

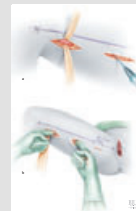
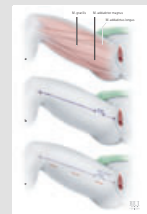
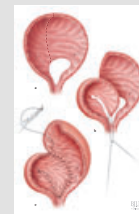
Surgery Illustrated – Surgical Atlas

Repair of giant vesico-vaginal fistulae using a rotational bladder flap with or without a gracilis flap

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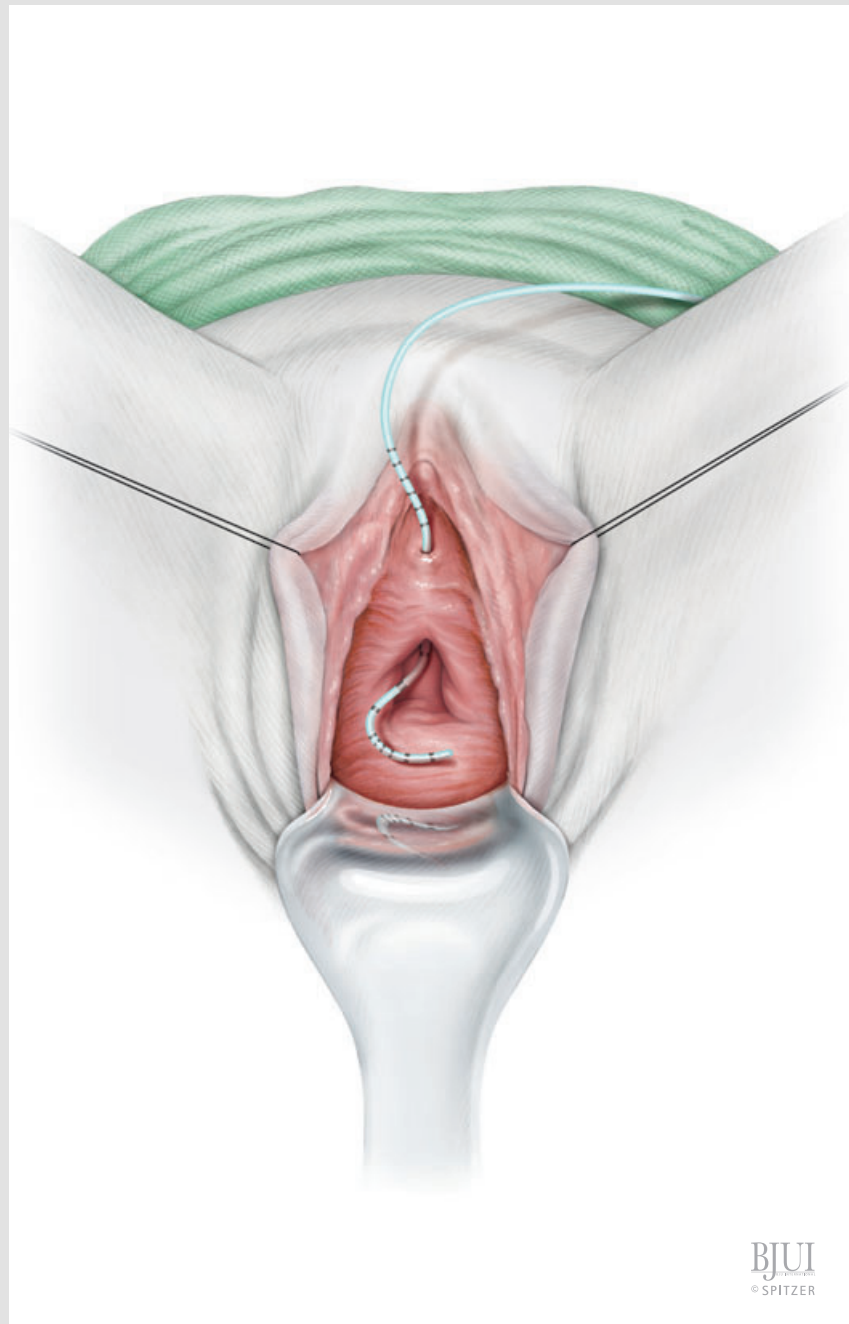


PLANNING AND PREPARATION

Figure 1

This surgical technique is reserved for repairs of giant, complicated and recurrent vesico-vaginal fistulae (VVF) resulting from various causes, such as trauma, iatrogenic injuries, radiation, and obstructed labour. We recommend delaying surgery until all the inflammatory process subsides and the demarcation between the healthy and ischaemic fibrotic tissue can be easily identified. This might vary depending on the cause. The time to repair is typically longer for radiation-induced VVF than for other causes.

