Case - Enterocutaneous fistula 10 years after undergoing tension-free transvaginal tape surgery

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INTRODUCTION

Tension-free vaginal tape (TVT) is a surgical procedure used to treat stress urinary incontinence (SUI) in women when conservative treatments fail. It involves placing a synthetic mesh tape beneath the urethra to provide structural support.[1] Since its development by Petros and Ulmsten during the 1990s, several variants have emerged, including retropubic TVT, transobturator approaches, and mini-slings.[2]

KEY MESSAGES

- Entero-cutaneous fistula secondary to TVT mesh erosion is a rare but serious delayed complication.
- Symptoms can manifest years after surgery, requiring a high index of clinical suspicion.
- Definitive management often necessitates a multidisciplinary surgical approach.
- Careful patient selection and thorough pre-operative counselling are crucial to minimize long-term risks.

TVT is widely used and effective, with long-term subjective cure rates for the retropubic approach ranging from 51% to 88%.[3] Common complications include urinary retention (2%–4%),[4] bladder perforation (2.5%–11.7%), and vaginal or bladder erosion (0.6%–5.4%).[5] Significant complications such as intestinal injury are rare, occurring in 0.03%–0.7% of cases.[6] Concerns about complications led to a decline in their use. However, recent renewed interest has revived the debate.[7]

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Here, we present the case of a 57-year-old female who developed an entero-cutaneous fistula over ten years after undergoing a TVT procedure.

CASE REPORT

A 57-year-old female with a body mass index (BMI) of 18.5kg/m^2 presented with a right suprapubic mass in July 2024. Her past surgical history includes L5-S1 fusion and TVT urethropexy for SUI in 2010.

The patient was initially seen by her primary care physician, and clinical assessment suggested a skin abscess, which was drained. However, she later developed persistent purulent discharge from the site, accompanied by gas emission and a foul odour, prompting referral to general surgery. Examination showed a right suprapubic cutaneous opening with purulent discharge (Figure 1).

CT scan revealed an 82mm×9mm×8mm entero-cutaneous fistula from the right lower quadrant to the cecal base following the expected path of the right lateral arm of the TVT sling (Figure 2).

Colonoscopy revealed a foreign body embedded within a fecalith. Attempts at dislodging the object and extensive irrigation revealed a bluish mesh filament partially embedded in the cecal wall (Figure 3). No other abnormalities were noted except for sigmoid diverticulosis. Based on the clinical and imaging findings, the working diagnosis was an entero-cutaneous fistula secondary to TVT mesh erosion into the cecum. Urology was consulted for collaborative management. Cystoscopy showed no urethral or bladder erosion. Treatment options were discussed, including the resection of the affected bowel segment with partial or complete removal of the TVT mesh. Complete excision was chosen to avoid retained infected material, which could lead to fistula recurrence or pelvic abscess. Potential risks of surgery were explained, including infection, bleeding, anastomotic leak, SUI recurrence and injury to bowel, urethra, bladder or vagina.

Surgical procedure

This was a joint procedure performed by a urologist and a colorectal surgeon. The patient was placed in Lloyd-Davies position under general anesthesia. A midline infraumbilical laparotomy was performed. Intraoperative exploration revealed an entero-cutaneous fistula originating from the base of the cecum in the right iliac fossa (Figure 4-A). The cecum was mobilized, and the fistulous tract was isolated at its base, leaving the ileocecal valve intact. A cecectomy was performed.

Upon further exploration, the foreign body embedded within the fistulous tract was encountered, consisting of a TVT mesh segment intertwined with a fecalith (Figure 4-B).

