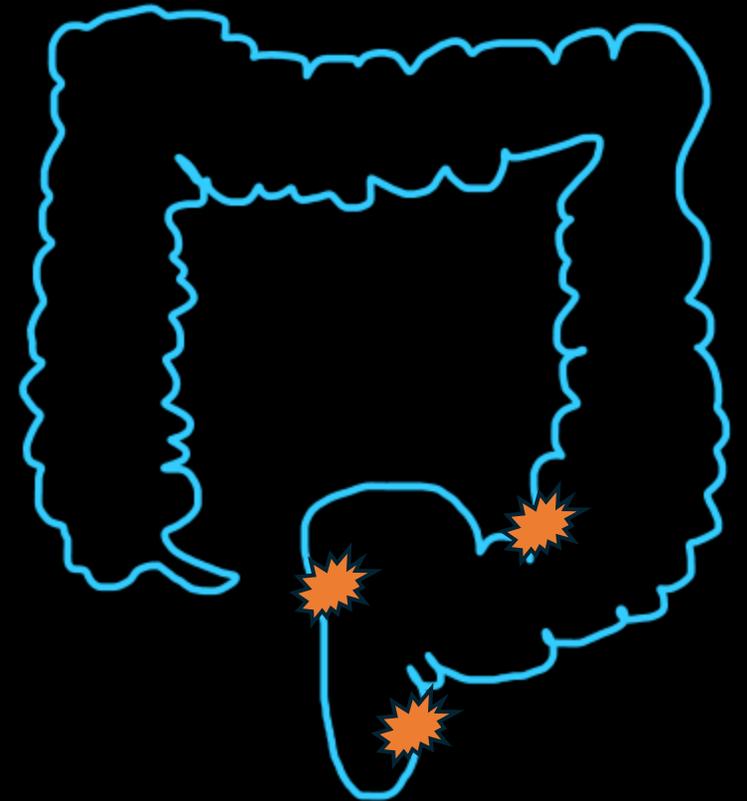




Bowel manifestations of deep pelvic endometriosis: an educational review

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Objectives:

- 1) To introduce the bowel manifestations of endometriosis
- 2) To provide a pictorial review for education through a series of cases, on:
 - Its MRI appearances
 - Key findings relevant for its surgical management

Background

Endometriosis involving bowel

Seen in approximately 37% of patients with deep pelvic/infiltrating endometriosis (DIE)¹

What are the symptoms?