The patient is given preoperative i.v. antibiotics 'on-call'. The patient should be placed in the dorsal lithotomy position to allow for a combined abdominal and vaginal approach. Bilateral lower extremities should be prepared in the surgical field if a gracilis flap is used. A 16 F Foley catheter is placed at the beginning of the case.



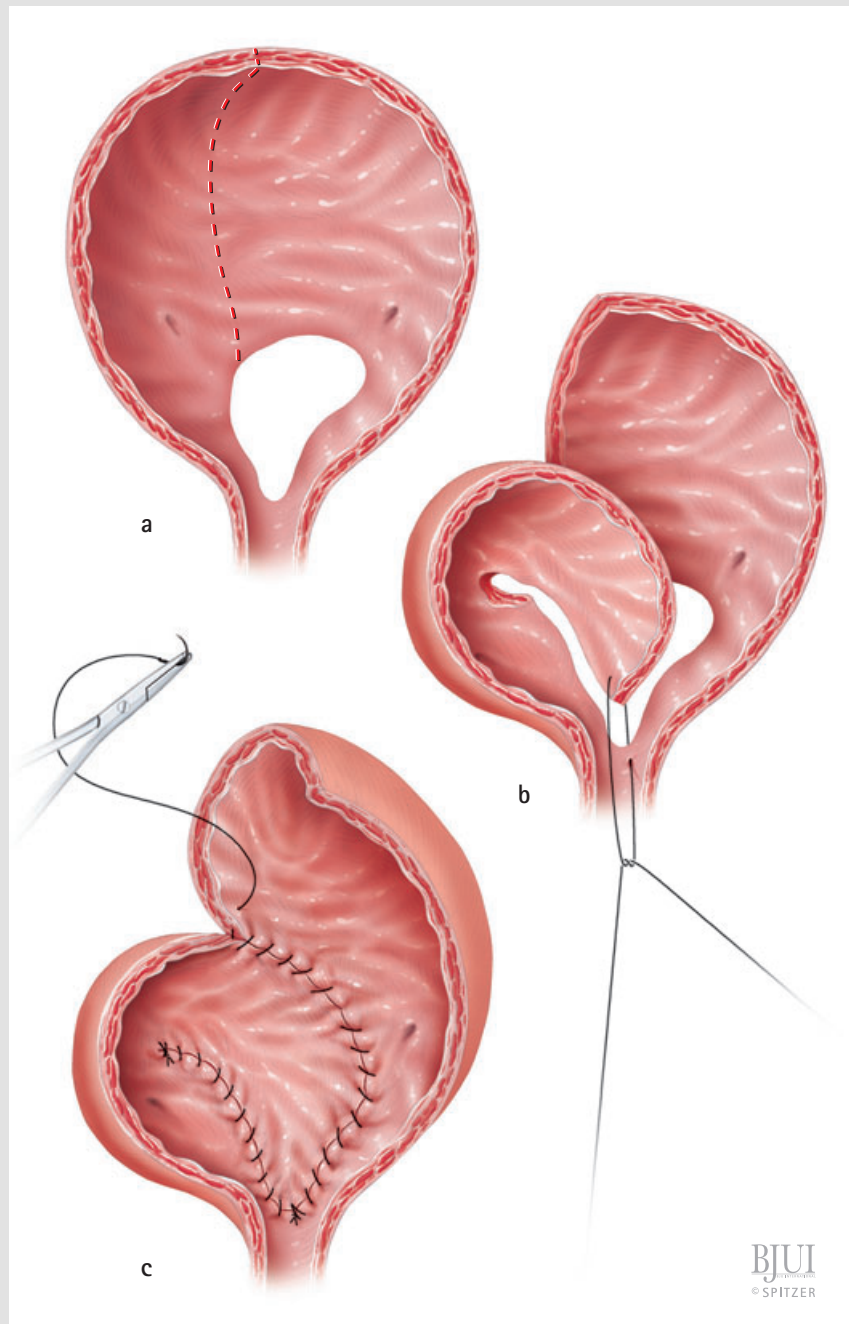
SURGICAL TECHNIQUE

Figure 2

A combined abdominal and vaginal approach is used to allow maximum exposure. A lower abdominal incision is made to expose the bladder. The peritoneum is dissected off the dome and posterior wall of the bladder. The bladder is then bi-valved. The incision is carried through the posterior wall to a lateral border of the fistula. The sagittally bisected bladder contains the fistulous defect on one side. The other side of the bisected bladder is rotated downward and medially as a generous flap to close the fistulous defect. The bladder and the vagina are separated. The fistulous tract and all devitalized tissue are excised and the vaginal defect is repaired as usual. The VVF and posterior wall of the bladder are then repaired meticulously in two layers using absorbable sutures.

