

Salvage operation for urethral perforation caused by TVT removal for severe urinary incontinence. A case report

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Abstract: Following a TVT midurethral sling 4 years earlier, (initially deemed 85% successful), a 53 year woman presented with gradual deterioration of her incontinence. By mid 2009, the patient was leaking 800-1000 ml/24 hours. There was no urine leak at rest or at night, but she leaked on the slightest effort during the day. On ultrasound examination, the whole posterior urethral wall was opened out during straining, with observed urine loss. The maximal urethral closure pressure was 60cm H₂O, with no urodynamically detected detrusor instability. At operation, the urethra was paper thin, 1.5 cm wide, fragile and attached to a wide loose TVT tape partly embedded in the urethral wall. Two small holes were made during tape removal and repaired. A “bridge/flap” of full thickness vaginal mucosa (3x1cm) was brought up to protect the thin urethral wall. A TFS (Tissue Fixation System) adjustable midurethral sling was then inserted over the vaginal flap, then covered by approximation of the lateral vaginal edges to form a double layer. The patient was entirely cured at 12 months review, with no vaginal retention cysts evident. Though midurethral tapes generally enhance the urethral closure mechanisms, a loosely applied tape may fibrose in such a way as to “hold open” the urethra and prevent closure.

Key words: Urethral perforation; TVT; Urinary incontinence.

INTRODUCTION

“Tension-free tape” midurethral slings have now become the gold standard for cure of stress incontinence. However, they are not without complications. Though organ, vascular and nerve damage has been reported, the commonest and most persistent problems concern tape complications which occur in up to 5% of patients in the longer term.¹ Most tape complications consist of vaginal erosions, but urethral and undetected bladder perforations have also been reported. We report severe incontinence 4 years after a “tension-free” midurethral sling, urethral perforation on removal of the tape, and a novel surgical method for simultaneously addressing the damaged urethra and curing the urinary incontinence.

CASE REPORT

A 53 year old para 4 woman had a “tension-free” midurethral sling in May 2006 at another centre for effort urinary incontinence of severe degree. She had a past history of a major co morbidity, a coagulopathy, Von Willebrand’s disease plus deficiency in factors 11&12. A 1cm space had apparently been left between the tape and the urethra. She had a post-operative hematoma and required catheterisation post-operatively, but there was no longer term urinary retention or voiding dysfunction.

The operation was according to the patient, 85% successful immediately post surgery, with only mild leaks noted on coughing. These leaks became gradually worse with time until by mid 2009 the patient was leaking a measured 24 hour loss of 800-1000 ml/24 hours. There was no urine leak at rest or at night, but she leaked on the slightest effort during the day, even during a short walk within the house. She had found that the use of transvaginal tampons and external continence pads were the best remedial management, reducing urine loss by approximately one third.

On ultrasound examination during straining, (figure 1), the whole posterior urethral wall appeared to be forcibly opened out. On urodynamic testing, the maximal urethral closure pressure was 60cm H₂O, and there was no bladder instability.

The decision was taken to remove the lower “U” part of the original tape and, because of the patient’s bleeding

diathesis, it was planned to replace it with a TFS minisling as the least invasive option.

Surgery

At operation, the urethra was paper thin, 1.5cm wide, and tissue fragility was noted at initial dissection. The TVT tape was loose and its “U” section was wide and densely adherent to the urethra. We felt that the anatomical findings precluded a 2nd overlaid tape as the wide tape and fibrosis would not allow sufficient closure, so it was decided to remove the “U” section of the tape. In the process of removal, two small defects, each 0.5 cm in diameter were created in the posterior wall of the urethra. These defects were repaired with fine 4-0 resorbable sutures, using a purse string suture.

A vaginal graft* “G”, fig 2, was taken from lower down in the vaginal wall and brought upwards (arrow) to cover the urethra. It was attached to the periurethral tissues with

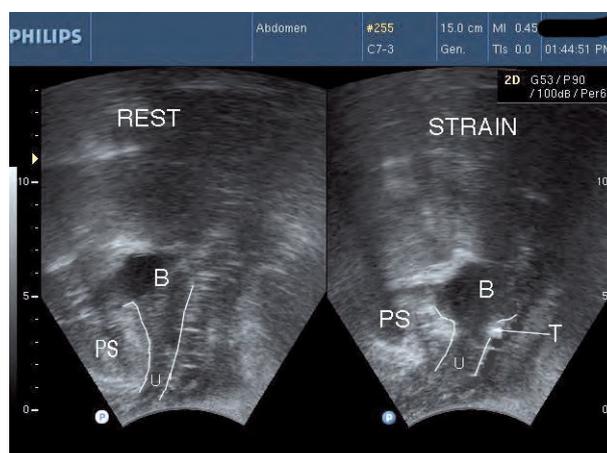


Figure 1. – Transperineal ultrasound showing opening out of the posterior urethral wall during straining. PS=pubic symphysis; B=bladder; U=urethra; T=tape.

LEGENDS

Tape and graft- sagittal view The white ovals indicate the position of the holes.

