

## The Unexploited Role of Transperineal Ultrasound Scan Examinations in Patients with Pelvic Pain

Abdel-Gadir A\*

Al Salam International Hospital, Division of Gynaecology and Reproductive Medicine and Surgery, Al Messila Clinics Tower, Port Sayeed Road, Kuwait

### Abstract

Transperineal ultrasound scan examination is not commonly used during investigations of chronic pelvic pain. This may lead to many cases with deep pelvic endometriosis being undiagnosed leading to great patients' sufferings. The technique is simple to learn, and with current high-resolution ultrasound scanning machines with 3-dimension software, MRI may not be necessary in many cases. Utilizing multiplanar reconstruction, multiple slices viewing and oblique transection techniques following transperineal ultrasound scanning may obviate the need for MRI which is costly and may not be available in many areas. I will show in this article how transperineal ultrasound scanning may be useful in the diagnosis of some cases with rectovaginal septum lesions, uterosacral nodules and endometriosis of the rectal wall without the help of MRI.

**Keywords:** Transperineal ultrasound; Pelvic pain; Rectovaginal endometriosis

### Introduction

Unlike transvaginal ultrasound scan examination, the transperineal technique is not commonly used during investigations of chronic pelvic pain. Accordingly, the vagina, anal canal and rectum may not be well explored. Consequently, many cases with deep pelvic endometriosis and other perineal pathologies may be missed and the patients dismissed without a specific diagnosis for many years.

The fundamentals and value of transperineal ultrasound scanning have been illustrated in previous publications [1,2]. Different probes have been used, but I personally prefer the intracavity one for such examinations. Over the years, the technique has been utilized in urological and gastroenterology studies [3]. In the field of gynaecology it was mainly utilized for examination of pelvic organs prolapse, anal sphincter injury [4] and bladder dysfunction [5] but not during pelvic pain investigations. Even more, the wide use of urodynamic studies and lack of exact correspondence between the two techniques in patients with urinary dysfunction lead to less utilization of the transperineal ultrasound technique. One article commended the use of transperineal ultrasonography in the investigations of urinary incontinence. However, the results presented by the same authors did not really justify this inclusive conclusion in all cases. Ultrasound and urodynamics were 100% in agreement in patients with intrinsic sphincter deficiency. However, they agreed in only 71.5% in cases with combined urethral hypermobility and intrinsic sphincter deficiency. This agreement was even lower (66.7%) in patients with isolated urethral hypermobility [5].

In this article I will show the technique for using an intracavity probe for transperineal ultrasound scan examinations. I will also show the value of the technique in different pathologies missed by routine transvaginal scan examinations. The value of 3D ultrasound technique in combination with transperineal ultrasound scanning will also be illustrated.

### Case Report

Four case reports will be presented to show the importance of transperineal ultrasound scanning in the fields of pelvic pain and dyspareunia. It was used together with transvaginal ultrasound scanning in all patients with chronic pelvic pain attending the clinic. The intracavity probe V5-9 was used in all cases mounted on a Samsung Ultrasound Machine, model UGEO WS80A. Patients were examined in

the lithotomy position after being adequately covered in the presence of a female chaperon.

### Case 1

A 38-years-old patient presented with superficial dyspareunia and vulval pain while sitting down for 5 years. Superficial inspection of the vulva was unremarkable. The introitus barely admitted two fingers with extreme tenderness. She had vulval renovation surgery previously. Transperineal ultrasound scanning was done. The probe was initially placed on the fourchette in the anterior posterior plane, with the labia separated sideways. A sagittal view of the anal canal and the rectum was obtained first. The probe was then rotated 90° and the hand holding the probe was lifted vertically towards the roof. The circular image of the anus was thus obtained. Extensive scarring was seen around the anal canal mainly anteriorly and on the right side with deficient muscles on the right side (Figure 1). Such an image should alert the surgeon to the difficulty expected while reconstructing the area and the amount of scar tissue necessary to be excised. The patient should also be counselled beforehand about the expected difficult surgery and result of the operation. Without such information, the extent of the operation might not have been visualized before surgery and the patient might not have been counselled appropriately. For comparison purpose, Figure 2 shows a normal anal orifice and intact surrounding muscles.

