



# Surgical management of recurrent urethrovaginal fistula with a skin island flap

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## Abstract

**Introduction and hypothesis** A urethrovaginal fistula is a possible rare complication of tension-free vaginal tape procedures. Surgical management of these fistulas is sometimes complicated, and failure can occur. The operation is difficult when the defect between the urethra and the vagina is larger or scarred, so surgical intervention and the preferred technique are controversial.

**Methods** The patient was referred to our department, where the first operation was performed to address the urethrovaginal fistula by the transvaginal and transabdominal approach with interposed omentum. This initial repair failed, resulting in a large urethrovaginal fistula with minimal redundant anterior vaginal wall to provide a tension-free closure. This video presentation describes the second operation—transvaginal repair of a large recurrent urethrovaginal fistula using the skin island flap technique.

**Results** The video of the procedure shows how to address a recurrent urethrovaginal fistula by employing a skin flap. An examination during the patient's follow-up visit 3 months later revealed excellent healing and persistent stress urinary incontinence (SUI). Six months after the fistula repair, the patient underwent a bulking agent procedure.

**Conclusions** The skin island flap procedure allowed the larger defect to heal, though it did not address the SUI, which was later treated by application of a bulking agent.

**Keywords** Native tissue repair · Skin flap · Urethrovaginal fistula

## Aim of the video

A urethrovaginal fistula is a possible though rare complication of tension-free vaginal tape procedures. Further factors that can lead to the formation of a urethrovaginal fistula on rare

occasions are radiation therapy, prolonged indwelling urethral catheter, anterior repair of the vaginal wall and others [1, 2]. Sometimes it is very difficult to assess the cause of persistent leakage of urine, which is greater during an increase of intraabdominal pressure. Patients can suffer from recurrent

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cystitis, hematuria and pruritus on the vulva. These problems can cause worsened quality of life and depression [3].

Surgical management of these fistulas is sometimes complicated, and failure can occur. The operation is difficult when the defect between the urethra and the vagina is larger or scarred, so surgical intervention and the preferred technique are controversial. It is very important to examine the patient and determine the location and size of the fistula before surgery. We recommend performing fistula repair approximately 3 months after the first procedure. Several surgical procedures for fistula repair have been described. The transvaginal procedure is simple, though it should only be used when the defect in the vagina is not large [4, 5]. The Latzko procedure is one of the most commonly used procedures for transvaginal repair of a vesicovaginal fistula and can be used for treating a urethrovaginal fistula, too [6, 7]. Another possibility is the use of a bulbocavernosus (Martius) flap to create a layer between the urethra and vaginal mucosa suture lines [7, 8].

We present surgical management of a recurrent urethrovaginal fistula in a patient who had undergone repeated treatment for SUI by means of tape procedures. The primary transobturator tape procedure failed, and as a complication of the subsequent retropubic tape procedure a urethrovaginal fistula developed. Commonly used techniques for transvaginal repair of a urethrovaginal fistula were not successful. The aim of this video presentation is to describe the transvaginal repair of a recurrent urethrovaginal fistula with a large mucosal defect in the vagina using the skin island flap technique [9].

## Materials and methods

A 69-year-old female was referred to our Urogynecological Unit in the Department of Obstetrics and Gynecology with a proven urethrovaginal fistula. Nine months earlier she had undergone a tension-free vaginal tape (TOT; Obtryx™ II, Boston Scientific Corp., Boston, MA, USA) procedure for stress urinary incontinence at a regional hospital. One month later, the patient reported to the hospital with continuing leakage and partial retention of urine. The cause was incorrect positioning of the tape under the urethrovesical junction, an indication for cutting and partial removal of the tape. This procedure resulted in urinary leakage, which was worse during coughing. Four months later, the patient underwent the next operation: a retropubic tension-free vaginal tape (TVT; RetroArc™, AMS, Minnetonka, MN, USA) procedure in the same hospital. Two weeks later, protrusion of the tape in the urethra was identified, and the following week the tape was removed. Two months later, the urethrovaginal fistula was diagnosed, and the patient was sent to our urogynecological unit. All relevant examinations, including cystourethroscopy, were performed, and the presence of a urethrovaginal fistula approximately 10 mm in size in the middle of the urethra was

confirmed. The remnant of the previously cut synthetic tape was at the edge of the fistula. The patient underwent the next operation in our department. The first step of the operation was laparoscopic abdominal removal of the rest of the retropubic tape, preparation of the omental flap in the urethrovaginal space and fixation with two stitches. The second step of this operation was from the vaginal approach. Removal of the rest of the transobturator tape from the vaginal approach and dissection of the plane between the urethra and vaginal wall were performed; then, the edges of the ureteral fistula were resected, and a transversal suture line with a 2-0 Vicryl stitch was performed. The edges of the vaginal wall were also resected. The omental flap was placed between the suture of the urethra and the defect in the vaginal wall. The omentum was fixed to the surrounding tissue with resorbable stitches. Closure of the vaginal mucosa was performed in the vertical plane with Monocryl; thus, the sutures were in an upright position relative to each other. Two months later, recurrence of the urethrovaginal fistula was identified in the middle third of the urethra under the omental flap, which was pulled up slightly.

A 14-F silicone Foley catheter was inserted in the urethra for 2 months and changed every 2 weeks. The size of the fistula remained the same, so 5 months after the first fistula operation reoperation of the urethrovaginal fistula with the skin island flap was indicated.

The first step in this transvaginal reoperation was separation of the urethral and vaginal walls; then, the edges of the urethral fistula were resected, and a transversal suture with a 2-0 Vicryl running stitch was performed. The edges of the vaginal wall were also resected. The defect in the vaginal wall was about 25 mm. A skin island flap was then created as follows. A 45-mm incision was made in the skin of the left labium majora, and then an incision created a skin island in the distal part of the incision. The skin island was separated from the surrounding tissue, and a labial fat flap and its vascular supply were created. A tunnel was then created between the left labium and the vaginal defect. The skin island with a fat flap was stretched through the tunnel and fixed to the vaginal mucosa with 2-0 Vicryl single resorbable stitches. The vaginal labial incision was closed with a running Monocryl stitch. A Foley catheter was placed in the bladder for 2 weeks. The patient received a single 1.5-g dose of prophylactic intravenous ampicillin + sulbactam (Unasyn®, Pfizer) before surgery.

## Results

The video of the procedure shows how to address a urethrovaginal fistula after unsuccessful surgery by employing a skin flap. A follow-up visit 3 months later revealed excellent healing and persistent SUI. Six months

after fistula repair, the patient underwent a bulking agent procedure.

## Conclusions

The skin island flap procedure allowed the larger defect to heal, though it did not address the SUI, which could be treated later by application of a bulking agent.

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## Compliance with ethical standards

**Conflicts of interest** None.

**Consent** Written informed consent was obtained from the patient for publication of this video article and any accompanying images.

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