Evaluation of Presenting Symptoms and Long-Term Outcomes of Patients Requiring Excision of a Transobturator Tape (TOT)

Abstract:
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The transobturator tape (TOT) is an effective treatment for stress urinary incontinence (SUI). Erosion of TOT mesh is a rare but troublesome complication requiring excision. A retrospective analysis of 228 females undergoing a TOT procedure over 4 years identified 16 patients (7%) who underwent excision of eroded mesh. Mean age of patients requiring excision was 48.8 years and mean weight was 72.7 kg. Mean time to re-presentation was 14.5 months. Presenting symptoms included dyspareunia in 9 patients (56.2%), dysuria in 3 (18.7%), persistent incontinence in 3 (18.7%) and groin pain in one patient. Ten patients (62.5%) had a prior urogynaecological procedure. After excision of eroded tape-mesh, 4 (25%) underwent repeat TOT for recurrence of SUI. Five patients (31.2%) required no further surgery. At present 10 patients (62.5%) report resolution of SUI, 4 (25%) report mild SUI and 2 (12.5%) patients have moderate/severe SUI. Resolution of symptoms occurred in the majority of patients after excision of eroded mesh and an additional anti-incontinence procedure.

Introduction
Stress urinary incontinence (SUI) is defined by the International Continence Society (ICS) as the complaint of involuntary leakage of urine on effort or exertion, or on sneezing or coughing, with urodynamic evidence of involuntary detrusor contraction or leakage of urine at a Qmax of less than 15 ml/s.

Methods
Between January 2008 and July 2012, 16/228 (7%) patients underwent excision of an eroded TOT mesh. Their relevant demographics are summarised in Table 1. The mean age at presentation was 48.8 (range: 34.5-76.6) years and the mean weight was 72.7 (range: 55-110) kg. Presenting symptoms are summarised in Table 2 and included dyspareunia in 3 patients (18.7%), dysuria in 2 patients (12.5%) and groin pain in one patient. Altogether, ten patients (62.5%) had a prior urological or gynaecological procedure (10% to 40% and approximately 50% of females with urinary incontinence suffer from SUI). Macroporous, monofilament polypropylene mesh is the most frequently applied surgical material and common surgical approaches include both retropubic (tension free vaginal tape – TVT) and transobturator routes. The transobturator tape (TOT) procedure was first described in 2001 by Delorme as an alternative approach to reduce the complications associated with TVT. The TOT is positioned underneath the mid urethra and runs laterally through the obturator membrane to the upper part of the thigh, from outside to inside. Studies have demonstrated equivalent subjective cure rates to TVT at 1 year; however TOT procedures are associated with less blood loss, less voiding dysfunction and shorter operative duration compared to a retropubic TVT approach. Notably, the TOT procedure is associated with higher rates of vaginal erosion and thigh pain. The timeframe associated with sling-related erosions from TOTs varies widely among female patients with some experiencing symptoms in the immediate post-operative period while others may develop complications years later. Ultimately, erosion of a tape material will require definitive surgical treatment with either partial or complete excision of the mesh. In the present study, our aim was to describe our experience with patients requiring excision of an eroded tape mesh following the TOT procedure. We also aimed to assess their symptom profile, risk factors for erosion, as well as their continence status postoperatively.

Results
Patient demographics
Between January 2008 and July 2012, 16/228 (7%) patients underwent excision of an eroded TOT mesh. Their relevant demographics are summarised in Table 1. The mean age at presentation was 48.8 (range: 34.5-76.6) years and the mean weight was 72.7 (range: 55-110) kg. Presenting symptoms are summarised in Table 2 and included dyspareunia in 3 patients (18.7%), dysuria in 2 patients (12.5%) and groin pain in one patient. Altogether, ten patients (62.5%) had a prior urological or gynaecological procedure (10% to 40% and approximately 50% of females with urinary incontinence suffer from SUI). Macroporous, monofilament polypropylene mesh is the most frequently applied surgical material and common surgical approaches include both retropubic (tension free vaginal tape – TVT) and transobturator routes. The TOT procedure was first described in 2001 by Delorme as an alternative approach to reduce the complications associated with TVT. The TOT is positioned underneath the mid urethra and runs laterally through the obturator membrane to the upper part of the thigh, from outside to inside. Studies have demonstrated equivalent subjective cure rates to TVT at 1 year; however TOT procedures are associated with less blood loss, less voiding dysfunction and shorter operative duration compared to a retropubic TVT approach. Notably, the TOT procedure is associated with higher rates of vaginal erosion and thigh pain. The timeframe associated with sling-related erosions from TOTs varies widely among female patients with some experiencing symptoms in the immediate post-operative period while others may develop complications years later. Ultimately, erosion of a tape material will require definitive surgical treatment with either partial or complete excision of the mesh. In the present study, our aim was to describe our experience with patients requiring excision of an eroded tape mesh following the TOT procedure. We also aimed to assess their symptom profile, risk factors for erosion, as well as their continence status postoperatively.