The TVT mesh excision was performed in a stepwise manner. A large urinary catheter was placed to guide the dissection and minimize the risk of urethral injury. An inverted U-shaped vaginal incision was made (Figure 4-C). The suburethral portion of the sling was identified and

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meticulously isolated. Dissection was then continued laterally and deeply on both the left and right sides. Subsequently, the dissection was resumed from the abdominal cavity. The retropubic portions of the sling arms were identified in the space of Retzius and dissected to connect with the portions already isolated during the vaginal approach. The subcutaneous pathways of the sling were also dissected. The suburethral portion of the sling was then divided, allowing the TVT mesh to be completely removed in two separate segments (Figure 4-D). The pelvic cavity was irrigated with warm normal saline to clear debris and reduce the risk of contamination. Estimated blood loss was minimal, and the procedure was well tolerated.

Post-op evaluation

Recovery was initially favourable but complicated by prolonged ileus and adhesive small bowelobstruction, requiring a second laparotomy with adhesiolysis. Bowel function improved gradually with parenteral nutrition, prokinetics, and close monitoring.

DISCUSSION

This case presents a rare yet severe delayed complication of TVT surgery: entero-cutaneous fistula due to mesh erosion into the cecum.

Fistula caused by mesh erosion is a well-documented complication of TVT, typically involving the vagina or bladder, with incidences ranging from 0.6% to 5.4%.[5] However, bowel perforation is exceedingly rare, with an estimated incidence of 0.036%.[8] In our literature review, multiple cases of bowel perforation caused by TVT have been published.[6, 9-13] Reported delays in symptom onset range from 1 day to 7 years postoperatively. Most perforations involved the small bowel or the sigmoid; caecum perforation occurred only in three cases.

Compared to small bowel perforation, which often presents with peritonitis and sepsis, significant bowel complications tend to present later and incidentally. In this case, symptoms developed more than 10 years after TVT placement, the most extended delay reported to date. This underscores the insidious course of mesh-related complications, warranting long-term clinical vigilance. Prompt imaging and endoscopy are essential for diagnosis and to guide timely surgical management.

Despite one study reporting a fatal small bowel injury in a patient with a BMI of 33 kg/m^2,[14] most literature highlights low BMI and prior pelvic surgery as key risk factors.[9, 13, 15] Patients with a low BMI, such as ours (18.5 kg/m^2), may be at an increased risk due to reduced subcutaneous fat. In both obese and thin individuals, anatomical variability complicates blind TVT passage and increases procedural risk.

While exploratory laparotomy remains the most commonly reported approach, successful laparoscopic resections, partial or complete, combined with vaginal mesh removal have also been described.[9] In our case, a shared decision was made with the patient to proceed with complete TVT mesh excision to minimize the risk of future complications. Laparotomy was preferred to

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ensure thorough resection of both the mesh and the fistulous tract. Partial mesh removal has also shown favorable outcomes with continence preserved.[6, 10, 12]

Variable approaches have been described to treat recurrent SUI after TVT removal. Mayhew et al. performed the placement of a fascial pubovaginal sling during the same operation, achieving satisfactory results at 6-month follow-up.[9] Alternatively, delayed intervention may be considered. A fascial pubovaginal sling should be preferred, although a synthetic midurethral sling may be considered.[10, 11]

CONCLUSIONS

This case highlights a rare and delayed complication of TVT surgery, an entero-cutaneous fistula due to mesh erosion into the cecum. While bowel perforation is rare, this case demonstrates that symptoms can occur years after the surgery, emphasizing the need for a high index of suspicion and timely diagnosis. Managing mesh-related complications requires a multidisciplinary approach involving both urology and general surgery. This case also underscores the importance of careful patient selection and clear pre-operative counselling, especially for those with risk factors such as a history of pelvic surgery or extreme BMI. Transparency and informed consent are crucial to ensure that patients understand the potential risks associated with TVT procedures.

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FIGURES AND TABLES

Figure 1. External opening of the enterocutaneous fistula located on the right lateral side of the pubis.

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Figure 2. Diagnostic computed tomography scan with contrast enhancement showing the fistulous tract.