The most distal portion of the VVF is dissected and repaired through the abdominal and vaginal approach. This step is important especially in patients with associated loss of urethral floor. A heavy speculum is inserted into the vagina. The labia majora are retracted laterally with stay sutures of 2-0 silk. The apical part of the rotated flap is fashioned to cover the urethral floor defect and is carefully sutured in place.

When the ureteric orifices are very close to the margin of the fistula, a formal ureteroneocystostomy or lateral mobilization of the ureteric orifice by 0.5–1 cm should be performed. The anterior wall of the bladder is then closed with a suprapubic catheter draining the bladder, two ureteric stents are inserted, and an indwelling urethral catheter is placed to maximally divert the urine away from the suture lines.



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Figure 3

If the VVF is very large and the surrounding tissue appears to be unhealthy and devascularized, especially in patients with a history of previous radiation, a gracilis flap should be considered for additional coverage. The gracilis flap harvest begins by delineating the anatomical landmarks. The pubic symphysis and the medial condyle of the tibia are marked and a line is drawn between them. The approximate location of the dominant neurovascular bundle of the gracilis flap can be identified ≈ 10 cm inferior to the pubic symphysis along the marked line (Fig. 3b). The adductor longus and gracilis muscle are then marked. Next, 4–5 cm horizontal marks are made along the medial aspect of the thigh in the proximal, mid and distal aspect. These marks are parallel and are located 2–3 cm posterior to the previously marked line (Fig. 3c).