Background symptoms of DIE: *cyclical deep pelvic pain*

Bowel specific symptoms: *haematochezia, dyschezia*

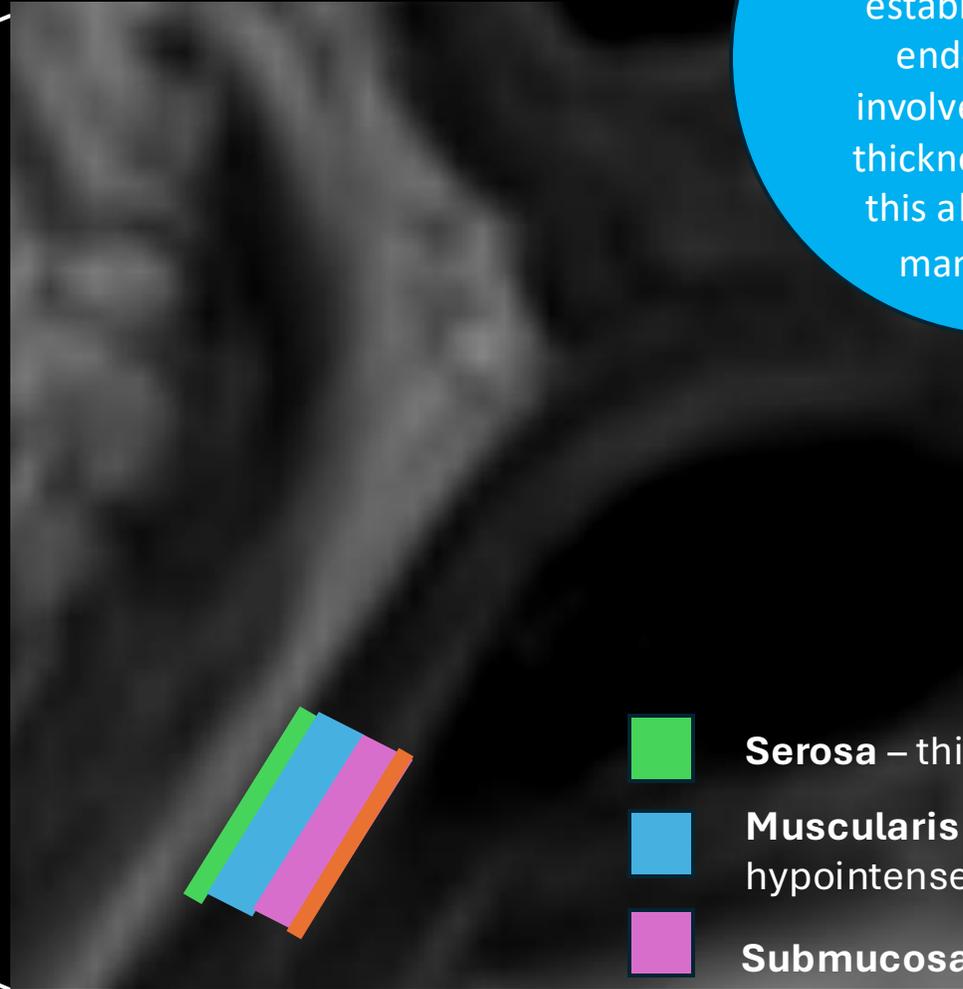
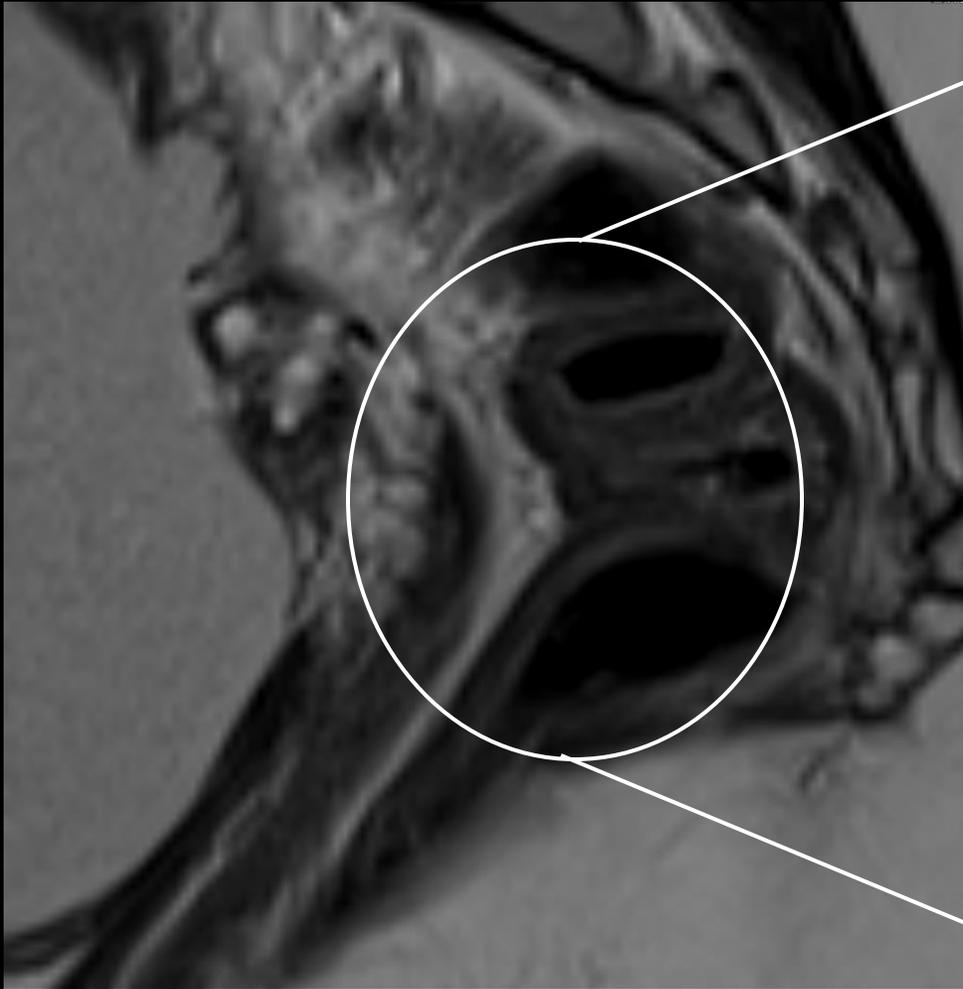
What imaging should be used to evaluate?

First line may be TVUS to establish presence of pelvic endometriosis. MRI for extent.

★ This poster will focus on MR appearances and how this is used to help plan surgery. ★

Looking at bowel layers on MRI

★ The best sequences for delineating relevant anatomy are T2 sagittal and axial. ★



We need to understand the bowel wall layers to establish whether endometriotic involvement is full-thickness or not, as this alters surgical management.

- Serosa** – thin & hypointense
- Muscularis propria** – hypointense
- Submucosa** - hyperintense
- Mucosa** – thin & hypointense, usually not seen

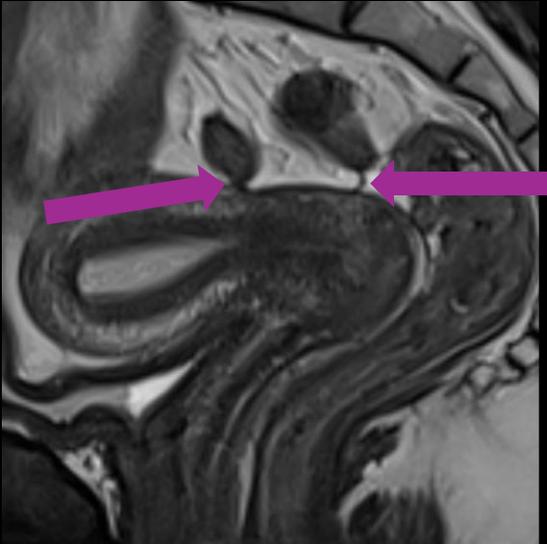
NB. Better distinction of the inner hypointense mucosa may be seen with rectal gel.