### Case 2

A 40-years-old para 3+0 female presented with dyskesia, difficulty sitting up because of perineal pain and superficial dyspareunia for the previous 4 years. She had many transvaginal scan examinations in the past without having a definitive diagnosis. She dated her symptoms to a vulval plastic procedure she had following her last delivery.

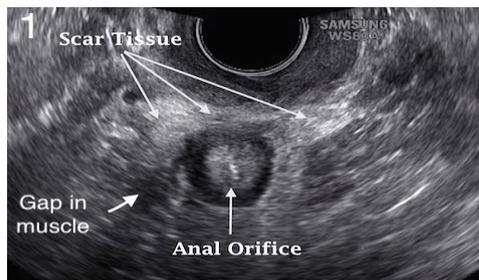
She sat at the edge of the seat, leaning towards one side then the

\*Corresponding author: Abdel-Gadir A, Al Salam International Hospital, Division of Gynaecology and Reproductive Medicine and Surgery, Al Messila Clinics Tower, Port Sayeed Road, Kuwait, Tel: 004407958422866; E-mail: [prof.gadir@gmail.com](mailto:prof.gadir@gmail.com)

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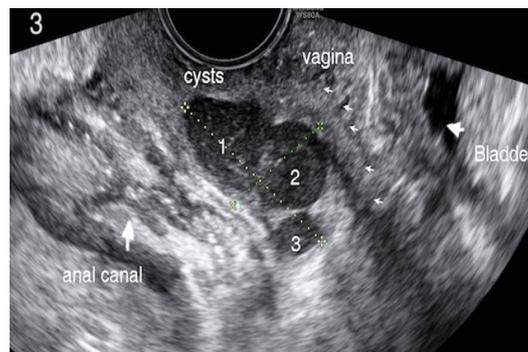
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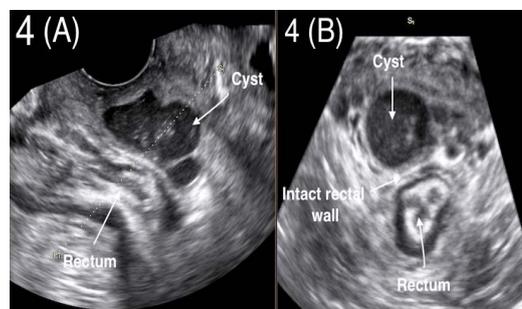
**Figure 1:** Transperineal ultrasound image across the anal canal showing thick adhesions around the anus and a gap in the muscle on the right side.



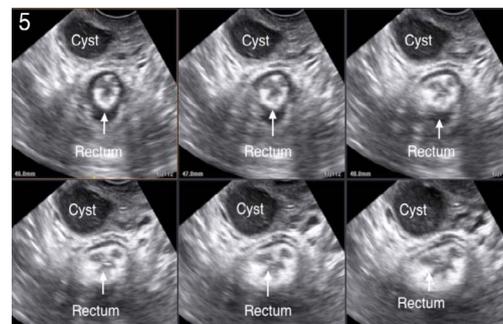
**Figure 2:** Transperineal ultrasound scan image across the rectum showing normal anal orifice and surrounding muscles, shown for comparison with Figure number 1.



**Figure 3:** Sagittal transperineal ultrasound scan showing 3 cysts between the rectum and the vagina which is marked by small arrows.



**Figure 4 (A and B):** (A) Split ultrasound image showing sagittal view of the rectum with 3 cysts anteriorly. (B) is an oblique transection view of the rectum and the middle cyst taken at the level of the dotted line in Figure A.