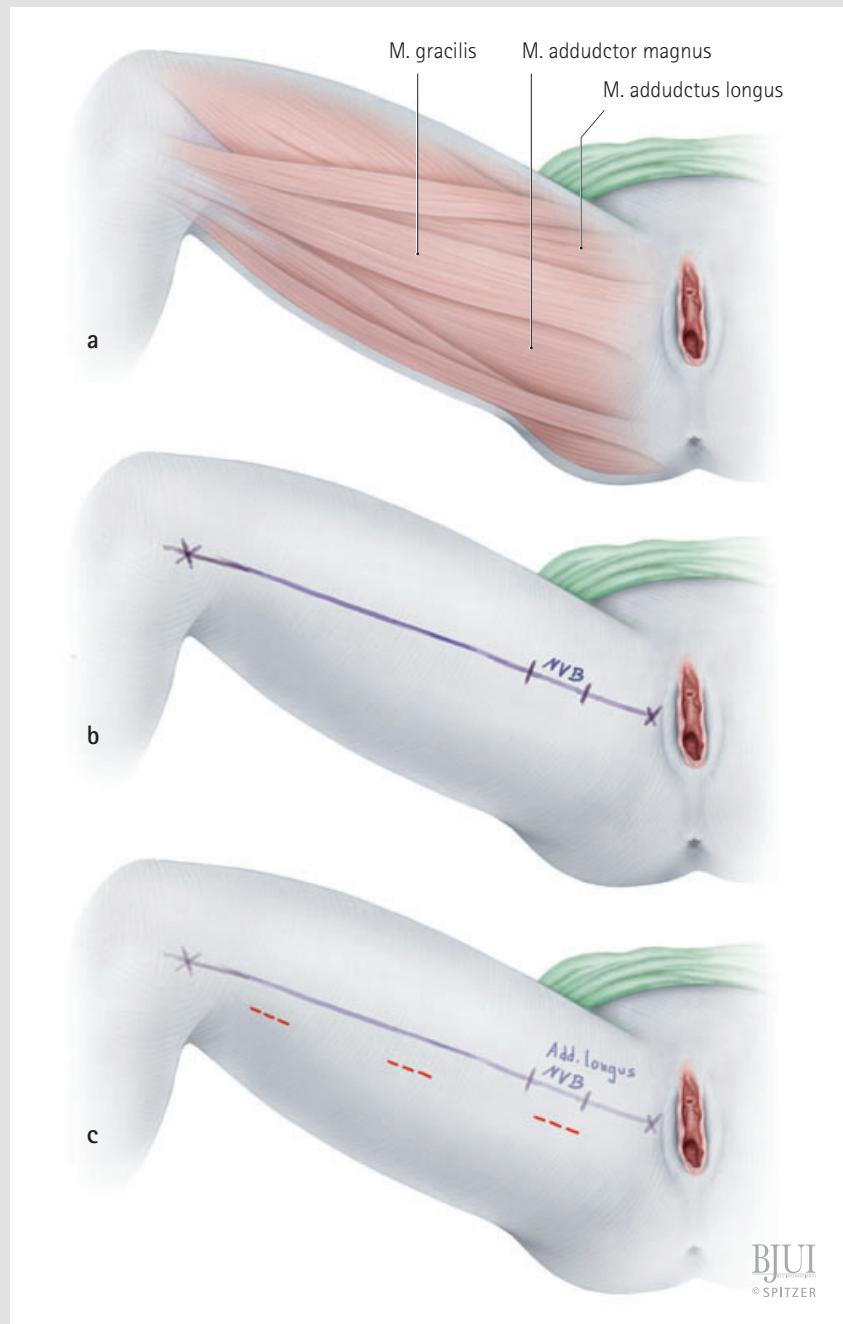


Figure 4

An incision is made over the distal mark and carried through the subcutaneous tissue using electrocautery and blunt dissection to expose fascia. The fascia is then opened and blunt dissection used to isolate the gracilis. A 2.5 cm Penrose drain is wrapped around the muscle (Fig. 4a). Distally, the saphenous vein is identified, retracted inferiorly, and positioned to avoid harm. Similarly, a second incision is made over the mid-thigh. A subcutaneous tunnel between the incisions is made with blunt finger dissection (Fig. 4b).