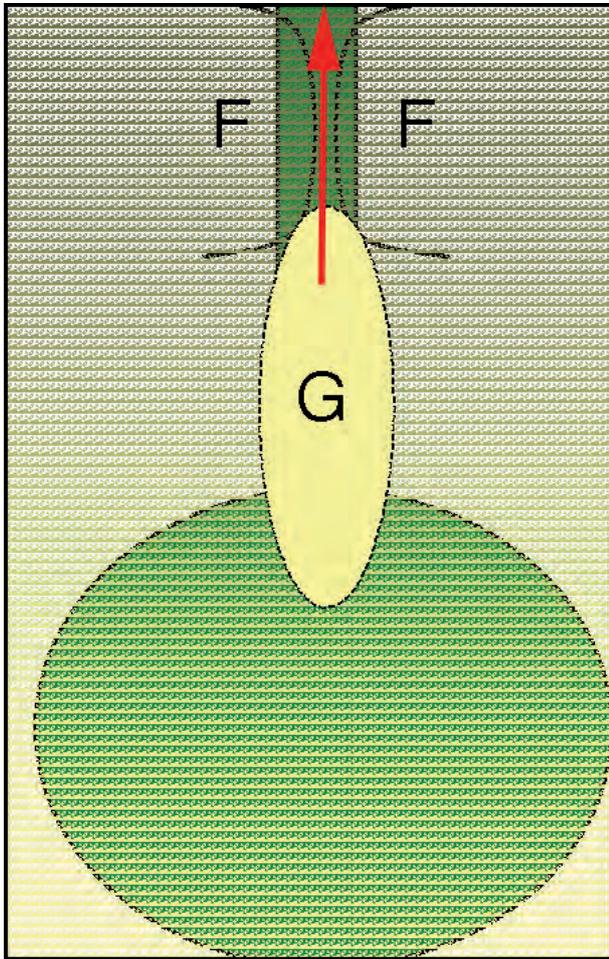


Figure 2. – Creation of vaginal skin graft ‘G’ (‘bridge’) to cover urethra. The sling sits over the graft. F= 2cm flaps created to cover the midurethral sling. Arrow indicates how the graft is pulled upwards.

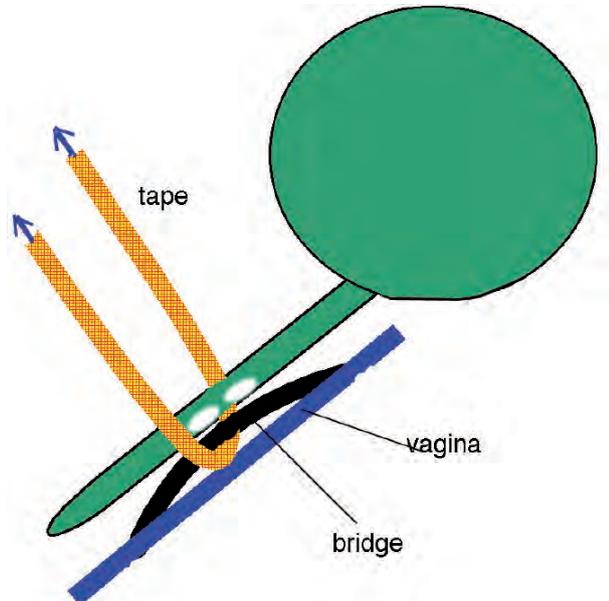


Figure 3. – Tape and graft- sagittal view. The white ovals indicate the position of the holes. The vaginal graft (‘bridge’) covers the urethra protecting it from the applied tape. Both are overlaid by the vaginal flaps ‘vagina’.

00 resorbable sutures, (fig 2). A TFS (Tissue Fixation System) adjustable sling was then inserted over the vaginal graft at midurethra, fig 3. Prior to tightening the tape, the bladder was filled with 400 ml saline with Methylene Blue to test for any leakage. Valsalva pressure was applied as the tape was adjusted until no leak was apparent prior to approximating the flaps ‘F’, figure 2. A no 8 Hegar dilator was inserted intermittently during tightening to protect against accidental overtightening.

* Known also as a ‘vaginal bridge’ or ‘bridge technique’

Post-operative course

An IDC silicone 12 Foleys catheter remained in situ for 72 hours. The patient was able to micturate immediately. She was completely continent at 12 months review, with no vaginal retention cysts evident.

DISCUSSION

The anatomical findings were most unusual and influenced our decision to add a protective vaginal layer for the sling. We hypothesize that the post-operative haematoma following the original TVT operation had grossly distorted the sub urethral anatomy, causing stretching of the TVT tape, distension and attenuation of the urethral wall which could not be closed by either the distal or proximal urethral closure mechanisms.⁴ We believed that the wide adherent TVT tape and extremely thin urethral wall contraindicated an overlaid 2nd TVT tape. Therefore the decision was taken to remove the ‘U’ part of the tape and insert a tissue graft of full thickness vaginal mucosa (3x1cm) to protect the thin urethral wall. The minimally invasive nature of the TFS minisling,² strong, one-way, precisely adjustable mechanism and a reported 90% cure rate at 3 years,³ suggested that this was a suitable treatment option.

CONCLUSION

The vaginal skin graft provides a simple protective barrier and it allows insertion of a corrective midurethral sling.

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