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TECHNICAL NOTE

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Dynamic imaging of pelvic floor with transperineal sonography

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Abstract Real-time transperineal sonography has enhanced the appreciation of morphology and dynamics of the pelvic floor. Standard images are obtained from longitudinal and axial planes by placing the transducer between the vagina and rectum. This fast, effective, noninvasive and inexpensive examination represents the preferred initial diagnostic imaging tool for women with pelvic floor dysfunctions, such as prolapse and incontinence.

Key words Pelvic floor • Imaging • Perineum • Sonography

Real-time transperineal sonography (TPS) [1–3] has enabled a new appreciation of the pelvic floor anatomy. TPS represents a significant step forward in our ability to help patients with symptoms related to pelvic prolapse and double incontinence. TPS uses transducers with frequencies in the 3–5 MHz range and requires a partially filled urinary bladder. The rectal ampulla is also distended just prior the examination by hypoechoic contrast medium; the typical dose is 180 ml of a 113% (wt/vol) semisolid barium sulfate suspension (Pronto Bario E, Bracco, Milan, Italy).

To prevent cross-contamination between patients, the surface of the probe is draped in a layer of a translucent film which is removed after use. The sonographer must wear gloves when preparing the probe and performing the

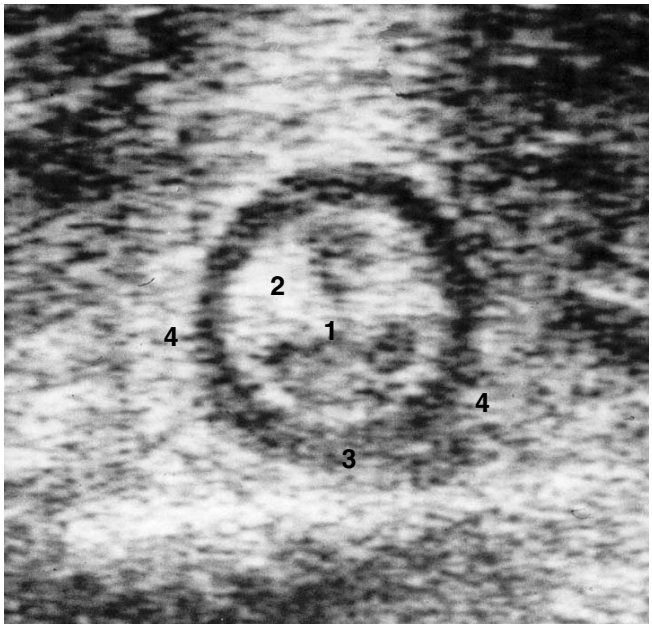

Fig. 1 Perineal sonography reveals the anal sphinter complex in axial view. *1*, mucosa; *2*, submucosa; *3*, internal anal sphincter; *4*, external anal sphincter

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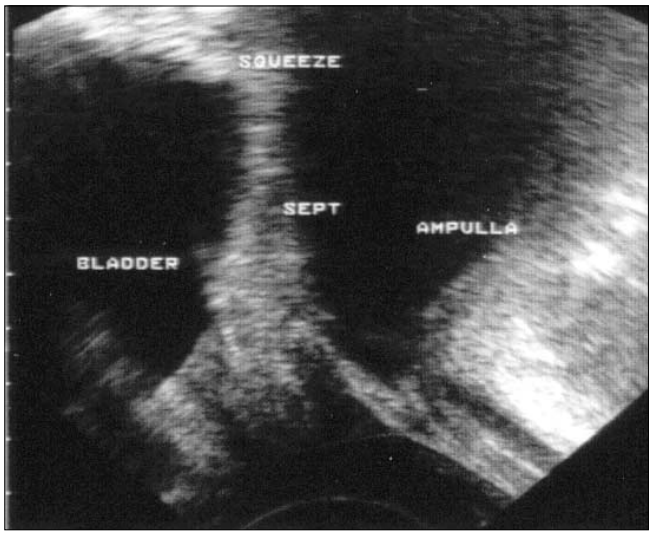