MRI appearance of endometriotic lesions

- Lesions generally are **low to intermediate** on both T1 and T2 signal
- May see scattered high intensity internally of:
 - T1FS – haemorrhage
 - T2 – dilated endometrial glands
- Can be divided into 3 main types:

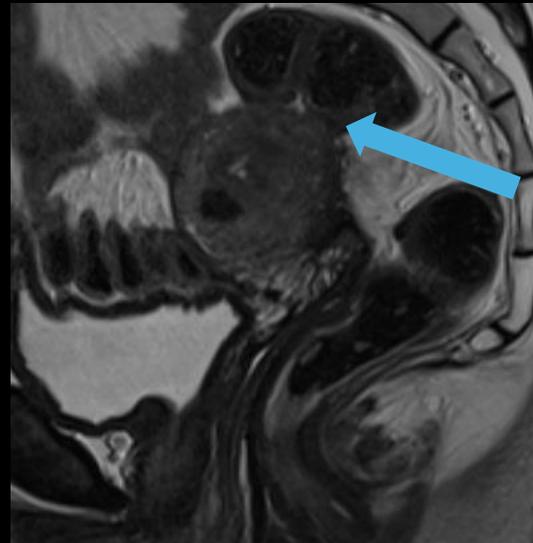
Adhesions

- Thin fibrotic bands
- May cause distortion: "tenting"



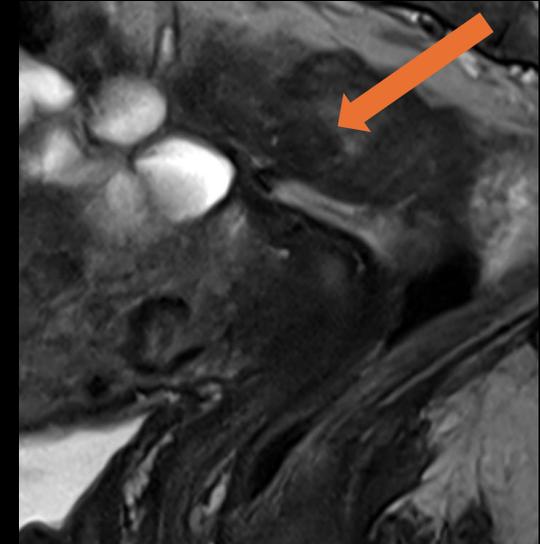
Plaques

- Thin strips of fibrotic tissue
- No penetration



Nodules +/- invasive

- Deeper involvement
- Invade through wall



What is considered short or thick for endometrial bowel lesions?

- Definitions and surgical procedures, as well as surgical preference, may be centre-specific
- As a principle:

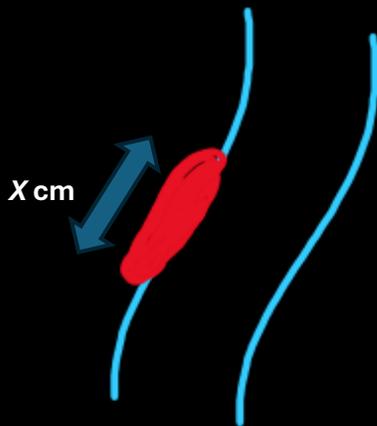
Length of bowel wall invasion is the longitudinal distance of a deposit

A short length would be **<3cm**

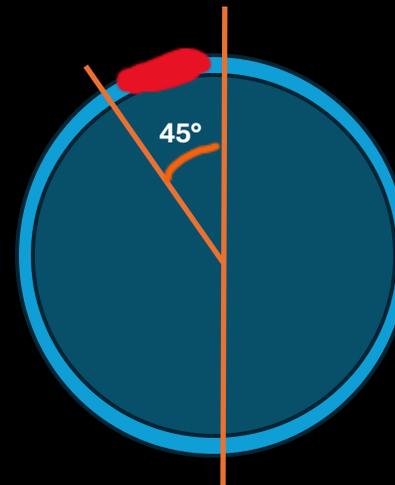
Angle refers to the circumferential angle of invasion in transverse orientation