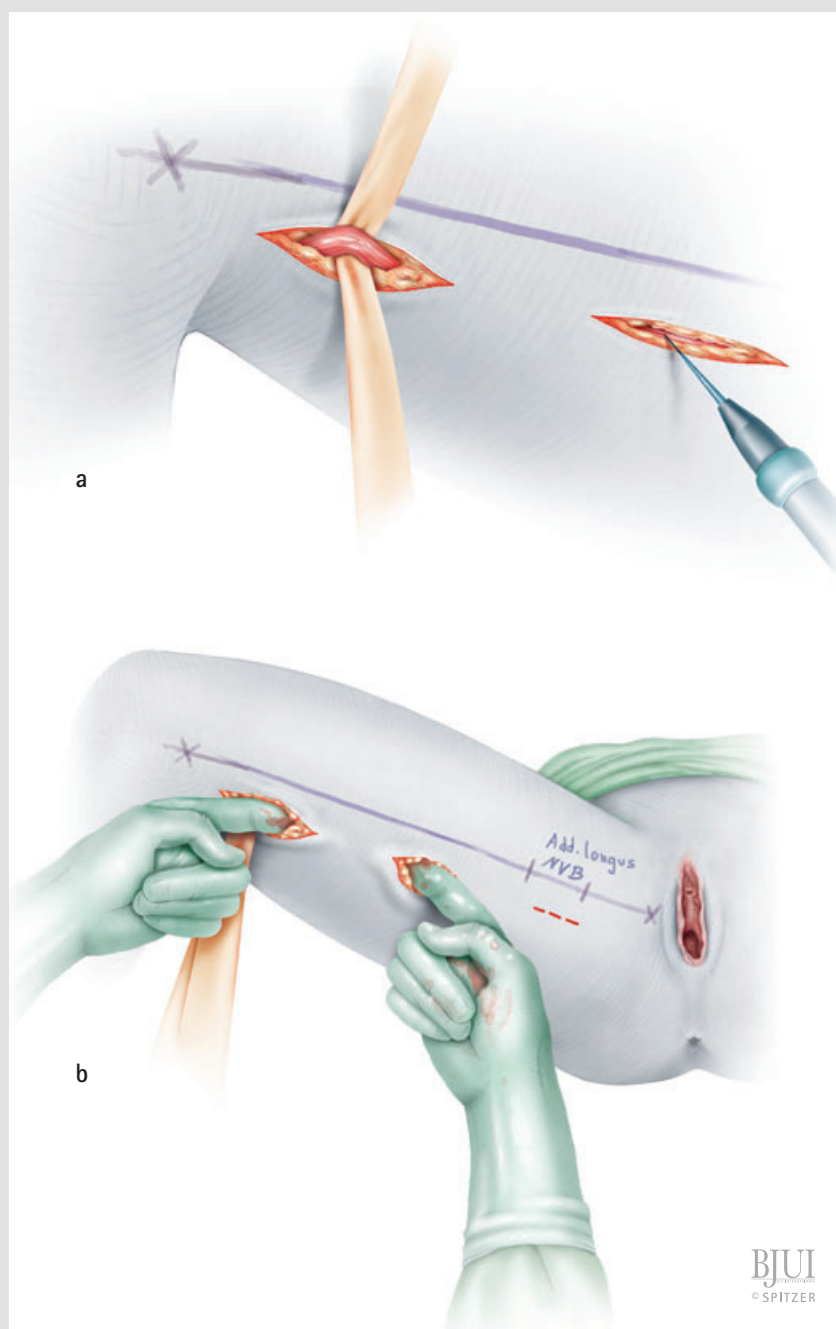


Figure 5

The gracilis is freed from surrounding tissue and a second Penrose drain is placed. By traction on the Penrose drains, the path of the gracilis can be verified. The proximal thigh incision is made in a similar fashion and the proximal portion of the gracilis is located and wrapped with a Penrose drain. The gracilis is freed with blunt dissection and connective tissue is divided with electrocautery as needed (Fig. 5a). Distally, the tendinous insertion is identified and divided between clamps (Fig. 5b).

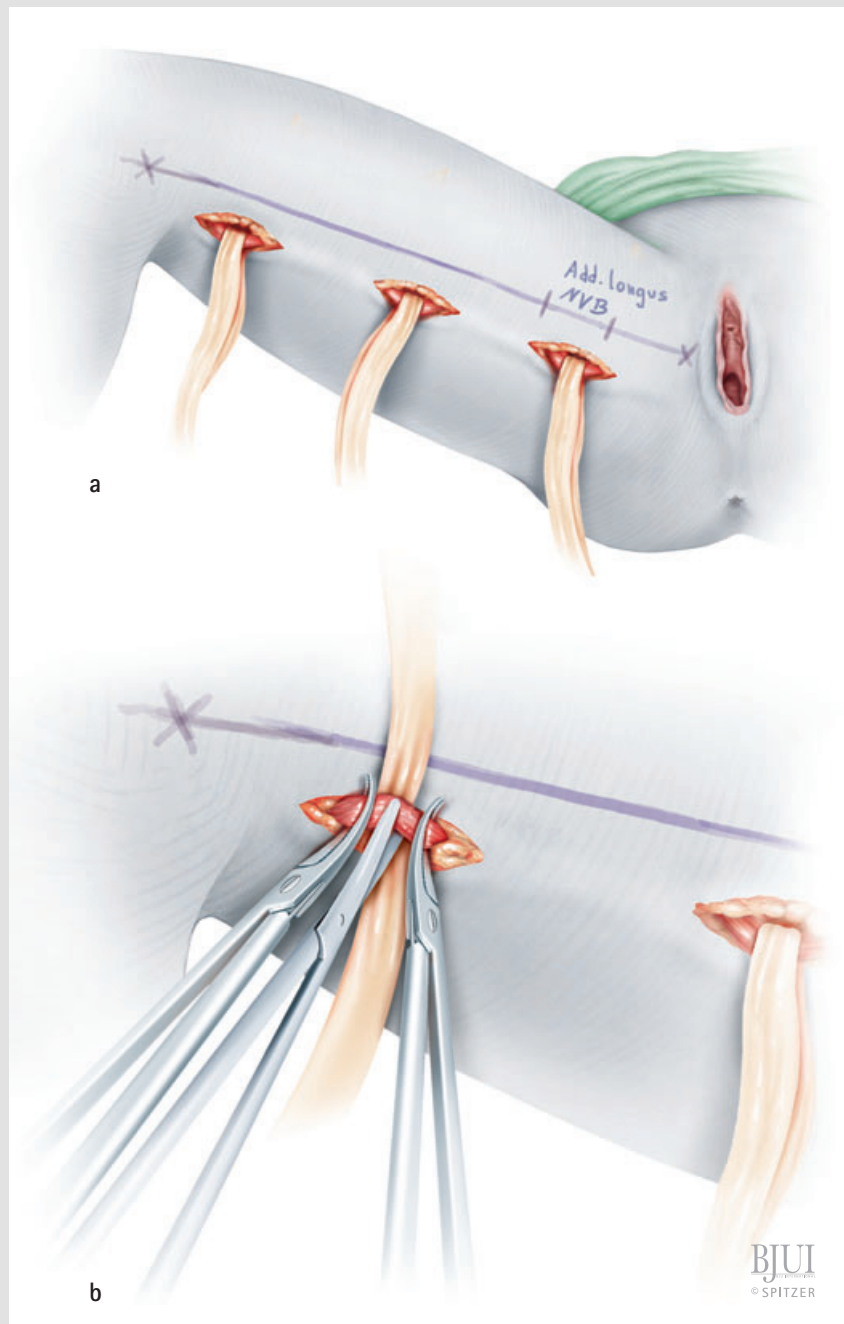


Figure 6

The distal attachment is suture ligated with #0 polyglactin and the proximal end of the muscle is marked with a 2-0 polypropylene suture. The lateral attachments are divided with electrocautery and additional blunt dissection. Small perforators from the superficial femoral artery are clipped when encountered. The muscle is delivered through the middle incision and additional attachments are transected. Likewise, the proximal portion of the gracilis is freed and the muscle is delivered through the proximal incision.