**Figure 5:** Transverse sequential multiple slices view across the rectum showing no direct connection or communication between the cysts and the rectum.

other every few minutes during consultation. This was a characteristic posture commonly adopted by women with perineal pain. Inspection of the vulva was unremarkable, and digital examination was not completed because of tenderness. Transperineal scan examination showed normal anal sphincter and normal anal canal and rectum. The vagina was easily identified as well as the urethra and bladder. Three small cystic areas with mixed echogenicity were seen between the rectum and the upper part of the vagina. The top one was at the level of the rectal ampulla (Figure 3). The oblique transection view technique was used to cut the image obliquely in different angles. This was done to ascertain the exact relationship of the cysts with the rectal wall, as represented in one plane by (Figure 4B). This oblique image resulted after cutting through the dotted line, running between 01 and 07 o'clock, shown in image number (Figure 4A). No connection or communication was seen between the cysts and the rectum. This was confirmed by multiple slices vision technique (Figures 5 and 6). This information was necessary as the patient had pain and difficulty during defecation. These techniques negated the need for MRI examination in this case. The cysts were excised with remarkable improvement in her symptoms. Postoperative transperineal ultrasound scanning showed no residual cyst and an intact rectovaginal septum. She was referred to a physiotherapist who started her on biofeedback exercises to deal with her residual minor symptoms.

### Case 3

A 28-year-old para 0+0 female presented with chronic pelvic pain for the previous 5 years, mainly during intercourse and defecation. Previous transvaginal ultrasound scan examinations were unremarkable.

Transperineal ultrasound scan examination was done in the usual anterior posterior plane in the clinic. The probe was rotated 90 degrees

into the transverse plane and directed slightly cranially to catch the cross-sectional area at the level of the rectal ampulla. 3D images were obtained and later studied.

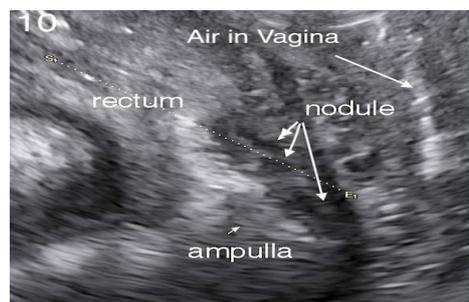
The right uterosacral ligament was seen thickened and heterogenous (Figure 7). 3D manipulation of the images in two different directions confirmed the diagnosis (Figures 8 and 9). Laparoscopic examination showed an endometriotic nodule along the right uterosacral ligament. The value of 3D manipulation in showing the pathology was clearly demonstrated in this case.

### Case 4

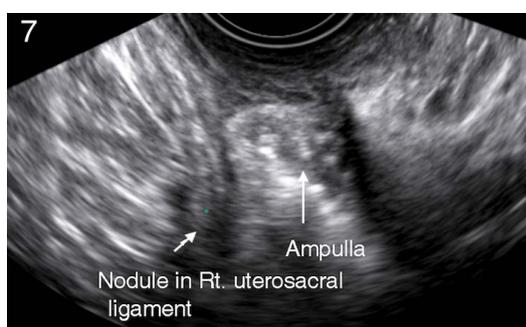
A 32-year-old para 0+0 woman attended the clinic because of



**Figure 6:** Sequential sagittal multiple slices view of the rectum and the 3 cysts showing no direct connection or communication between the cysts and the rectum.



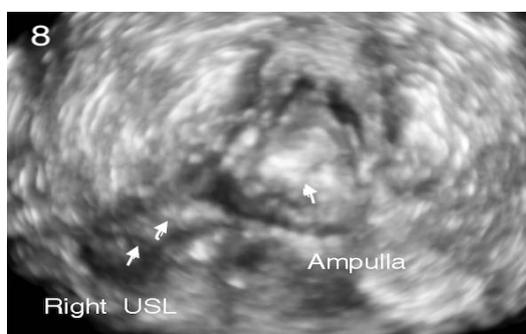
**Figure 10:** Magnified transperineal ultrasound scan image showing a nodule on the anterior wall of the rectum. The nodule is marked with three arrows.



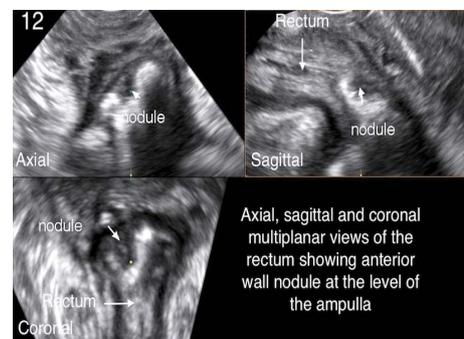
**Figure 7:** Transperineal ultrasound 2D scan view showing the rectal ampulla with suspected nodule in the right uterosacral ligament.