A narrow angle is **<45°**

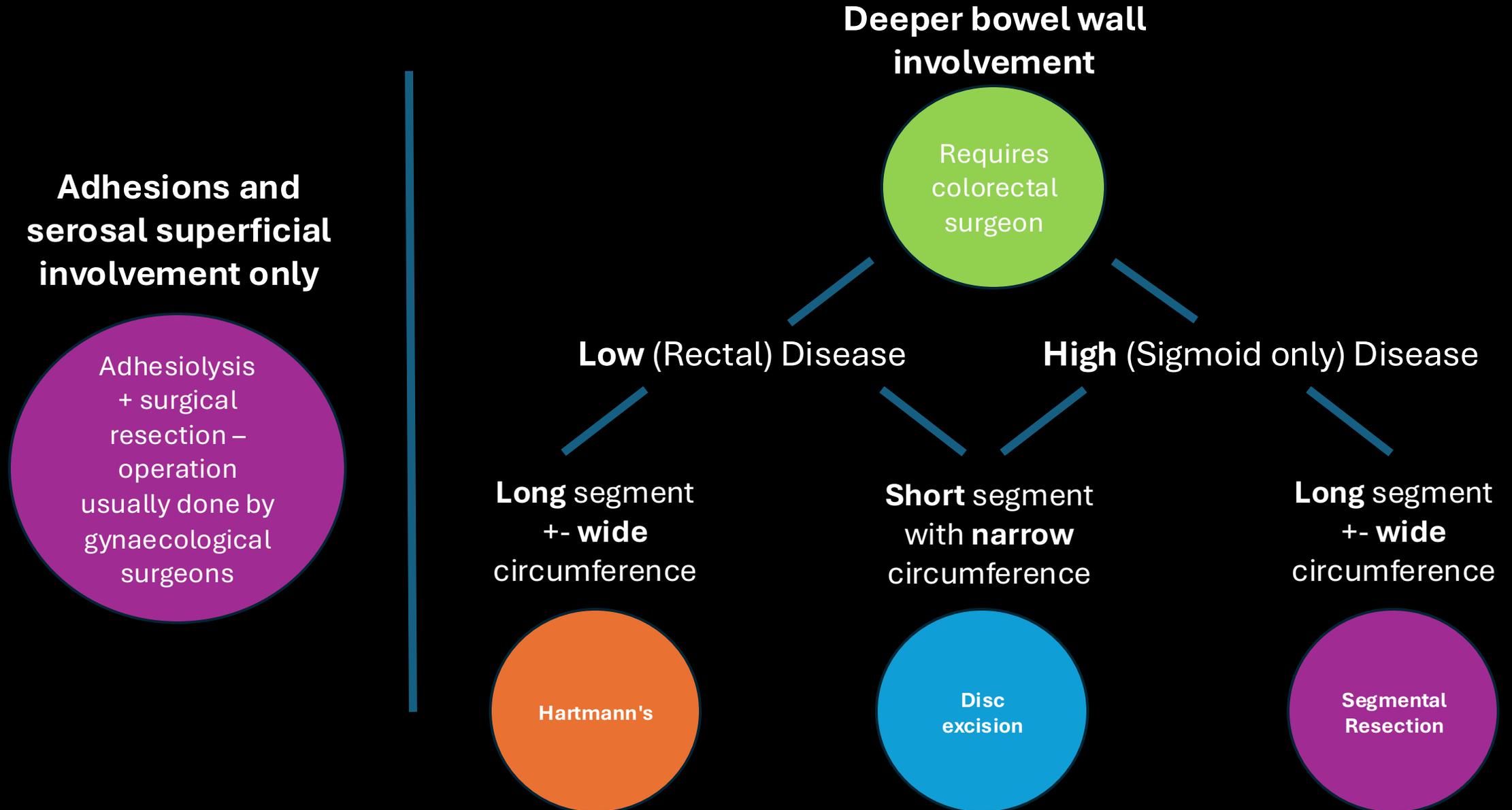
**Measuring segment length
(longitudinal)**