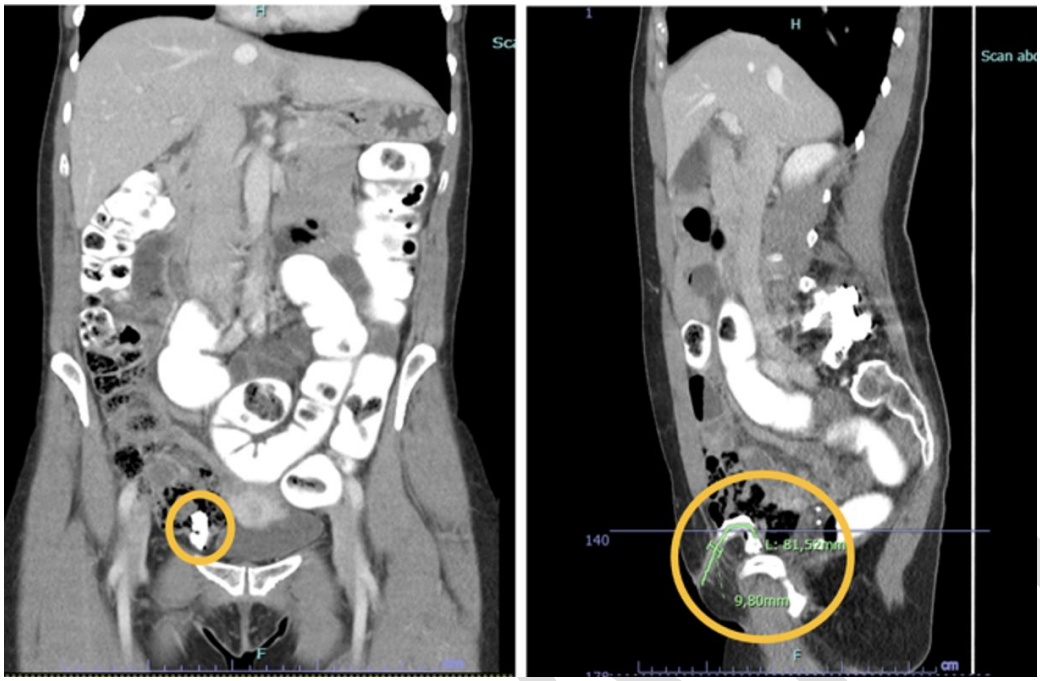

Figure 3. Diagnostic colonoscopy showing transvaginal tape (TVT) mesh protruding into the cecum. (A) Foreign body embedded in a fecalith. (B) Blue filament of the TVT mesh.

