

# The issues surrounding the pre-operative TVS diagnosis of rectovaginal septum endometriosis

**Shannon Reid**

MBBS (Hons) University of Sydney

**George Condous**

FRCOG, FRANZCOG, MD (Lon)

Acute Gynaecology, Early Pregnancy and Advanced Endosurgery Unit

Sydney Medical School, University of Sydney

Nepean Hospital, Penrith, New South Wales, Australia

Correspondence to email [sereid@gmail.com](mailto:sereid@gmail.com)

**T**ransvaginal ultrasonography (TVS) is recommended as the first line imaging tool for the pre-operative diagnosis of posterior compartment deep infiltrating endometriosis (DIE), with a sensitivity and specificity for the prediction of bowel endometriosis as high 91% and 98%, respectively.<sup>1</sup> Immediately above the anterior rectum, lies the rectovaginal septum (RVS), which may also be infiltrated by DIE. Some studies have found the detection rate of RVS DIE with TVS to be quite poor (11–29%),<sup>2,3</sup> whereas other researchers have reported a sensitivity as high as 78%.<sup>4</sup> The inconsistent findings for the use of TVS to predict RVS DIE may not only be explained by the differences in ultrasound technique and user experience, but also by the discrepancy in the literature regarding the definition of RVS DIE. In this editorial, we describe the issues surrounding the ultrasound diagnosis of RVS DIE and challenge the concept of whether the pre-operative diagnosis of RVS is actually helpful in the surgical planning of endometriosis surgery for women with suspected posterior compartment DIE.

The RVS is a retroperitoneal structure that lies between posterior vaginal wall and surface of the anterior rectum, beginning at the base of the pouch of Douglas (or rectovaginal pouch) and extending caudally to the top of the perineal body. RVS DIE is thought to occur as a result of the extension of a DIE lesion that has originated in a neighbouring structure (i.e. pouch of Douglas, anterior rectum, posterior vaginal fornix), rather than originating as an isolated lesion in the RVS.

The diagnosis of RVS DIE with TVS can be very challenging, even for those with experience in imaging posterior compartment DIE. During TVS, the RVS is represented by a thin, hyperechoic layer between the vagina and anterior rectum, with a length ranging from 2.1 cm (nulliparous women) to 3.3 cm (multiparous women).<sup>5</sup> It is our experience that the RVS can be clearly visualised with TVS in a normal subject, however, in the presence of a RVS DIE nodule, the ability to visualise the normal aspect of the RVS becomes virtually impossible. Researchers have used 'stand-off' techniques including sonovaginography and tenderness guided TVS as well as MRI to improve the visualisation of the RVS and pre-operative diagnosis of RVS DIE. Although a small number of studies have reported a high detection rate of RVS DIE using TVS and the abovementioned

modified TVS approaches, there has also been an ongoing discrepancy among various studies when defining the criteria used to identify RVS DIE with TVS.

Some studies have defined the TVS diagnosis of RVS DIE as the absence of the normally appearing hyperechoic layer between the vagina and rectum due to the presence of a nodule which passes through lower edge of the posterior cervix. Other researchers have used the terms RVS and rectovaginal (RV) DIE interchangeably to describe RVS DIE. The RVS is an individual anatomical structure with a specific location, whereas RV DIE describes DIE located in the rectovaginal area, which may be associated with several different structures (i.e. vagina, rectum ± RVS), depending on the definition used. Indeed, there is also an inconsistency in the definition of RV DIE in the literature. RV DIE has been described as endometriotic lesions which infiltrate both the rectum and the posterior vaginal wall/fornix,<sup>6</sup> with possible extension into the rectovaginal septum (RVS).<sup>7,8</sup> Others have used the term RV endometriosis to describe nodules which primarily infiltrate the RVS,<sup>9</sup> with possible extension into the vagina and/or rectum.<sup>10</sup> These definitions are not consistent in terms of defining either RV or RVS endometriosis, but attempt to define the concept of RV endometriosis.

There are a few factors that make the TVS diagnosis of RVS DIE difficult. Although the RVS may be clearly visualised as a separate structure in normal anatomy, the ability to confirm the invasion of the RVS during TVS is only possible by reporting the absence of seeing the actual RVS due to the presence of a DIE lesion, which appears where we would expect to see the RVS. This is in contrast to the diagnosis of anterior rectal DIE, where the lesion may be visualised as invading the continuous hypoechoic longitudinal smooth muscle layer or muscularis propria of the anterior rectum, often with normally appearing longitudinal muscle on either side of the lesion to help confirm the diagnosis. Perhaps this is why the TVS diagnosis of bowel DIE is far more accurate than RVS DIE; we are surer of the diagnosis because we are able to confidently visualise the invasion of the DIE lesion within the normal anatomy of the rectal wall. Another difficulty with the diagnosis of RVS endometriosis with TVS is that fact that RVS DIE rarely, if ever, occurs as an isolated lesion. RVS DIE tends to exist as a contiguous lesion with neighbouring

structures (i.e. vagina and/or anterior rectum), and this loss of the ability to visualise the normal anatomy of the structures within the posterior compartment is likely to further obscure the operator's interpretation of RVS infiltration.

The diagnosis of RVS DIE may be confirmed at the time of laparoscopy, when the pouch of Douglas (POD) is dissected to reveal the location and extension of the central posterior compartment DIE lesion. As RVS DIE tends to occur as an extension from a lesion in a neighbouring structure (i.e. posterior vaginal fornix and/or anterior rectum), the excision of RVS DIE is associated with the risk of complications such as bowel perforation and rectovaginal fistula. It would therefore seem that the ability to predict DIE infiltration of the RVS pre-operatively may be useful in the surgical planning and counselling regarding possible post-operative complications. However, RVS DIE is known to be associated with rectal DIE and POD obliteration, both of which are more accurately predicted with TVS than RVS DIE. For women who have POD obliteration or bowel DIE diagnosed pre-operatively, the TVS diagnosis of RVS DIE is not likely to change the pre-operative planning as such, as the colorectal surgeon will counsel the patient regarding the possible need for bowel surgery and risk of post-operative complications. In addition, the surgeon will decide whether the RVS is affected by the DIE lesion at the time of surgery, not as a result of the pre-operative TVS findings.

Due to the inconsistency in the terms used to define the TVS diagnosis of RVS DIE in previous studies, it is difficult to draw conclusions regarding the accuracy of TVS in the diagnosis of RVS DIE. It is also debatable whether the pre-operative diagnosis of RVS DIE actually contributes to the planning of endometriosis surgery for these women. In any case, there lies a need for consistent use of nomenclature when classifying TVS findings and surgical diagnosis of endometriosis location. Consistent use of definitions to classify disease location should optimise objective interpretation of research, allow reproducible assessment of the pelvis on TVS and hopefully lead to improved clinical care of women initially identified to have DIE preoperatively.

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