**Measuring degree of
circumferential involvement
(transverse)**



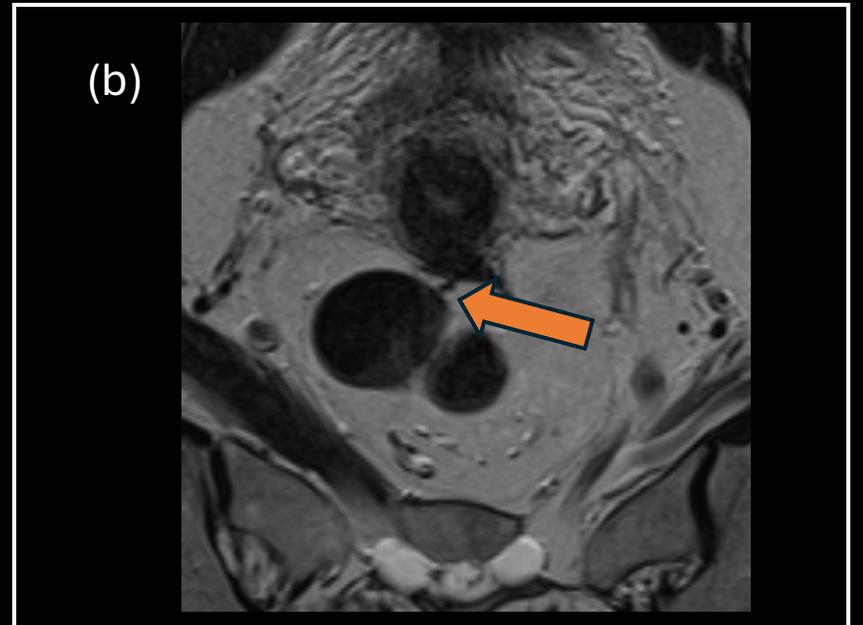
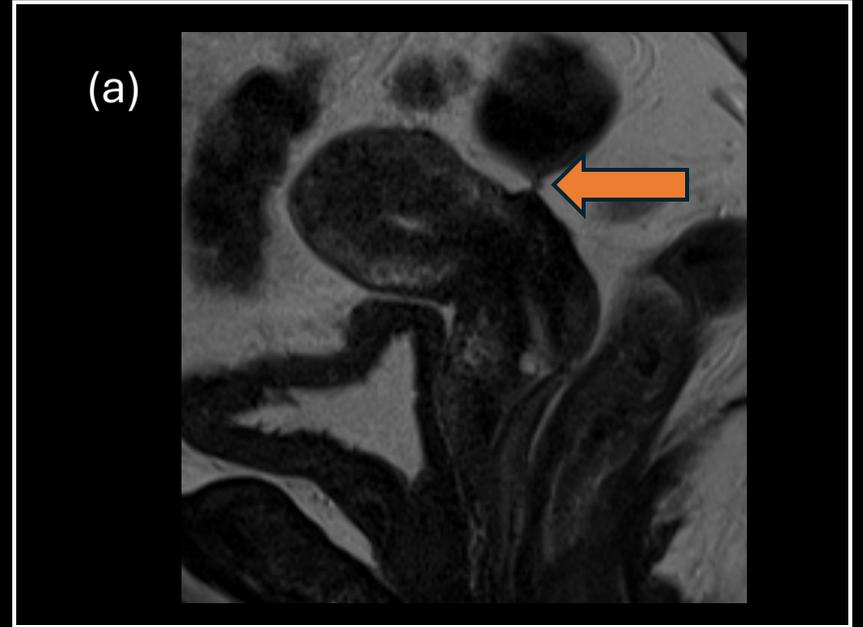
Why what layer is involved and where matters to the MDT



Case 1: Simple adhesion

This case of a 50 year old female with severe, cyclical pelvic pain demonstrates (a) **low T2 signal thin fibrous adhesion from torus to high rectum, T2 sagittal** and (b) **T2 oblique**. There is no transmural involvement.

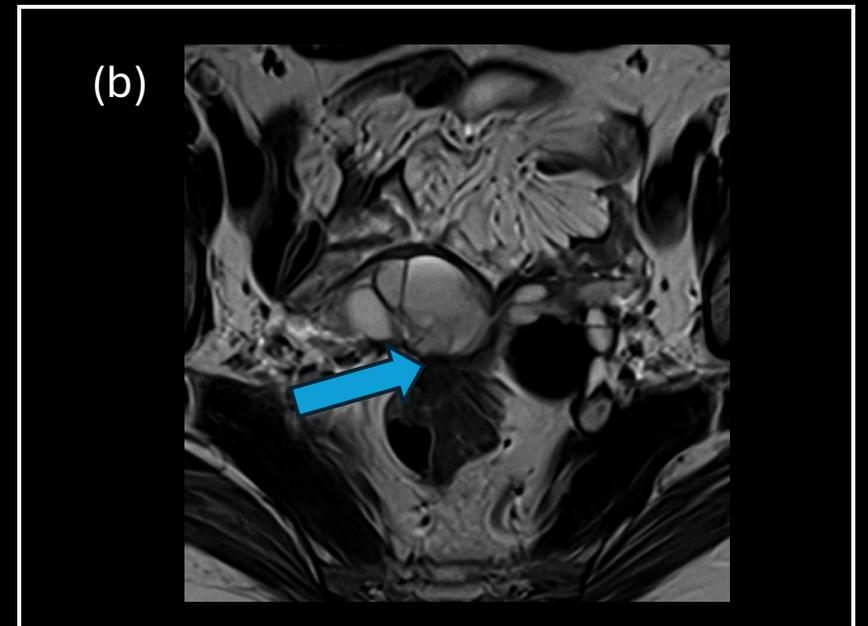
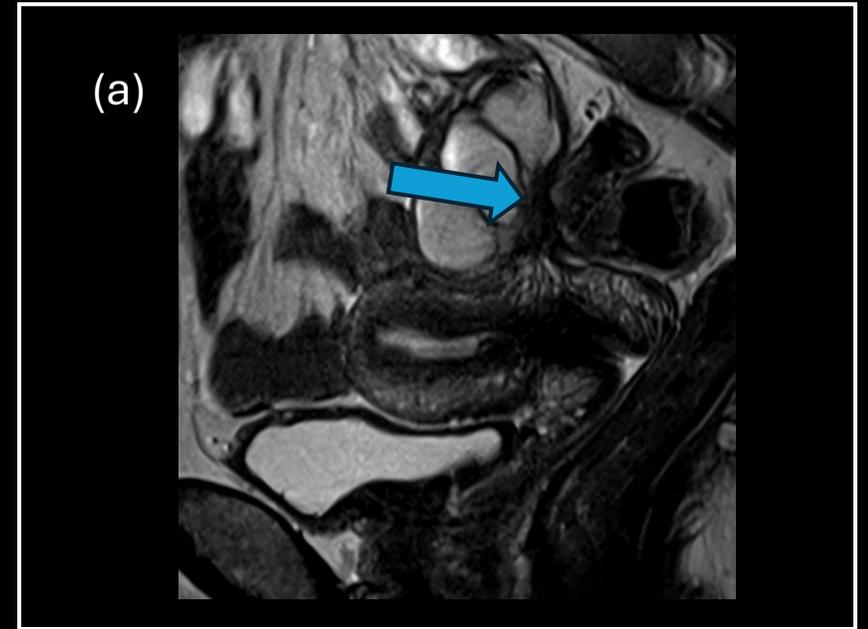
As such, this case can be treated with adhesiolysis under the care of a gynaecological surgeon.