Fig. 2 Sagittal view of bladder, vaginal canal and septa, and rectal ampulla while the patient was asked to squeeze

Fig. 3 Coronal view of the diaphragmatic hiatus opening on straining. Note also the rectal ampulla distended with hypoechoic contrast medium
*, internal sphincter; **, ampulla

examination. For this, the patient is placed in a supine position with knees bent and feet flat on the table, approximately shoulder-width apart. However, the upright position may also be used, as needed. To maintain patient dignity, the patient is appropriately covered with a draw sheet at all times and, when the examining physician is a man, a female assistant is brought into the room to act as a chaperon.

Standard images are obtained from longitudinal and axial planes by placing the transducer directly on the perineal body between vagina (anterior) and rectum (posterior). For better orientation, the image on the monitor is displayed upside-down so that movements of probe and image correspond when the patient is asked to squeeze and/or strain. The dynamic portion of the examination is recorded on videotape. Finally, standard measurements from frozen images are obtained by means of a calliper.

Because of its cost-effectivness, fast examination time and wide availability, TPS may represent the preferred initial diagnostic imaging modality for women with known or suspected pelvic floor dysfunctions.

References

1. Rubens DJ, Strang JG, Bogineni-Misra S, Wexler IE (1998) Transperineal sonography of the rectum: anatomy and pathology revealed by sonography compared with CT and MR imaging. Am J Roentgenol 170:637–642
2. Teele RL, Share JC (1997) Transperineal sonography in children. Am J Roentgenol 168:1263–1267
3. Hertzberg BS, Bowie JD, Weber TM, Carroll BA, Kliewer MA, Jordan SG (1991) Sonography of the cervix during the third trimester of pregnancy: value of the transperineal approach. Am J Roentgenol 157:73–76

Invited comment

Sonography via the perineum has been used to evaluate the anal sphincters [1, 2], bladder neck position and mobility [3], and levator function [4]. Endovaginal sonography has been used to demonstrate enterocoeles [5].

The technique described here uses rectal contrast agent as well as a partially filled bladder to enhance image of these structures, with rest/stress views to show pelvic floor movement and change in these structures. An obvious concern is that keeping probe contact with the perineum might reduce pelvic floor movement, but I expect this can be minimised with a light touch. More fundamental is the limitation of the dynamic views used. Just stressing the perineum does give useful information, but most important abnormalities of pelvic floor function in the posterior compartment, such as intussusception, trapping in a rectocoele and enterocoele occur only when the rectum is stressed maximally by evacuation. This is the same limitation that applies to many dynamic magnetic resonance imaging (MRI) examinations that are in vogue. Transperineal sonography (TPS) may be able to visualise the rectum and levators, but does it provide the information required to determine patient management? This has yet to be determined, and as at best it will be equivalent to dynamic MRI, TPS may have to include rectal voiding to become a valuable study in coloproctology.

References

1. Stewart LK, Wilson SR (1999) Transvaginal sonography of the anal sphincter: reliable or not? Am J Roentgenol 173(1):179–185
2. Peschers UM, DeLancey JO, Schaer GN, Schuessler B (1997) Exoanal ultrasound of the anal sphincter: normal anatomy and sphincter defects. Br J Obstet Gynaecol 104(9):999-1003
3. Peschers U, Schaer G, Anthuber C, DeLancey JO, Schuessler B (1996) Changes in vesical neck mobility following vaginal delivery. Obstet Gynaecol 88(6):1001–1006
4. Peschers UM, Schaer GN, DeLancey JO, Schuessler B (1997) Levator ani function before and after childbirth. Br J Obstet Gynaecol 104(9):1004–1008
5. Halligan S, Northover J, Bartram CI (1996) Vaginal endosonography to diagnose enterocoele. Br J Radiol 69(827):996–999

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