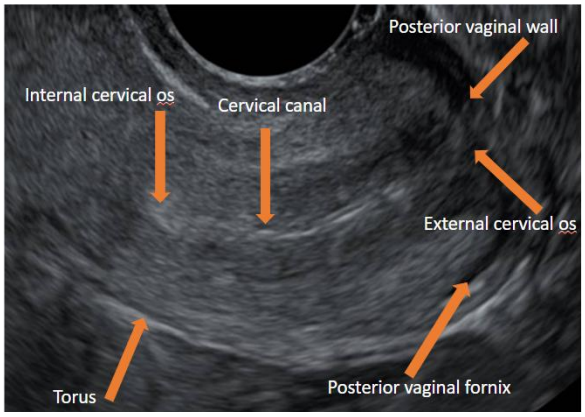
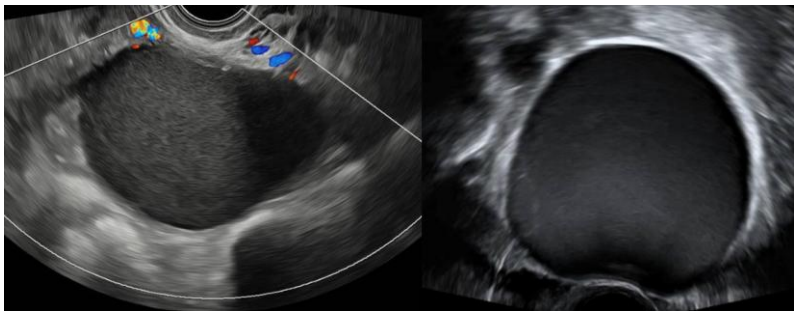
The bladder wall should be assessed. Many practitioners assess the bladder at the end of the scan, once the bladder has started to fill with urine.



Bladder nodule:

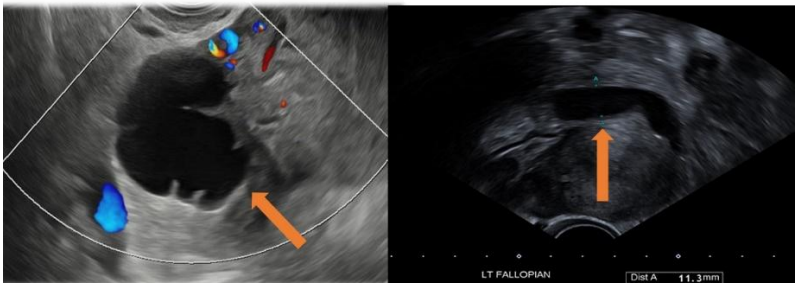
A hypoechoic nodule infiltrating the bladder muscularis layer. Nodules tend to be located on the bladder wall adjacent to the uterus (bladder dome / base).

Bladder mobility: Indicates whether the urinary bladder moves freely from the anterior uterine surface. The absence of free movement may indicate underlying adhesions and is described as negative or abnormal bladder mobility. This is an indirect sign and could represent adhesions secondary to endometriosis or prior Caesarean delivery.	
Rectovaginal septum A thin layer of connective tissue between the posterior wall of the vagina and the rectum.	
Parametrial Involvement: Presence of hypoechoic nodules in the parametrium, the connective and fatty tissue partially surrounding the cervix, containing blood and lymphatic vessels. The parametrium can be divided into medial and lateral by the distal ureter. Endometriosis within the parametrium may be seen as hypoechoic nodules or fibrosis causing distortion of local anatomy or causing a hydroureter.	

Posterior vaginal fornix: The posterior vaginal fornix is the deepest recess of the vagina, formed where the upper vagina reflects around the intravaginal portion of the cervix. **Posterior vaginal fornix nodule:** Hypoechoic thickening in continuity with the posterior vaginal wall. May involve only the vagina or extend into the rectovaginal septum.	 
Endometrioma: Ovarian cysts with ground-glass contents. Typically 1-4 locules, no solid component, may demonstrate avascular hyperechoic mural foci consistent with blood clot, minor shadowing and minor peripheral vascularity.	
Kissing Ovaries: Ovaries positioned close together in the midline, usually posterior to the uterus, often adherent to each other and/or the posterolateral surface of the uterus due to adhesions or nodules.	

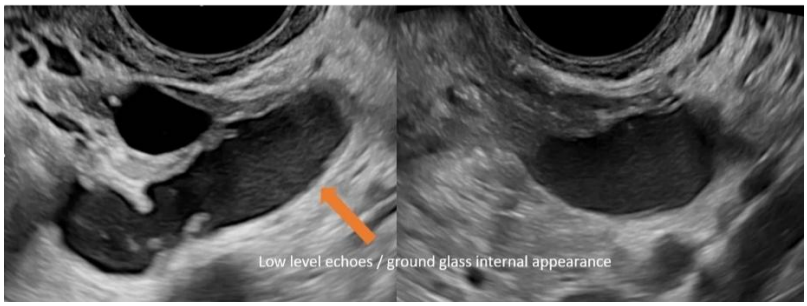
Hydrosalpinx:

Anechoic or hypoechoic tubular structure with features such as the waist sign, cogwheel sign, and incomplete septa, typically showing no internal vascularity with colour Doppler.