Case 2: Complex Plaque Tethering

A 35 year old female with complex three compartment disease, noted to have severe symptoms. Involving the bowel there is (a) **low T2 signal thick fibrous plaque** involving the torus, rectosigmoid and both ovaries (containing endometriomas). This is over a length of 2cm, with (b) **<45° involvement**. There is no transmural involvement.

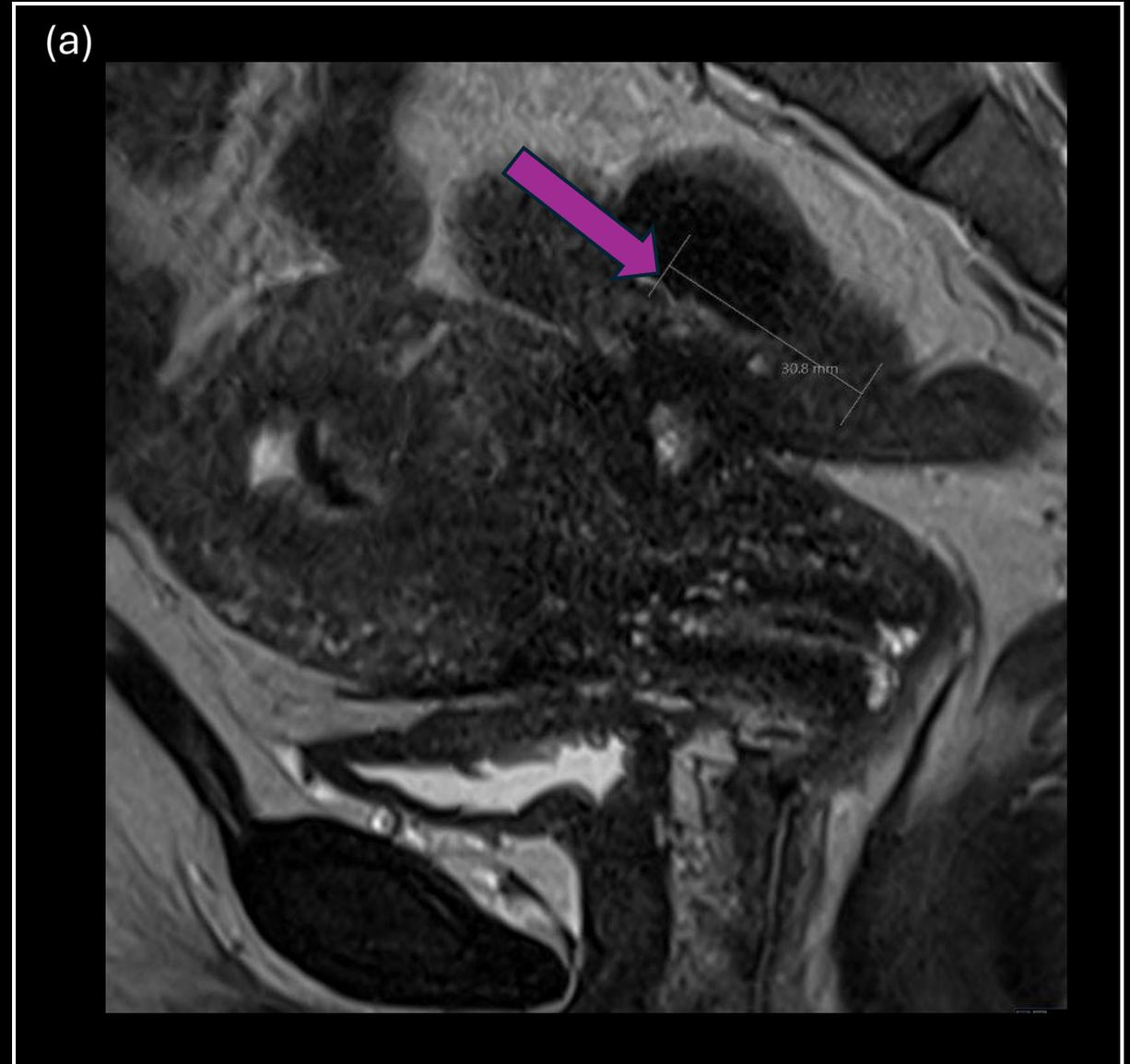
This would require involvement of a colorectal surgeon, and due to its narrow circumference and short length, may be amenable to disc resection.