Proximally, the neurovascular pedicle is identified and the surrounding connective tissue is preserved for 2–3 cm to prevent it from being injured. The length of the muscle is assessed (Fig. 6a). A subcutaneous tract to the vaginal area is created using blunt dissection and a large clamp (Fig. 6b). The muscle is placed back into the proximal pocket. The dissection of the gracilis flap is complete.

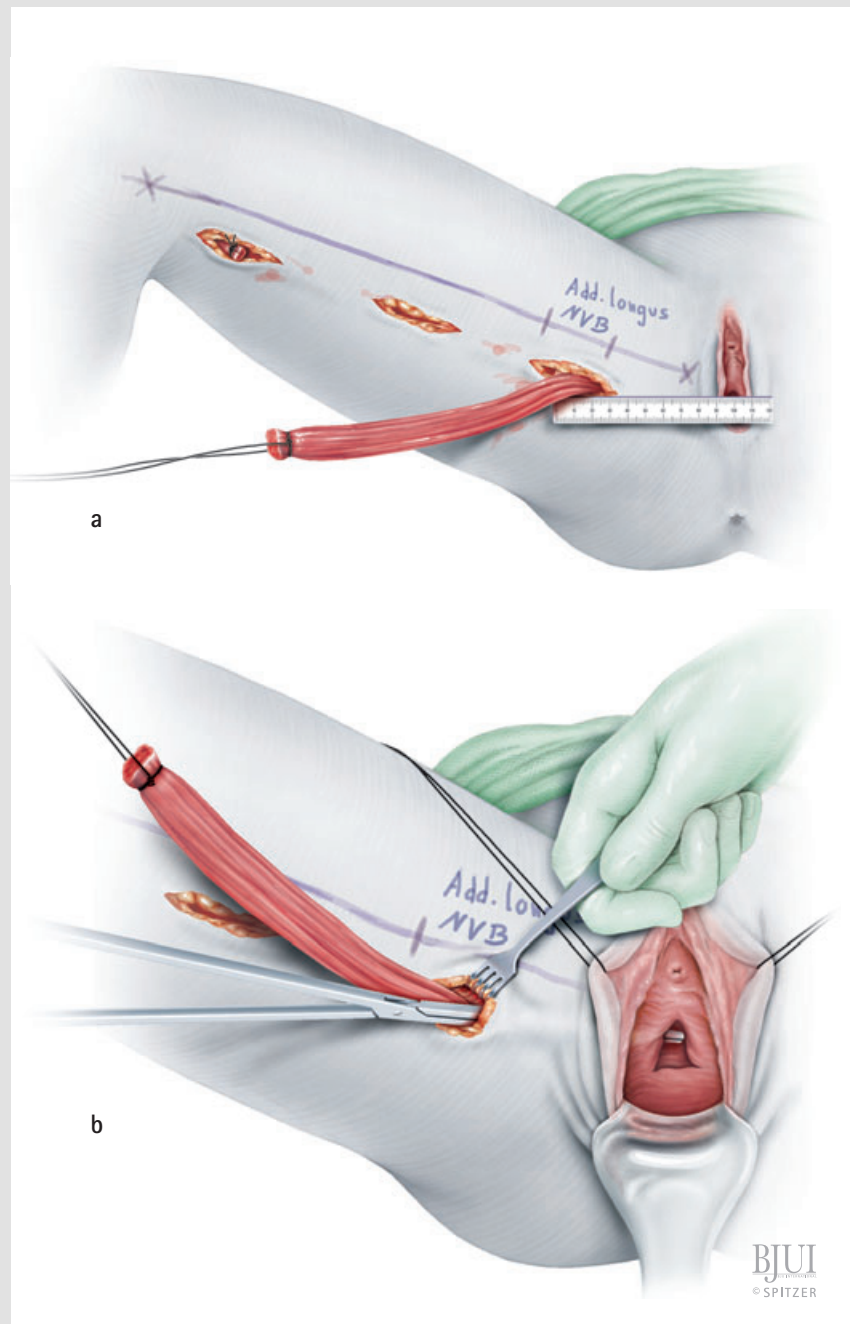


Figure 7

The gracilis flap is overlaid onto the vaginal mucosa for coverage.