Haematosalpinx:

Dilated tubular structure with low-level internal echoes, sometimes with layering fluid or clot.

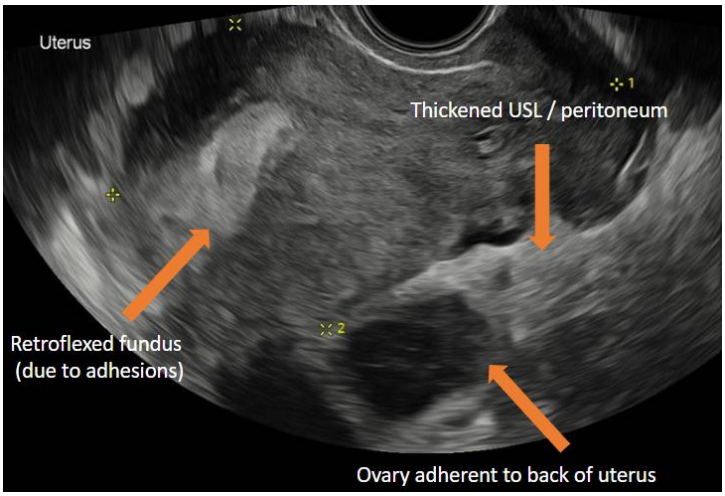


Uterine mobility:

Indicates whether the uterus moves freely in relation to the posterior rectum / distal sigmoid colon, also known as sliding sign. The absence of free movement may indicate underlying adhesions and is described as a negative or abnormal uterine mobility. This is an indirect sign and could represent adhesions secondary to endometriosis, previous pelvic inflammatory disease or previous surgery.

Obliteration of the Pouch of Douglas (POD)

- **Complete obliteration**: No uterine mobility between the anterior rectum and posterior vagina / cervix / uterus; POD is entirely obliterated.
- **Partial obliteration**: Adhesions obliterating one side of the POD.
- **Free POD**: Normal mobility, no adhesions

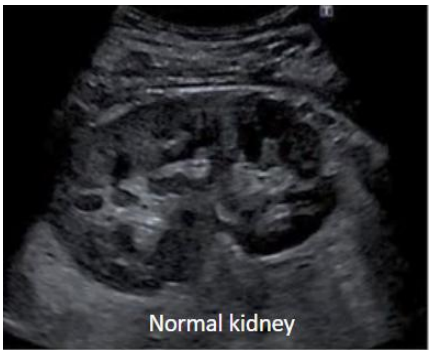


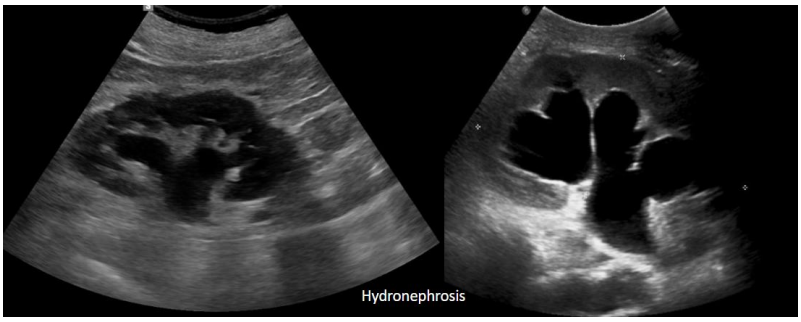
Site specific tenderness: Pain experienced by the patient when the ultrasound transducer applies pressure to specific anatomical locations, including the uterus, adnexa, uterosacral ligaments (USLs), and pouch of Douglas (POD).

Ovarian mobility: This assesses whether the ovary is freely mobile in its location or demonstrates adhesions to the adjacent uterus, uterosacral ligament, bowel or pelvic sidewall.

Hydronephrosis:

A condition whereby the collecting system of one or both kidneys become distended with retained urine. Hydronephrosis may be caused by blockage or distortion of the ureter by endometriosis. It is estimated that approx. 3% of patients with endometriosis will have hydronephrosis which is often silent and may cause renal failure if left undiagnosed. Reporting severity can vary depending on the degree of obstruction (Mild – Severe).





Training and competency

Assessment of endometriosis requires advanced skills beyond performing a standard pelvic ultrasound. It involves dynamic assessment techniques (e.g. uterine mobility or 'sliding sign'), detailed anatomical mapping, and systematic evaluation of the wider pelvis. Incorrect or incomplete assessment may lead to misdiagnosis, diagnostic delay and inappropriate surgical planning. [7]

Depending on the service provided in local departments, there may be a role in distinguishing levels of practice. Endometriosis scanning competencies could be organised into a tiered system; e.g. Levels I, II & III.

