

# #348 Transperineal 3D pelvic ultrasound in the assessment of complex voiding dysfunction following failed suburethral sling division surgery

Chan L<sup>1</sup>, Tse V<sup>1</sup>, Wang A<sup>2</sup>

1. Concord Repatriation General Hospital, University of Sydney, NSW, Australia

2. Westmead Hospital, Sydney, NSW, Australia



## Introduction

The mid-urethral synthetic sling (MUS) is the most commonly performed surgical procedure in the treatment of female stress urinary incontinence. However, a small proportion of patients (1-9%) may develop voiding dysfunction/urinary retention due to urethral obstruction which is often treated by sling division. We aimed to evaluate the utility of transperineal 3D pelvic ultrasound in the assessment of complex patients with persisting voiding dysfunction following sling division surgery.

## Materials and Methods

12 patients with persisting voiding dysfunction post MUS division were studied. All patients had bladder outlet obstruction based on urodynamic evaluation. Transperineal pelvic ultrasound examinations were performed using Philips IU22 and EPIQ ultrasound machines with X6-1MHz Matrix transducer. Dynamic 2D imaging was performed in the sagittal plane at rest and on Valsalva to assess sling position and urethral mobility. Patients were imaged in supine, sitting and standing positions. 3D volume datasets were obtained and off-line analysis performed on Qlab software to evaluate sling position relative to the urethra.



Fig 1. Transperineal ultrasound image of obstructive synthetic suburethral sling with angulation/kinking of urethra during Valsalva (arrow, right image)

## Results

Of 12 patients with persisting symptoms post sling division, 9 patients had 2 slings in situ and 2 had pubo-vaginal fascial sling. All had undergone previous transvaginal surgery to relieve obstruction (8 had division of sling and 4 had excision of a suburethral sling segment). All synthetic suburethral slings were easily visualized on 2D transperineal imaging. Dynamic compression of the urethra by sling was observed on 2D imaging in all patients. 10 of 12 patients had overangulation or distortion of axis of the urethra due to the obstructive sling (8 synthetic, 2 fascial) (Figs 1 & 2), 3 of whom were demonstrated only when scanned in sitting position. 3D volume analysis showed that 2 patients had sling erosion into urethra (Fig 3) and 2 had vaginal erosion of sling. In patients who had persistent voiding dysfunction despite previous sling division there was little separation of the ends of the divided sling (<3mm) (Fig 4). In 3 patients who had undergone excision of a suburethral sling segment, 3D volume analysis showed there was incomplete excision with a small amount of sling continuity (Fig 5). 10 patients subsequently underwent urethrolisis with excision of a suburethral sling segment with resolution of voiding dysfunction.

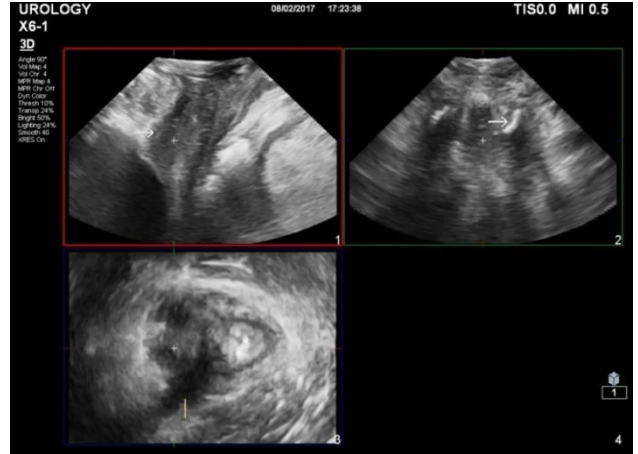


Fig 2. Multiplanar reconstruction of 3D pelvic floor volume in patient with obstructive pubovaginal fascial sling (arrow- sagittal image, box 1) Note previous division of synthetic sling (arrow, coronal image, box 2)

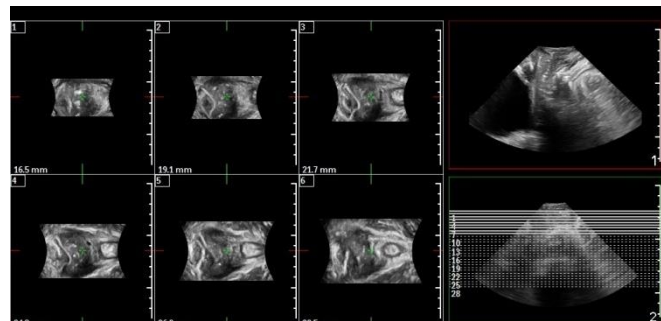


Fig 3. Multiplanar reconstruction of 3D pelvic floor volume in patient with 2 synthetic suburethral slings. Note erosion of more anteriorly placed sling into urethra (box 3-6)

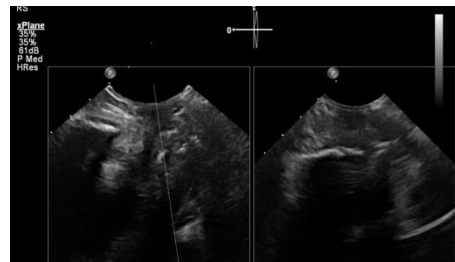


Fig 4. X-plane (transverse) image (right) showing insufficient separation of sling post division due to scar contraction

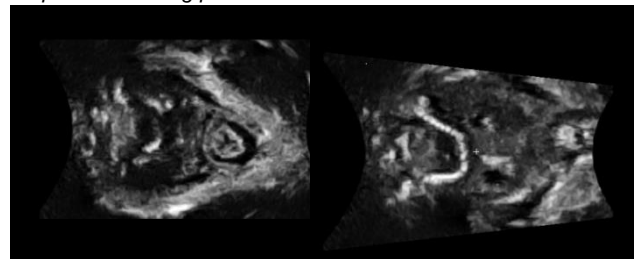


Fig 5. Persisting voiding dysfunction due to insufficient division of sling with residual sling continuity (right image)

## Discussion

Common sonographic findings in patients with persisting voiding dysfunction post sling division surgery include distortion/angulation of the urethral axis and incomplete separation of the edges of the divided sling. Our findings suggest that incision of an obstructive sling may not result in adequate relief of obstruction and excision of a sub-urethral portion of sling may be preferable.

## Conclusion

Transperineal 3D Ultrasound has a useful role in the assessment of complex patients with persistent voiding dysfunction post sling division, especially in those with multiple slings in situ.