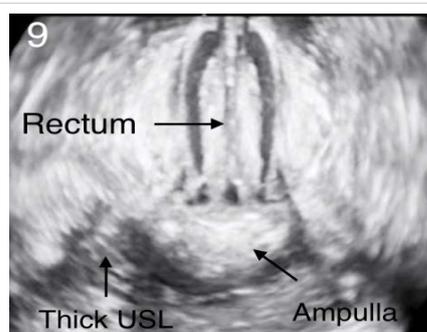
**Figure 11:** Oblique ultrasound view of the rectum obtained by transection of the rectum along the dotted line in image number 10. It clearly shows a nodule on the anterior wall of the rectum marked with arrows.



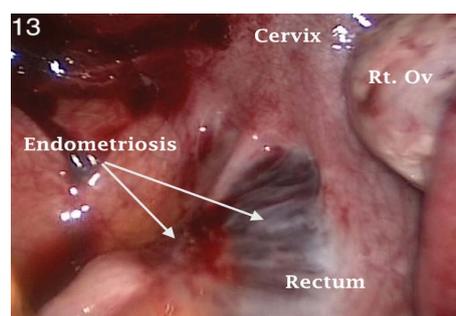
**Figure 8:** 3D ultrasound view across the ampulla with a thick right uterosacral ligament.



**Figure 12:** Multiplanar ultrasound view following transperineal ultrasound scan examination. It shows axial, sagittal and coronal views of the rectum with an anterior wall nodule on the right side of the ampulla.



**Figure 9:** Coronal ultrasound scan view showing the rectum, ampulla and the thick uterosacral ligament.



**Figure 13:** Laparoscopic image showing a large endometriotic nodule on the anterior wall of the rectum, mainly towards the right side.

chronic pelvic pain, deep dyspareunia and dyskesia. Her symptoms dated more than 7 years previously during which she had conflicting medical advice.

Transperineal ultrasound scan examination showed a nodule pushing into the rectum at the level of the ampulla (Figure 10). The diagnosis was confirmed by oblique transection of the rectum along the dotted line in image number 10 to show the nodule clearly on the anterior wall of the rectum (Figure 11). Multiplanar view reconstruction (Figure 12) confirmed the exact location of the nodule towards the right side of the anterior wall of the ampulla. It proved to be endometriotic during laparoscopic examination (Figure 13).

## Discussion

These 4 cases are only few examples of many others I diagnosed using transperineal ultrasound scanning in women with pelvic pain over the years. It is important to note that their symptoms lasted for 4-7 years before having a diagnosis. The technique has been used routinely for years as part of the clinic protocol for investigation of women with chronic pelvic pain together with transvaginal scanning. It mainly targets the anal canal, rectum and uterosacral ligaments. It is remarkable that all patients had previous negative transvaginal ultrasound scan examinations. This affected their quality of lives and delayed their management for many years, putting them at risk of developing chronic pelvic pain syndrome.

The technique is easy to learn and could be used routinely with transvaginal scanning in all women with pelvic pain, especially those with dyspareunia and dyskesia. MRI is expensive and may not be readily available in many areas. Furthermore, utilizing oblique transection,

multiplanar reconstruction, and multiple slices techniques following transperineal ultrasound scanning with high resolution ultrasound machines equipped with 3D software may reduce or even negate the primary need for MRI in many cases.

## Conclusion

Transperineal ultrasound scanning proved useful in diagnosing pathologies involving the perineum, rectovaginal septum, uterosacral ligament and the rectum at the level of the ampulla. Accordingly, it can be advocated that all gynaecological examinations of patients with pelvic pain should include the transperineal technique. This should supplement transvaginal ultrasonography, as part of a complete ultrasound scanning assessment of the pelvis. It adds no cost or inconvenience to patients already having transvaginal scan examinations, but it can definitely add some very useful information in patients with pelvic pain and dyspareunia.

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