There are no international recommendations for how ultrasound practitioners should be trained at each level of expertise or how competency is assessed. The table below suggests the levels and standards we expect to be acquired at each stage with the suggested training and competency assessments. Local agreement for standards of competency is necessary depending on expertise and pathway provision. [13]

Level 1	ALL practitioners performing gynaecological ultrasound
Level 2	Practitioners with an interest in gynaecological ultrasound, who have developed wider skills to assess for major features of endometriosis.
Level 3	Practitioners with expertise in gynaecological ultrasound, who have developed significant skills to assess and map subtle features of endometriosis.

The competencies required for each level are detailed in the table below. This may be used as a template for protocols and a benchmark of standards.

Level I Standards to be acquired (will mainly be primary care referrals)	
General principles	**ALL** ultrasound practitioners who undertake gynaecological ultrasound scans: · Understand signs and symptoms for endometriosis (including association between adenomyosis and endometriosis) · Can take a simple patient history to help guide scanning and reporting for endometriosis · Can identify and report sonographic findings associated with endometriosis, including: o Ovarian endometrioma

	○ Adenomyosis · Can assess uterine mobility (sliding sign) during a standard pelvic ultrasound scan . Are alert to areas of specific tenderness communicated by the patient during the transvaginal examination. · Are aware of limitations of knowledge and scan ability for endometriosis; they may caveat this in their reports and recommend a level 2 assessment where suspicion of endometriosis exists) **Example reporting suggestions:** *Normal pelvic examination within the limitations of today's assessment. Significant pelvic tenderness was noted during the transvaginal assessment; considering patient's symptoms, further investigations for endometriosis are advised (detailed ultrasound if available).* *Due to the significant limitations of a transabdominal scan, we are unable to exclude endometriosis during today's assessment.* *Some ultrasound features of endometriosis were observed during today's examination [insert features observed]. A detailed ultrasound specifically for endometriosis is recommended in accordance with local pathway.* *No obvious signs of endometriosis were observed during today's standard pelvic scan. In view of symptoms and negative findings, further investigations are advised (detailed ultrasound if available).*
Competencies to be acquired	Level I ultrasound practitioners should be able to: ● Recognise the most common symptoms associated with endometriosis and how this may affect the ultrasound scan (pelvic pain/tenderness) ● Identify and report the ultrasound appearances/diagnostic criteria of adenomyosis and understand the associated relationship between adenomyosis and endometriosis ● Identify and report the ultrasound appearances of ovarian endometrioma ● Identify and report gross fallopian tube pathology (hydrosalpinx / haematosalpinx) ● Dynamically assess the mobility of the uterus during ultrasound assessment and understand the implications of normal/abnormal mobility ● Recognise where a renal scan is indicated and undertake imaging within scope of practice to do so.

	● Able to write an ultrasound report and advise appropriate onward referral for management of potential endometriosis
Minimum training & competence assessment	● PgC, Intermediate RCOG Ultrasound competency or CASE level or equivalent for sonographers working in ultrasound departments and/or gynaecology units. ● Training for uterine mobility (if not included in above training: e-learning/placement with level II/simulation)

Level II Standards to be acquired (In addition to level I competencies)	
General principles	Ultrasound practitioners with a specialist interest in gynaecological ultrasound including endometriosis and adenomyosis. This person may be considered the 'Endometriosis Ultrasound Champion' within their department. In addition to level I, at level II practitioners will: - Have intermediate knowledge and understanding of Deep Endometriosis and the associated ultrasound appearances Level II practitioners should: ● Provide support & mentorship for level I practitioners ● Undertake regular gynae ultrasound scan sessions, ideally per week, dedicated to endometriosis/pelvic pain depending on demand ● Engage with the local endometriosis team ● Attend MDT (if applicable) ● Liaise with staff at the nearest tertiary or BSGE accredited centre in their own network, area or region for support and education
Competencies to be acquired	In addition to level I, level II ultrasound practitioners should have the skills to: ● Assess the cervix and the posterior vaginal fornix ● Assess the uterus for more subtle features of adenomyosis ● Recognise and describe the appearance, volume and location of pelvic fluid (free vs loculated) ● Identify, assess and report thickening of the uterosacral ligaments / torus uterinus and associated nodules ● Assess ovarian mobility (in relation to surrounding structures) ● Identify and report bowel nodules and associated adhesions ● Able to write a detailed and clinically relevant ultrasound report to describe the above features and advise appropriate onward referral for management of potential endometriosis
Minimum training & competence assessment	● In person training and supervision with a level III practitioner to build foundational competency.

	● Attend advanced gynaecological ultrasound courses such as those provided by BMUS, BSGE, RCOG or universities. ● Attendance at endometriosis MDT (optional). ● The Practitioner will have undertaken supervised training and have a logbook documentation of 50 (direct/indirectly) supervised ultrasound examinations. These examinations should include all the features of endometriosis listed in the table above. This is a minimum standard; it is accepted that development occurs at varying stages, and some practitioners will require additional time and procedures to ensure competence.