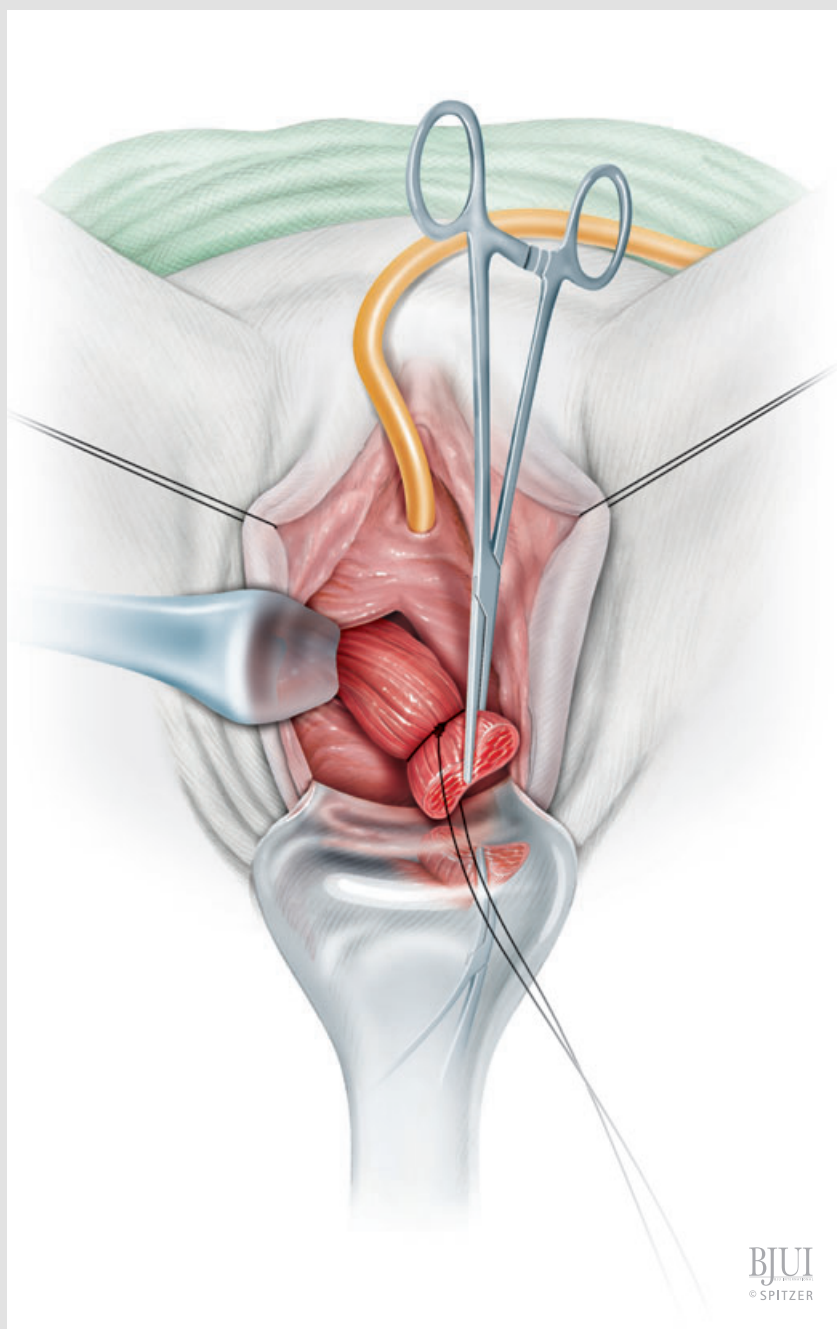
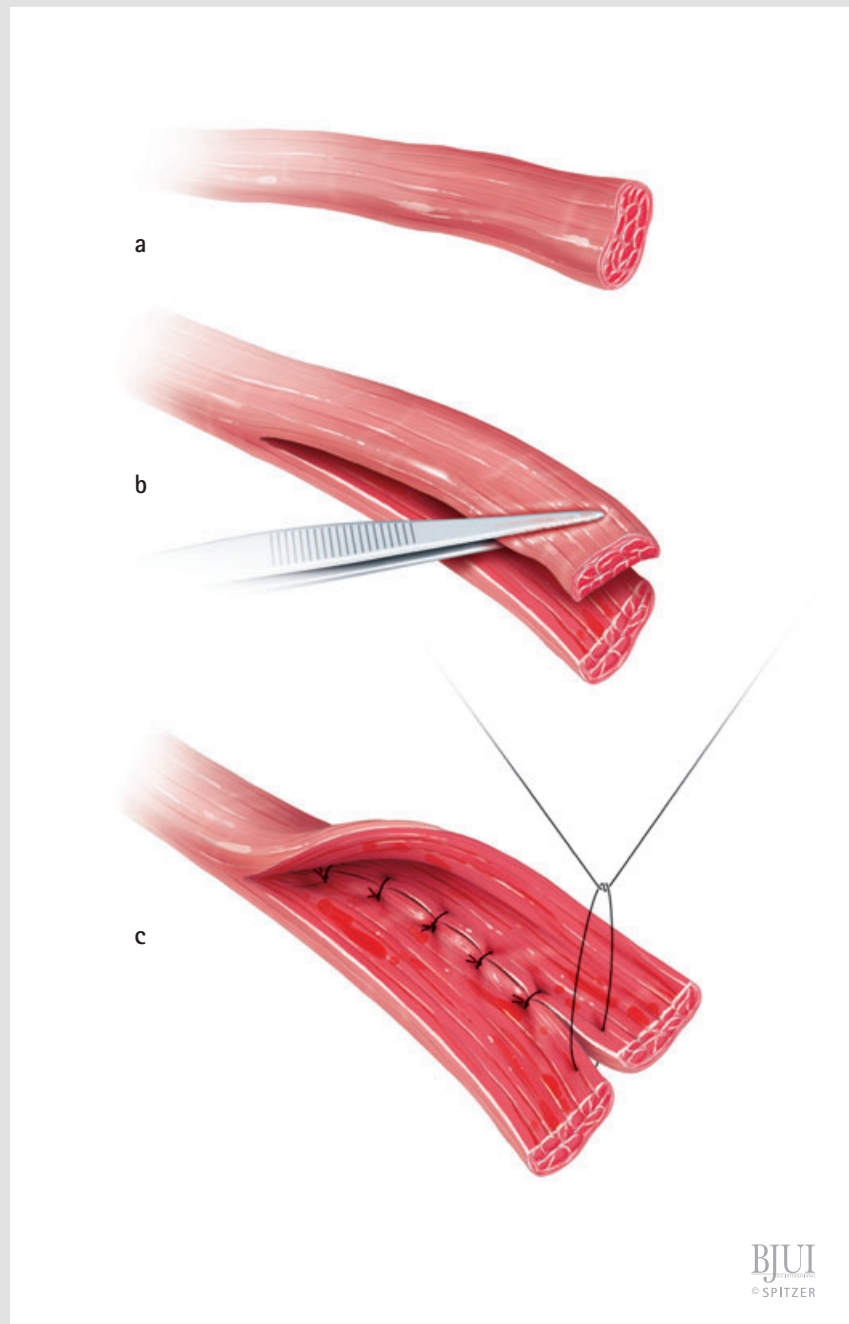