Intra-operative findings
There were 11 patients (68.7%) with anterior vaginal erosion and 5 patients (31.2%) had erosion of the tape-mesh through the urethra/bladder neck. Fourteen patients (87.5%) underwent complete lysis of TOT and excision of eroded segment of TOT while 2 of the 16 patients (12.5%) of patients had partial excision of the visible eroded segment of material only leaving the original TOT intact.

Post-operative follow-up
Following excision of TOT: 7 patients (43.7%) underwent insertion of a rectus fascia sling, 4 patients (25%) had a repeat TOT and 5 patients (31.2%) required no further surgery. At present 10 patients (62.5%) report resolution of SUI, 4 patients (25%) report mild SUI (light leakage with vigorous activity) and 2 patients (12.5%) have moderate/severe SUI (leakage with any movement).

Discussion
Stress urinary incontinence (SUI) is an extremely common problem among females and accounts for approximately 50% of all urinary incontinence cases. The transobturator tape (TOT) procedure has advanced the treatment for SUI since it was first described in 2001. Comparative studies have demonstrated equal efficacy to the well-established retropubic route of the transvaginal tape (TVT). Although the transobturator approach is associated with a reduced risk of bladder and urethral perforation, compared to the retropubic approach of the TVT; there is an increased risk of
vaginal perforation with a TOT approach. The main finding of our study is that definitive surgical excision of eroded TOT mesh followed by an additional anti-incontinence procedure is an effective solution to this challenging clinical scenario. Pain during sexual intercourse (dyspareunia) and dysuria were the most prevalent presenting complaints, and were found in 90% (27/30) of patients (56%) and 3/16 patients (18.75%) of patients, respectively. These findings are consistent with other studies that describe both symptoms as predominant presenting symptoms after erosion of TOT mesh. These symptoms may develop from direct contact during sexual intercourse or from direct contact of the eroded material with host urine resulting from resultant urine leak, dyspareunia or shrinkage or extensive fibrosis. Either the female patient or the male sexual partner may complain of dyspareunia. The male partner may indicate that male dyspareunia may be an early sign of mesh erosion. A review recently reported an overall incidence of dyspareunia following surgery for SUI of 6.2%. Other common presenting symptoms are recurrent SUI and de novo groin pain. Chronic groin pain as a result of mid-urethral sling placement can become a challenging problem for the surgeon post-operatively. It has been reported in up to 40% patients after trans-obturator sling placement and as per a recent meta-analysis is more common in ‘inside-to-outside’ trans-obturator approach. In our study, one patient complained of persistent groin pain following TOT. This resolved following excision of the mesh. Another important finding we noted was the significant duration of presenting symptoms before diagnosis was prolonged at 14.5 months. This suggests that clinicians are poor at diagnosing erosion of TOT mesh and the TOT procedure is a higher index of suspicion for TOT erosion should be observed in the context of previous anti-incontinence surgery. The overall TOT erosion rate in the present study was 7% and this finding is consistent with another study by Kaelin-Gambrasio et al. that demonstrated a vaginal erosion rate of 7.6% among 233 females undergoing the TOT procedure after 27 months follow-up. However, an important secondary finding unique to the present study is the relatively higher rates of TOT erosion in patients with a previous history of urological or gynaecological surgery including mid-urethral slings (62.5%). Despite this, a higher erosion rate was not observed in this group.

A limitation to our study is that it is a single-centre, retrospective analysis of a prospectively maintained database. However, our study used a prospectively collected database with comprehensive clinical follow-up and no patients were lost to follow-up. Another potential limitation is that alternative, and perhaps more minimally invasive, endoscopic approaches to the excision of TOT mesh with laser therapy, for tape-mesh erosion were not compared. However, a randomised control group was not available for comparative purposes due to the infrequency of erosive complications after anti-incontinence procedures and this is an area that may be compared in future randomised prospective studies. The TOT procedure is increasingly being used as a treatment for stress urinary incontinence as a result of its minimally invasive nature and high success rates. It is likely that the frequency of TOT erosion is will increase as the TOT procedure becomes a more frequently used surgical procedure. In the present study, we followed 16 female patients presenting with an eroded TOT mesh and described the presenting symptomatology and the definitive treatment options for the complication of mesh erosion. Our findings provide important knowledge on the risk factors, clinical presentation and surgical treatment options for managing eroded tape-mesh as a complication of the TOT procedure.

References
2. Ogah J, Cody JD, Rogerson L. Minimally invasive synthetic suburethral sling operations for stress urinary incontinence in women. The Cochrane database of systematic reviews. 2009CD006375