Level III Standards to be acquired (In addition to level II competencies)	
General principles	In addition to level I and level II competencies, level III practitioners will: • Have developed a detailed understanding of the signs and symptoms of complex pelvic endometriosis. • Be able to fully map endometriosis for the purpose of surgical planning and treatment evaluation. • Recognise symptoms of endometriosis outside of the pelvis and recommend appropriate investigations. • Be involved in mentorship and training of all levels. • Be involved in local and regional MDTs. • Act as an essential resource for consultation on complex cases. • Be able to refer to other imaging modalities and other investigations as required and make necessary referrals to medical colleagues (where governance and local guidelines permit).
Competencies to be acquired	In addition to level I and level II, level III ultrasound practitioners should have the skills to: • Assess the extent of bowel muscle invasion and distance of nodules from anal verge • Map subtle peritoneal lesions • Identify and report bladder nodules • Identify and report vesico-uterine junction (VUJ) adhesions • Evaluation of ureter from pelvic sidewall to VUJ to assess disease within the parametrium • Provide a transrectal US service (where governance and local guidelines permit)
Minimum training & competence assessment	Competency will be evidenced by local training and evaluation

Ultrasound Technique

Ultrasound plays a central role in the evaluation of patients with suspected endometriosis. Unlike static imaging modalities such as MRI, ultrasound offers the advantage of dynamic, real-time assessment, enabling evaluation of organ mobility, anatomical relationships, and site-specific tenderness. These dynamic features are integral to the identification of endometriosis, particularly in cases where subtle abnormalities may otherwise be overlooked. [8][6]

A systematic and standardised approach to scanning the pelvis is essential to ensure comprehensive assessment, optimise diagnostic accuracy, and support reproducibility across operators and clinical settings. Establishing such an approach provides a consistent framework for the evaluation of the pelvis and underpins accurate characterisation of disease extent and distribution. [4][7]

The following sections will outline, in detail, the recommended technique for transvaginal pelvic ultrasound assessment for endometriosis, including key anatomical landmarks and the characteristic features of commonly encountered disease manifestations.

Length of examinations

A comprehensive transvaginal ultrasound assessment for endometriosis is considerably more detailed and systematic than a routine pelvic scan.

As such, we recommend the following examination lengths for scanning depending on the level of training / expertise available at local centres:

Level I - 20 minutes minimum

Level II - 30-45 minutes

Level III – 30-45 minutes

Endometriosis training lists at any level - 45 minutes

Appointment times may be longer if extensive disease is suspected and requires thorough compartmental mapping.

Good practice considerations

- In line with the BMUS Transvaginal Ultrasound Guidance, all patients with known or suspected endometriosis should be offered a transvaginal ultrasound examination as the first-line approach [10], irrespective of sexual orientation or previous sexual experience. Where TVS is not possible or acceptable, a transabdominal approach should be undertaken, with clear documentation of the limitations in diagnostic yield.

- Transrectal ultrasound may be offered as an alternative to TVS where local expertise exists.

- Informed consent must be obtained before undertaking a TVS examination. This may be verbal or written consent depending on local practice. Practitioners should ensure that patients understand the procedure, its purpose, and any potential discomfort that may be caused. In instances where patients decline a transvaginal examination, practitioners should

ensure the patient is aware of the significant limitations of a transabdominal scan, particularly for the investigation of endometriosis.

- The presence of a chaperone should be offered in line with professional and institutional policies as outlined in BMUS guidance (Transvaginal Ultrasound Examinations – Guidance for Practitioners | BMUS), both to safeguard the patient, ultrasound practitioner and to provide additional reassurance.

Endometriosis is frequently associated with chronic pelvic pain, dyspareunia, and tenderness, which can make pelvic ultrasound particularly uncomfortable. It is therefore essential to prioritise patient comfort throughout the examination. Strategies to minimise discomfort may include:

  - Clear explanation of the procedure before and during the scan
  - Using appropriate lubrication
  - Allowing the patient to guide insertion of the probe where appropriate
  - Offering breaks during the examination if required
  - Providing a calm, supportive environment that acknowledges the sensitivity of the procedure.

Images & Assessment

When compiling a set of images to accompany an ultrasound report, is it important that they are stored in a systematic way and that they match your report. We recommend that the following images are recorded to demonstrate anatomy and endometriotic deposits. To demonstrate mobility, short video clip / cine loop may be preferable where local storage permits: [4][7][15]

- Uterus: LS / TS / endometrium in LS / cervix in LS (plus TS if pathology) / image demonstrating adenomyosis features if present.
- Each ovary: 3-dimensional measurement and images of any pathology (such as endometrioma) with measurements and colour Doppler assessment, +/- cine of ovarian mobility
- Torus: In LS plane and then in TS plane (split screen). +/- cine loop if pathology
- Posterior fornix and USLs (with probe in posterior vaginal fornix), measurements of any nodules present +/- cine loops of any adhesions to adjacent anatomy
- View of posterior compartment / rectal wall. If bowel nodules are present, measurement in 3 dimensions and colour Doppler assessment
- View of anterior compartment. If bladder nodules are present, measurement in 3 dimensions. Distance of nodule to ureteric orifice. +/- cine loop of bladder mobility and any bladder pathology.
- Both distal ureters +/- cine loop of ureteric peristalsis
- +/- cine loop of uterine mobility / sliding sign (posterior uterus vs bowel)