Case 3: Full thickness disease

This case of a 40 year old female demonstrates disease across anterior, middle and posterior compartments with (a) 3cm endometriotic plaque at the torus, causing full thickness involvement. This is below the sigmoid takeoff, and lies 12cm from the anal verge.

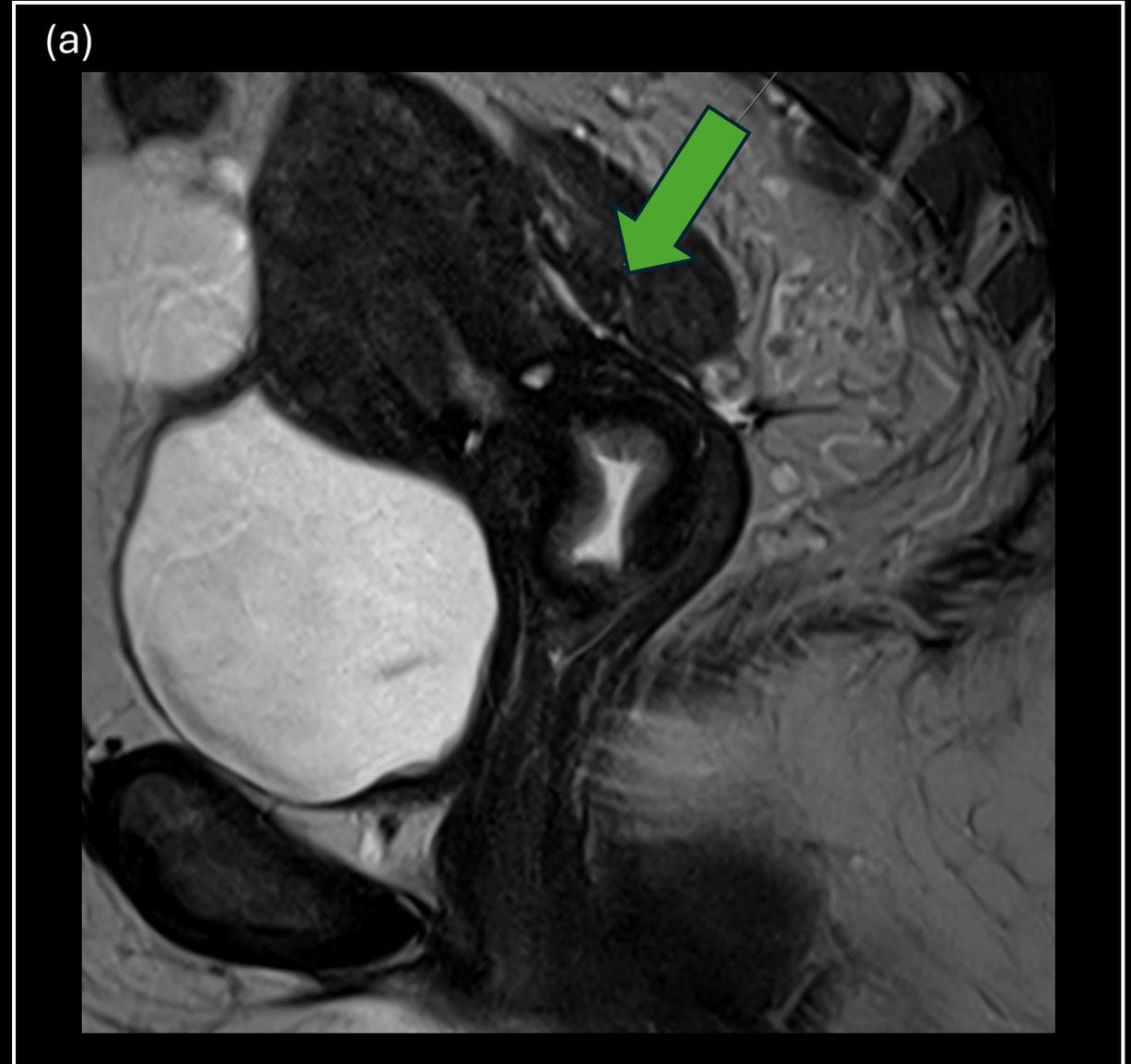
This disease would not be amenable to adhesiolysis and would require at least a full-thickness disc resection.



Case 4: Muscularis Involvement

Another case of a 40-year-old female with DIE demonstrates cicatrising disease across middle and posterior compartments with (a) torus plaque and resultant **high T2 signal within the muscularis**, implying its involvement.

