The importance of pre-operative ultrasound diagnosis of pouch of Douglas obliteration

Pre-operative diagnosis of pouch of Douglas (POD) obliteration is important for several reasons. We know that pre-operative identification of POD obliteration allows for the identification of women who may be at a higher risk of having underlying bowel endometriosis. In women noted to have POD obliteration at laparoscopy, there is a three times higher risk of concurrent bowel deep infiltrating endometriosis (DIE). If POD obliteration is detected during the pre-operative transvaginal ultrasound scan (TVS) assessment, then these high risk women could then be referred to have a more detailed pelvic ultrasound performed by an advanced gynaecological sonologist/sonographer. This is important in order to identify and map posterior compartment DIE nodules that may exist in the anterior rectum, anterior recto-sigmoid, recto-cervix, vagina, rectovaginal septum, and/or uterosacral ligaments. Another reason to identify whether the POD is obliterated pre-operatively using TVS, is to provide the laparoscopic surgeon with as much information as possible in relation to what to expect at surgery.

This is very important as part of the pre-operative planning stage of surgery and when the POD obliteration is secondary to the presence of underlying posterior compartment DIE, the procedure is often long and complex, requiring the skills of an advanced laparoscopic surgeon (with colorectal input, in the case of co-existing bowel endometriosis). Therefore, when POD obliteration is noted on TVS and underlying posterior compartment endometriosis is suspected, these women should be referred to an advanced laparoscopic surgeon and/or colorectal surgeon to discuss the implications of possible bowel endometriosis and expectations for surgery. By ensuring the appropriate referral of these high risk women for bowel endometriosis to an advanced laparoscopic surgeon, this may also prevent the situation where the woman undergoes two laparoscopies; i.e. the primary laparoscopy is performed by a general gynaecologist who is not able to excise the severe endometriosis and this results in the need for a second laparoscopy by an advanced laparoscopic surgeon. I truly believe that with experience, the need for this “primary diagnostic laparoscopy” can be potentially negated by the introduction of advanced gynaecological ultrasound skills to correctly identify POD obliteration in conjunction with severe posterior compartment DIE.

Posterior compartment DIE is known to be associated with POD obliteration and the use of pre-operative imaging techniques to predict posterior compartment DIE have been well documented. TVS is the most commonly used imaging modality to predict posterior compartment DIE location and extent. It is the most economical non-invasive technique with the sensitivity and specificity 91% and 98%, respectively. The prediction of POD obliteration with pre-operative imaging however to date has not been as well studied.

Ultrasound studies have also been performed using TVS to predict POD obliteration pre-operatively, with a sensitivity and specificity ranging from 72%–83% and 97%–100%, respectively. We have recently developed a new real-time dynamic TVS technique in our gynaecological ultrasound unit, known as the “sliding sign”, which may be used to accurately predict whether the POD is obliterated pre-operatively. As described in our recent study, the TVS “sliding sign” technique was evaluated pre-operatively in 100 women with a history of chronic pelvic pain, to assess whether POD obliteration could be predicted in women with suspected endometriosis prior to laparoscopy. All women in the study were subjected to the same gold standard, i.e. laparoscopic confirmation of POD obliteration/non-obliteration. This study found the TVS “sliding sign” to have an accuracy, sensitivity, specificity, positive predictive value, negative predictive value, positive likelihood ratio and negative likelihood ratio of 93.0%, 83.3%, 97.1%, 92.6%, 93.2%, 29.2 and 0.17 when predicting POD obliteration pre-operatively.

The TVS “sliding sign” is elicited by a dynamic ultrasound technique to determine whether adhesions exist between the posterior uterus/cervix and the adjacent recto-sigmoid/rectum, and in turn, predict whether the POD is obliterated. In order to elicit the “sliding sign”, the examiner places gentle pressure against the cervix with the transvaginal (TV) probe. During real-time ultrasound, the examiner is able to visualise whether the anterior rectum glides freely across the posterior aspect of the cervix and posterior vaginal wall. The “sliding sign” is considered positive for the retro-cervical region if the anterior rectal wall can be seen gliding easily over the posterior cervix and posterior vaginal wall. Next, the examiner assesses the posterior uterine/fundal region by placing one hand over the woman’s lower anterior abdominal wall and balloting the uterus between the palpating hand and TV probe (being held in the other hand) and visualises in real-time ultrasound whether the recto-sigmoid bowel is gliding smoothly across the posterior aspect of the upper uterus/fundus. The “sliding sign” is considered positive for this region when the anterior recto-sigmoid bowel glides smoothly over the posterior aspect of the upper uterus. If both regions (i.e. retro-cervical and posterior upper uterine/fundal regions) display a positive “sliding sign”, then the POD is considered not obliterated. However, if either the anterior rectum or recto-sigmoid bowel do not glide freely across the posterior cervix or posterior uterus, (i.e. the “sliding sign” is negative in either region) and the POD is considered to be obliterated.

We have also recently evaluated the reproducibility of the TVS “sliding sign” technique for the prediction of POD obliteration and found an acceptable inter- and intra-observer agreement among gynaecological sonologists, ranging from substantial to almost perfect agreement and substantial to perfect agreement, respectively. The TVS “sliding sign” test was found to be superior to MRI in the prediction of POD obliteration, both in terms of diagnostic accuracy and reproducibility (97.0%...
vs. 71.9%, respectively and kappa 0.69 vs. 0.57, respectively) when considering the four gynaecological ultrasound observers.

In our recent study, the gynaecological ultrasound specialists performed markedly better compared to their fetal medicine colleagues, as would be expected by sonologists who perform gynaecological ultrasound on a regular basis and who are more familiar with visualising the pelvic structures associated with a gynaecological TVS examination.

The TVS “sliding sign” technique is a simple technique that can be learned by sonologists and sonographers who perform gynaecological scanning on a regular basis. I believe that TVS “sliding sign” should be considered as part of the standard routine pre-operative work-up for all women suffering from chronic pelvic pain. If you can confirm POD obliteration pre-operatively using ultrasound, this may help to identify women who are at increased risk for bowel endometriosis and therefore allow for the appropriate referral to an advanced laparoscopic surgeon (+ colorectal surgeon). These high risk for DIE women with a negative TVS “sliding sign” may also benefit from further pre-operative imaging performed by an advanced gynaecological sonologist/sonographer that specialises in the visualisation of posterior compartment DIE. The pre-operative diagnosis of posterior compartment DIE, particularly with regard to bowel DIE, has major implications for surgical planning and post-operative outcomes. This approach should become a routine part of the gynaecological sonologist’s/sonographer’s repertoire in the work up of women with potential endometriosis.

Assoc Prof George Condous, Editor

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