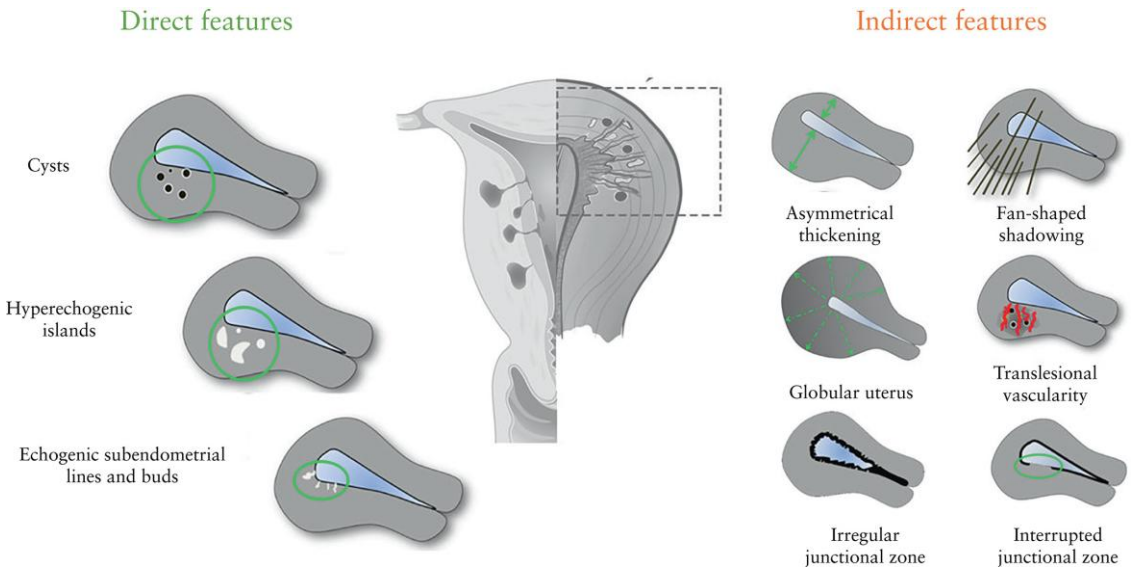
Hints and tips for safe imaging:

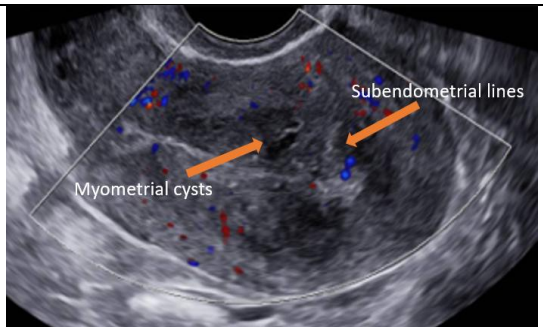
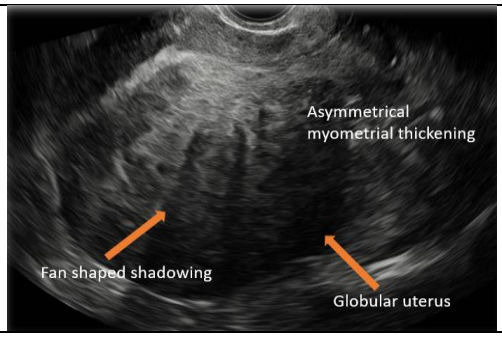
- Be systematic in your scanning and show it in your captured images.
- Always annotate images – writing on the image can be helpful – e.g. medial/lateral/left/right and if necessary, use arrows or drawing tools to highlight a lesion that is difficult to visualise.
- Ensure frequency, depth, focus, gain and dynamic range are set appropriately.
- Be as accurate as you can with your measurements in case of serial scanning in the future.
- Ensure there are representative images to demonstrate any pathology and extension of the examination to other body areas as required.
- Ensure that as a minimum, there are images of pathology in two orthogonal planes, measurements in three dimensions, and a representative image of the lesion with Doppler applied (PRF 0.6).
- If the examination is normal, then representative images should be stored to document that the anatomy has been assessed.

Ultrasound evaluation of the Uterus / Adenomyosis

During any pelvic ultrasound assessment, it is important to assess the size, contour, echotexture and mobility of the uterus. Uterine position should also be assessed; if the uterus is anteverted and retroflexed (usually from the level of the internal os), this should prompt further investigation as to the cause. The cervix should also be assessed as part of the uterine scan.