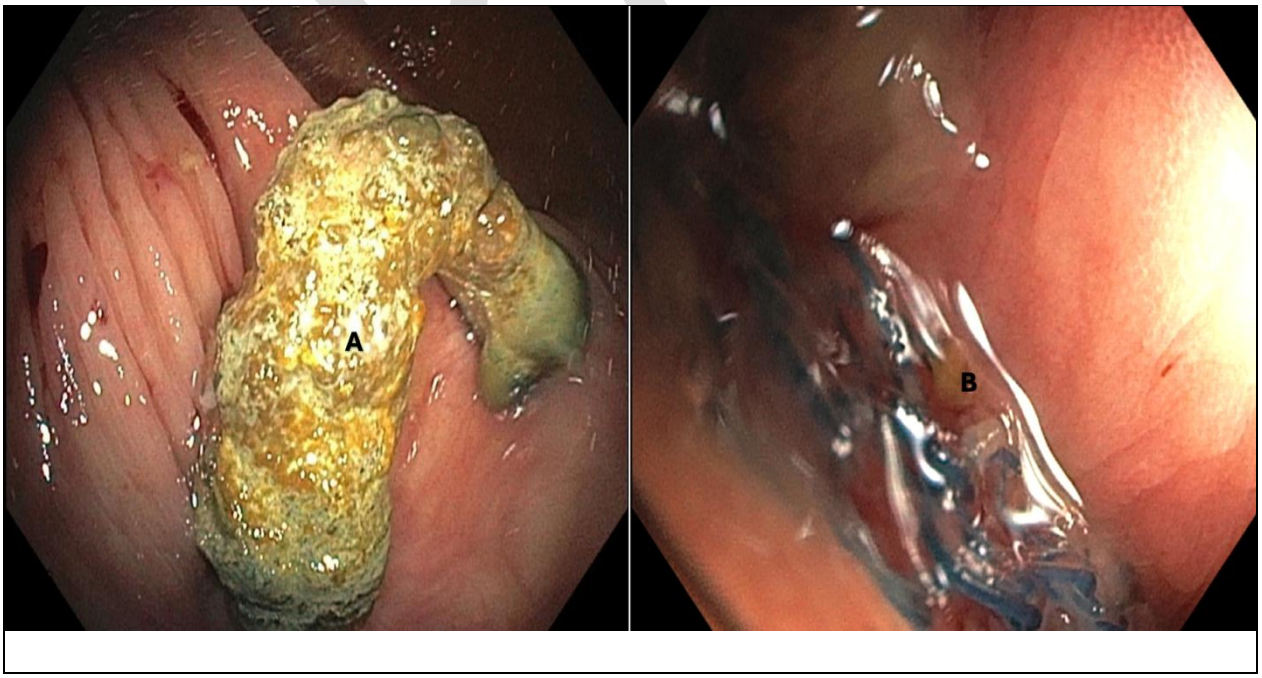

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Figure 4. Surgical procedure Exposure of the enterocutaneous fistula: (A) cecum retracted toward the fistulous tract; (B) ascending colon.

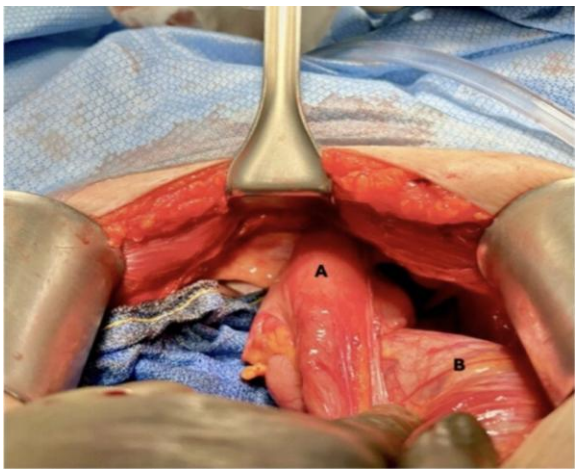

Figure 5. Cecectomy and transvaginal tape (TVT) mesh segment intertwined with fecalith. (A) Cecectomy; (B) TVT mesh segment intertwined with fecalith; (C) ascending colon.

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Figure 6. Vaginal transvaginal tape (TVT) excision. (A) Inverted U-shaped vaginal incision; (B) urinary catheter.

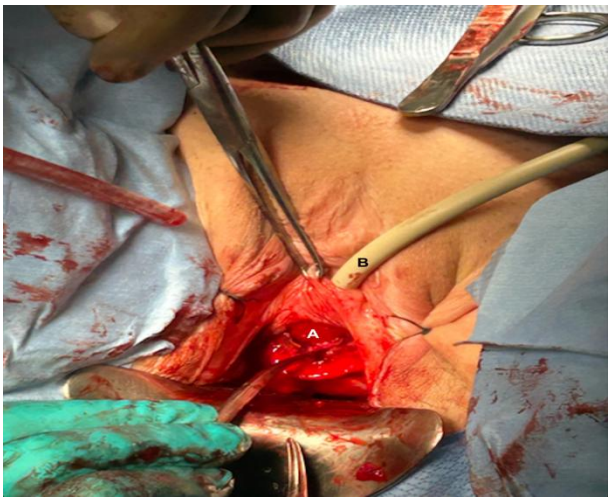

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Figure 7. Abdominal transvaginal tape (TVT) excision. (A) Left lateral arm of the TVT; (B) right lateral arm of the TVT; (C) space of Retzius.

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