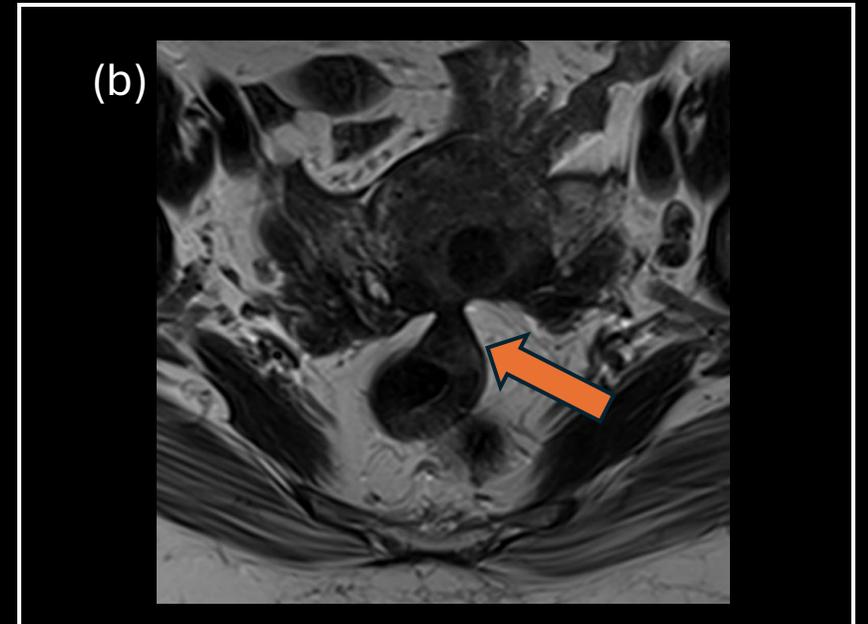
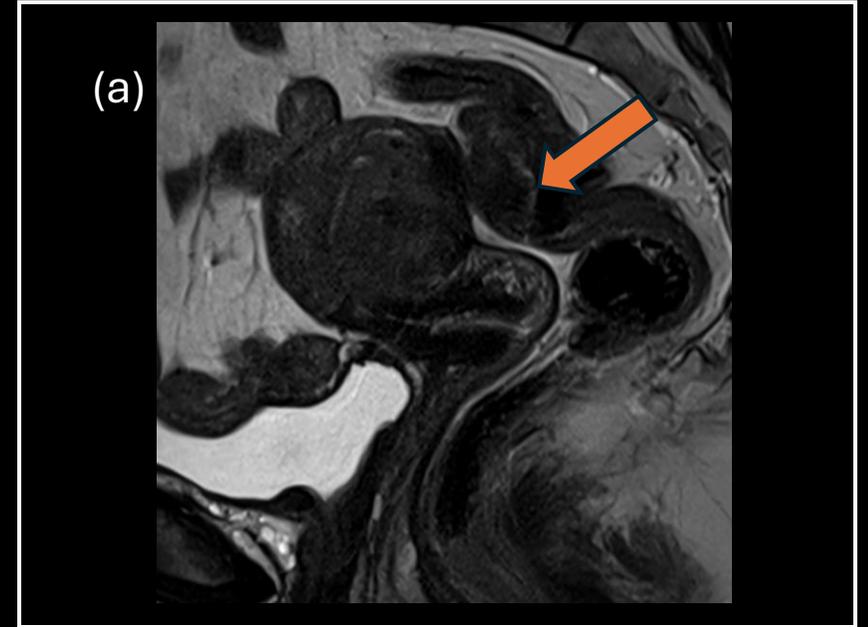
This is a pertinent point to note within the report as it will likely require disc resection.



Case 5: Full thickness wide circumference involvement

Here full-thickness bowel involvement seen within the high rectum with (a) **invasive deposit over a distance of 3cm**, closely abutting endometriosis-adenomyosis spectrum disease within the posterior uterine wall, which is distorted.

In (b) this is seen to involve **at least 90 degrees** of the anterior bowel wall – this will thus require a segmental bowel resection. At this level within the rectum this would likely necessitate a Hartmann's procedure.



Summary key points to remember:

- 1) Report the **location** of bowel DIE clearly - the level matters
- 2) State whether disease is **serosal only** or whether there is **deeper wall invasion**
- 3) The **length** and **circumference** of deposit help determine management and aid pre-surgical planning

Further references:

1. Remorgida V, Ferrero S, Fulcheri E, Ragni N, Martin DC. Bowel endometriosis: presentation, diagnosis, and treatment. *Obstet Gynecol Surv.* 2007 Jul;62(7):461-70.
2. Wolthuis AM, Tomassetti C. Multidisciplinary laparoscopic treatment for bowel endometriosis. *Best Pract Res Clin Gastroenterol.* 2014 Feb;28(1):53-67.
3. Dave HB, Chamié LP, Young SW, Sakala MD, VanBuren WM, Jha P, Shen L, Pectasides M, Movilla P, Laifer-Narin S, Glanc P, Shenoy-Bhangle AS. Bowel Endometriosis: Systematic Approach to Diagnosis with US and MRI. *Radiographics.* 2025 Apr;45(4):e240102.
4. Jaramillo-Cardoso A, Shenoy-Bhangle AS, VanBuren WM, Schiappacasse G, Menias CO, Morteale KJ. Imaging of gastrointestinal endometriosis: what the radiologist should know. *Abdom Radiol (NY).* 2020 Jun;45(6):1694-1710.