Careful assessment of the myometrium is essential during every pelvic scan but particularly during endometriosis imaging. Adenomyosis frequently coexists with endometriosis and may influence symptoms, disease severity, and surgical planning. Detailed assessment of the myometrial structure, particularly within the junctional zone, is essential for detection of adenomyosis during pelvic investigations. Scanning assessment should include interrogation of both direct and indirect features of adenomyosis as detailed in the infographic below from the 'Consensus on revised definitions of Morphological Uterus Sonographic Assessment (MUSA) features of adenomyosis'. [6][5]



Direct features: Direct visualisation of ectopic endometrium within the myometrium) / pathognomonic.	**Indirect features*:*** Visualised as a consequence of ectopic endometrium within the myometrium. Less specific as they could be attributable to other causes
	

Ultrasound reports should detail the features that were visualised to prompt a diagnosis of adenomyosis. These features should also be evident within the stored imaging. As direct features are considered diagnostic for adenomyosis, whereas indirect features are suggestive but could be attributable to alternative causes, the following phrases may be useful for reporting:

'*The following direct features were identified within the myometrium, consistent with adenomyosis [list features].*

'*The following indirect features were identified within the myometrium, which are suggestive of adenomyosis [list features].*

It is not sufficient to solely describe the myometrium as being heterogenous. Heterogeneity can be attributable to age, parity and a host of uterine pathology.

'Increased myometrial vascularity' is not considered a diagnostic ultrasound feature of adenomyosis.

The phrase 'early fibroid change' should also never be used.

Ovarian Evaluation

During ultrasound assessment, it is important to evaluate the ovaries and adnexa for size, contour, and the presence of any lesions suggestive of endometriosis. The ovaries should be assessed for mobility, particularly when they lie close to the uterus to help exclude adhesions. Care is needed to avoid over-interpreting reduced movement in laterally positioned ovaries, where limited excursion may reflect technique rather than pathology. Assessment should include both ovaries individually, noting laterality (position) and comparison between sides. Careful evaluation of the ovarian stroma, along with surrounding structures, is essential for detection of ovarian endometriomas and secondary features of pelvic endometriosis. Antral follicle count may be reduced in women who have previously undergone surgical removal of ovarian endometriomas. Providing antral follicle count in the scan report may assist the referring clinician when counselling about fertility.

- Endometrioma (typically unilocular or multilocular cyst with homogeneous low-level internal echoes, "ground glass" appearance) [12][8]
- Ovarian adhesions
    - Reduced ovarian mobility suggestive of adhesions.
    - "Kissing ovaries" sign (ovaries adherent together behind the uterus).

- Antral follicle count is the number of immature ovarian follicles (approx. 2-10mm) visible on ultrasound.

The Fallopian tubes should be evaluated for dilation or fluid accumulation, suggestive of hydrosalpinx, particularly in cases of tubal involvement by endometriosis. [12]

Uterosacral Ligament Evaluation

The uterosacral ligaments (USLs) are critical structures to evaluate for suspected endometriosis, as they are among the most common sites for deep endometriosis (seen in up to 69% of DE cases). [11][6]

USLs insert along the posterior cervical wall at the level of the internal os, called the torus uterinus, and extend posterior-laterally around the mesorectal fascia to the sacrum. When assessing USLs, the probe should be sited in the posterior vaginal fornix, the highest frequency available should be used, and the focus placed close to the posterior fornix and/or torus. The USL can be identified as a hyperechoic band running posterolaterally from the uterocervical junction at approximately 45

degrees to the cervix. DE nodules are hypoechoic to the ligament which is often thickened and echogenic; nodules appear as hypoechoic, nodular, spiculated or plaque-like lesions.

In endometriosis, the USLs may appear:

- Thickened and hyperechoic.
- Containing discrete hypoechoic nodules.
- Irregular or asymmetrical when compared to the contralateral side.
- Tenderness on probe pressure may indicate DE even if nodules are small. The bowel in this area can also be acutely tender for patients during scanning.

Bowel Evaluation

Deep endometriosis frequently involves the bowel, particularly the rectum, and sigmoid colon. Accurate preoperative ultrasound assessment is critical for surgical planning and patient counseling. To undertake assessment for bowel nodules/involvement, an assessment of the posterior compartment is essential. Assessment should include bowel wall thickness, layering, mobility, and any nodules, strictures, or tethering. [4][9][7]

Features of bowel endometriosis:

- Hypoechoic nodules within the bowel wall
- Focal thickening of the bowel wall layers, often with loss of normal stratification
- Infiltration of the muscularis propria layer
- Adhesion of the bowel to the posterior uterus or posterior vaginal fornix
- Localised bowel angulation or kinking due to adhesions
- Reduced bowel mobility or fixation to adjacent structures

Examination should include assessment of the distance between lesions and the anal verge, involvement of the posterior vaginal fornix and the uterosacral ligaments. Careful documentation of size, location, mobility, and tenderness of lesions is essential to guide surgical planning and correlate with symptoms.