Figure 8

The gracilis muscle can be fashioned to cover a wide surface area of the repaired VVF by splitting the muscle into anterior and posterior segments, and spreading each segment beside one other and securing them in place.

The thigh incisions are closed in two layers. The subcutaneous wound is closed with 0 polyglactin in single interrupted fashion followed by 4-0 poliglecaprone 25 for subcuticular closure. Large Blake drains are brought through the proximal and distal aspect of the thigh.



POSTOPERATIVE CARE

The patients are advised to remain prone or on their side leaning towards prone while in bed. The lower extremity should be kept elevated if a gracilis flap was harvested. The thigh drains are removed in about a week if outputs are minimal. A cystogram is taken at 3–4 weeks to assess resolution of the VVF, and the suprapubic and Foley catheters are removed. If the patient still complains of urinary incontinence at 6 months, urodynamics are used to assess bladder and sphincteric function.

FROM SURGEON TO SURGEON

The surgical management of giant VVF can be difficult. Our combined abdomino-vaginal approach with the use of either a rotational bladder flap or a gracilis flap in repairing complex VVF has had good success in our experience. This approach allows for excellent exposure to access the VVF, and for successful repair in a single stage. The bladder flap is an excellent source of vascular tissue that can be easily fashioned to fill large defects. For very large VVF, the use of additional interposed tissue provides the best chance of surgical

success. We believe this is an excellent method and should be considered a viable option when repairing large complex VVF.

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