Ultrasound evaluation of the urinary tract

Anterior compartment (bladder and vesicouterine pouch)

Bladder endometriosis is a relatively rare form of DE, affecting approximately 1–2% of patients with endometriosis. Accurate imaging assessment is crucial for diagnosis and preoperative planning to minimize complications and inform the surgical approach. Assess the anterior uterine contour for possible uterine invasive endometriosis which may extend into the uterovesical fold as Deep Endometriosis. [8][9]

The bladder may be involved with adhesions to the serosa which causes an abnormal mobility or a hypoechoic endometriotic nodule infiltrating into the bladder detrusor muscle. The overlying bladder mucosa will typically look normal.

Renal Assessment

Evaluation of the kidneys is an essential component of the comprehensive ultrasound assessment in women with confirmed endometriosis. Endometriosis may involve the ureters either directly,

through deep infiltrating disease (rare), or indirectly, through fibrosis and adhesions causing extrinsic compression (more common). Hydronephrosis secondary to endometriosis is an important but often under-recognised manifestation of the disease. Patients often remain asymptomatic until significant renal compromise has occurred due to 'silent hydronephrosis'. Delayed diagnosis can result in irreversible renal impairment or loss of renal function, highlighting the need for systematic assessment of the urinary tract in this context. [10][8]

We advise that if there is any evidence of ovarian endometrioma or deep endometriosis, a renal assessment should be undertaken or recommended for evaluation of hydronephrosis. For patients under conservative/non-surgical management, assessment for hydronephrosis is crucial to highlight when urological intervention is required.

Reporting hydronephrosis grading may vary between departments (Grade 1-4 vs Mild/moderate/severe), please refer to local protocols.

It is expected that all gynaecological ultrasound users understand when assessment for hydronephrosis is required. Local protocols should be considered in cases where ultrasound users do not have abdominal/general ultrasound training to perform this at the time of the pelvic ultrasound. For technique of renal ultrasound please use BMUS/SCoR guidance.

Interpretation and reporting

Accurate and standardised reporting is fundamental to the effective use of ultrasound in the assessment of endometriosis. A structured report provides clarity, ensures that all relevant anatomical areas have been evaluated, and facilitates clear communication between imaging specialists, referring clinicians, and surgical teams. Given the complex and heterogeneous nature of endometriosis, a systematic approach to reporting also supports consistency across practitioners and centres, improving reproducibility and reducing the risk of important findings being overlooked. [4][7][8]

Reports should clearly document the presence or absence of disease in each pelvic compartment, the mobility of pelvic organs, and any features suggestive of deep endometriosis, ovarian endometriomas, adhesions, or involvement of adjacent structures (bladder/bowel/etc). Where possible, terminology should be aligned with recognised international consensus recommendations (see references) to promote uniformity in clinical practice and research.

This section provides suggested templates and examples of structured reports, together with practical recommendations for documenting common pathological findings encountered in endometriosis. These resources are intended to support best practice in reporting and to ensure that key information relevant to diagnosis, management, and surgical planning is consistently conveyed.

- Please note that management strategies (for example by suggesting or requesting further imaging or referral) may vary between geographical areas or service pathways. In view of these variations, it is not within the remit of this document to be specific about management strategies, and it is therefore expected that each endometriosis ultrasound service collaborates with local stakeholders to agree robust protocols for scanning, reporting and making onward recommendations.

Sample report templates.

The following examples illustrate structured approaches to reporting ultrasound findings in endometriosis. They are designed to demonstrate clear, consistent documentation of each pelvic compartment, key pathological features, and relevant anatomical relationships. These templates are not prescriptive but serve as practical guides to support thorough and reproducible reporting, helping to ensure that critical information is communicated effectively to referring clinicians and surgical teams.

Users are encouraged to adapt the templates to local protocols and service requirements while maintaining alignment with recognised terminology and best practice standards.

Level I

History: (symptoms & previous surgery)

Previous Imaging:

Uterus & cervix: (position/size)

Endometrium: (appearance/thickness) (LMP //)

Myometrium: (fibroid/adenomyosis)

Uterine mobility: (normal/abnormal)

Ovaries: (size/position/endometrioma)

Fallopian tubes: (hydrosalpinx/haematosalpinx)

Free fluid: (define whether physiological or pathological e.g.loculated fluid in POD)

Other:

Conclusion:

Level II/III

History: (symptoms & previous surgery)

Previous Imaging:

Uterus and cervix: (position/size/morphology/mobility)

Myometrium: (fibroid/adenomyosis/C-section scar)

Endometrium: (appearance/thickness) (LMP //)

Torus uterinus/uterosacral ligaments: (site/size/tenderness)

Rectovaginal space: (adhesions/lesion)

Posterior vaginal fornix: (lesion size)

Ovaries: (size/follicles/position/mobility/endometrioma)

Fallopian tubes: (hydrosalpinx/haematosalpinx)

Free fluid/loculated fluid present/deepest pool:

Bowel muscle invasive lesion: (lesion size, site/distance from anal verge)

Uterovesical fold/bladder: (adhesions/uterine serosa/bladder serosa/muscle invasive/site/size)

Parametria/ureters: (distance from VUJ/hydroureter/peristalsis)

Other sites: (abdominal wall/inguinal canal)

Kidneys: (hydronephrosis)

Site specific tenderness:

Conclusion:

Example reporting phrases for pathology:

Adenomyosis focal / Adenomyoma	There is an ill-defined hypoechoic region in the x myometrium measuring [a x b x c] mm which demonstrates internal hyperechoic foci and myometrial cysts without local mass effect and some translesional vascularity. This appearance is most likely to represent focal adenomyosis.
Adenomyosis diffuse	Hyperechoic linear striations and buds, extending from the endometrial/myometrial interface AND/OR Myometrial cysts are seen within the inner myometrium; these are direct appearances consistent with diffuse adenomyosis.
Endometrioma	The left ovary contains a unilocular cyst with ground glass echogenicity measuring [a x b x c] mm. The cyst is poorly vascularised and surrounded by normal ovarian tissue, features consistent with an ovarian endometrioma
USL nodule	There is a hypoechoic nodule of endometriosis measuring [a x b x c] mm in the thickened (left/right) uterosacral ligament
Posterior vaginal fornix / RVS	A hypoechoic nodule measuring [a x b x c] mm is noted in the posterior vaginal fornix, extending into the rectovaginal septum. The lesion is adherent to [insert anatomy].
Bowel nodule	There is focal thickening consistent with a nodule of endometriosis within the muscularis layer of the [rectum/sigmoid] colon, which measures [a x b x c] mm. The lesion is adherent to [insert anatomy]. There is / no evidence of luminal stenosis. The caudal aspect of the lesion is approximately [x] mm from the anal verge.
Bladder nodule	There is a nodule of endometriosis in the bladder wall which measures [a x b x c] mm. It is located at the (dome / bladder base / trigone / lateral wall) approximately [x] mm from the (left / right) VUJ. Adhesions extend from the anterior uterine serosa to the bladder DE nodule causing reduced bladder mobility.

Audit

Audit is a quality improvement process designed to improve patient outcomes by reviewing services. Audits assess individuals or services against established standards and guidelines in order to ensure safe and effective care for patients.

Recommendations for ongoing audits of endometriosis ultrasound services could include:

- US findings correlated to surgical findings (True/False Positive/Negative, PPV, NPV, Sensitivity, Specificity)
- Comparison of US & MRI findings (+/- correlation to surgical findings)
- Follow up findings of conservatively/non-surgically managed endometriosis

Whilst most audit is developed on a local level, there are several examples of audit for the ultrasound evaluation produced by BMUS and the Royal College of Radiologists:

- https://www.bmus.org/policies-statements-guidelines/professional-guidance/guidance-pages/bmus-recommended-audit-tool/ [18]
- https://www.rcr.ac.uk/our-services/all-our-publications/clinical-radiology-publications/standards-for-the-provision-of-an-ultrasound-service/ [19]
- https://www.rcr.ac.uk/our-services/all-our-publications/clinical-radiology-publications/recommendations-for-specialists-practising-ultrasound-independently-of-radiology-departments-safety-governance-and-education/ [20]
- https://www.rcr.ac.uk/our-services/all-our-publications/clinical-radiology-publications/standards-for-interpretation-and-reporting-of-imaging-investigations-second-edition [21]

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Appendix 1. Pre-scan symptom and history questionnaire

Please answer these questions to help us interpret your scan and provide a diagnosis			
First day of last menstrual period:		Are your periods regular (monthly) Y / N	
Are you using contraception: Y / N If yes, please state type:			
Is your smear test up to date? Y / N		Have you ever been pregnant: Y / N	
If yes, what was the outcome of your pregnancy / pregnancies? (Please provide numbers in the boxes below)			
Live birth vaginal delivery		Live birth Caesarean section	
Still birth vaginal delivery		Still birth Caesarean section	
Miscarriage no surgery		Miscarriage with surgery	
Termination no surgery		Termination with surgery	
Ectopic pregnancy no surgery		Ectopic pregnancy with surgery	
Have you ever been diagnosed with any gynaecological conditions? Y / N If yes, please state:			
Have you ever had any pelvic surgery? Y / N If yes, please state:			
Do you have any of the following symptoms? (please tick the boxes to indicate below)			
Heavy periods		Painful periods		Bleeding between periods	
Midcycle pain		Bleeding after sex		Painful bowel motions	
Pain during sex		Rectal bleeding		Blood in urine	
Other symptoms, please state:			
Do you have any family members with endometriosis? Y / N If yes, please state:			
Is there anything else you would like us to know? Y / N If yes, please state:			

Disclaimer

The British Medical Ultrasound Society produces recommendations and guidelines as an educational aid to inform safe practice. They offer models and pathways associated with established clinical imaging techniques and best professional practice, based on published evidence.

BMUS recommendations and guidelines are designed to inform local protocols issued by employers, but are not intended to be inflexible or prescriptive. Therefore, the choice of imaging examination and subsequent management of all patients is ultimately a local decision based on agreed schemes of work, the clinical information provided, and the ultrasound practitioner's professional judgement.