

Surgery Illustrated – Surgical Atlas

Laparoscopic sacrocolpopexy

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ILLUSTRATIONS by STEPHAN SPITZER, www.spitzer-illustration.com

PLANNING AND PREPARATION

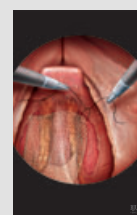
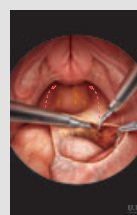
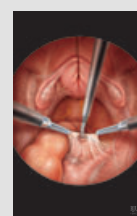
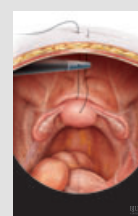
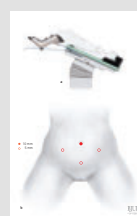
INDICATIONS

Sacrocolpopexy is the treatment of choice for women with female genital organ prolapse associated with symptoms of descent or stress/mixed urinary incontinence. It is a technique with demonstrated success in the setting of vaginal vault prolapse as well as multi-compartment pelvic organ prolapse. Subjective success rates range from 74% to 98%, although follow-up in many case series is short.

Benefits of the laparoscopic approach include a shorter hospital stay and faster recovery. Its efficacy appears to be comparable to the abdominal approach and both laparoscopic and abdominal approaches have surpassed vaginally-assisted techniques by virtue of maintaining vaginal length and limiting postoperative dyspareunia.

Many of our patients undergoing this procedure have previously undergone hysterectomy with or without other surgical treatments for pelvic organ prolapse. With the exception of those cases where there is clearly no posterior compartment prolapse, we routinely perform a rectopexy as a combined procedure. In addition, a tension-free vaginal tape is routinely placed.

For urological surgeons who regularly perform pelvic laparoscopic procedures, sacrocolpopexy should be relatively straightforward and undaunting. It may also serve as a stepping stone to more complex pelvic laparoscopy such as radical prostatectomy and cystectomy.



SPECIFIC MATERIALS

- High-definition laparoscopic stack
- 10 mm 0° laparoscope
- 2 × 5 mm Johann graspers
- 5 mm Maryland dissector
- 5 mm diathermy scissors
- 5 mm bipolar diathermy graspers
- 5 mm needle holder
- 12 mm camera port
- 3 × 5 mm laparoscopic trocars
- Polypropylene mesh
- 0 nylon sutures
- 2/0 polyglactin 910 (Vicryl)

Figure 1**A, Specific patient positioning.**

We position the patient with legs fully abducted and in a steep Trendelenburg position. This is essential to allow adequate exposure of the pelvic organs and affords an excellent view of the pelvis free from small bowel. This approach may present certain anaesthetic problems, notably higher ventilation pressures and decreased lower limb perfusion. These are easily remedied by securely taping a large foam block to the operating table above the patient's shoulders and, in our practice, we have not encountered anaesthetic difficulties. Compression devices and thrombo-embolus deterrent stockings are not used to prevent lower limb ischaemia. The laparoscopic stack is positioned between the patient's legs allowing an excellent view and comfortable working position for both surgeons.

B, Port placement.

A 10-mm camera port is placed first at the level of the umbilicus or immediately below. We routinely use a blind technique with a sharp automatically retracting port and have encountered very few port-site complications. Local practice will vary and we recognise that in the UK an open Hassan technique is preferred. Left and right 5-mm working ports are inserted under direct vision at a point 2/3 of the distance between the umbilicus and the anterior superior iliac spines. A third 5-mm port is placed midway between the umbilicus and the symphysis pubis. A pneumoperitoneum is maintained at 12 mmHg using CO₂. In general, the operating surgeon works from the patient's left side using the left and midline ports, whilst the assistant has access via the right hand port for retraction and suction where necessary.

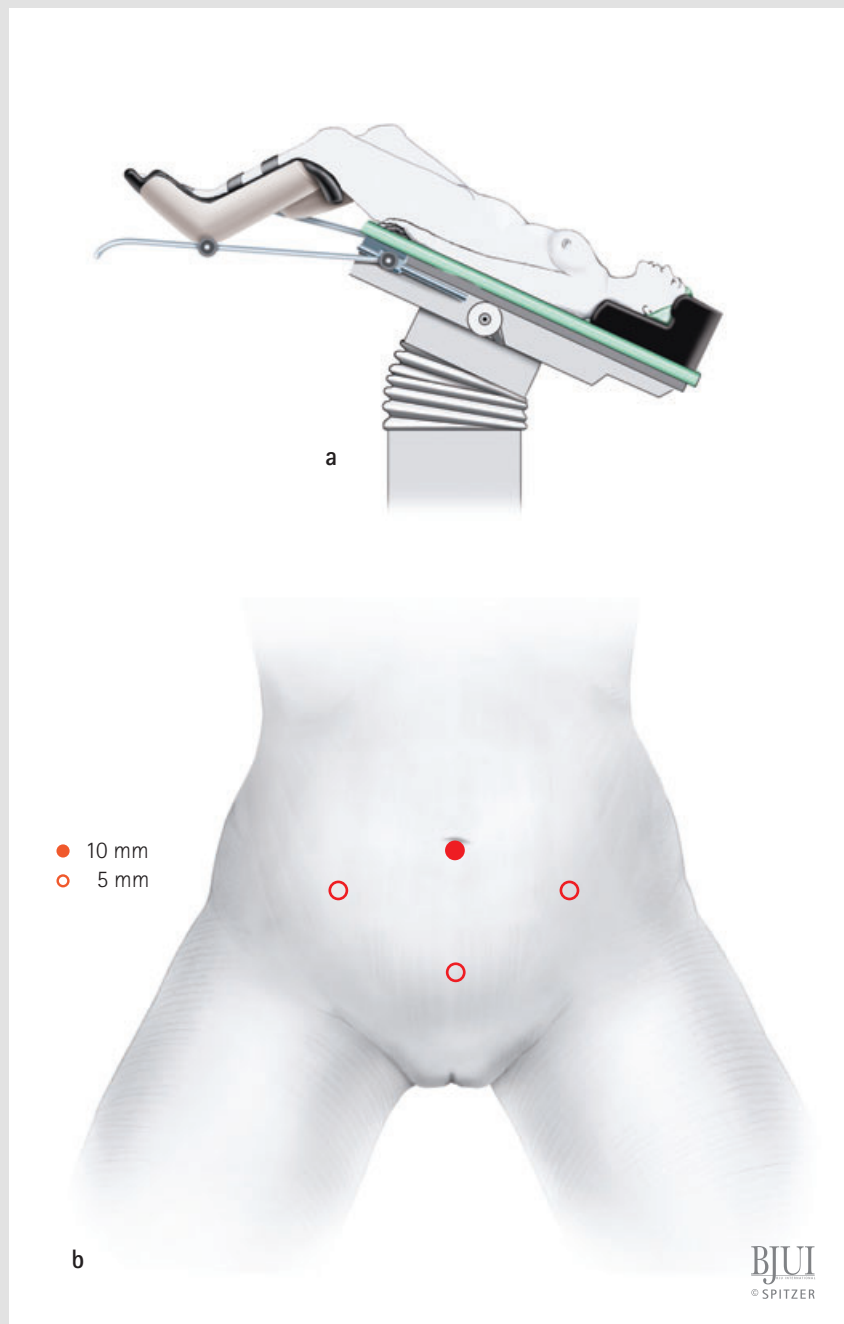
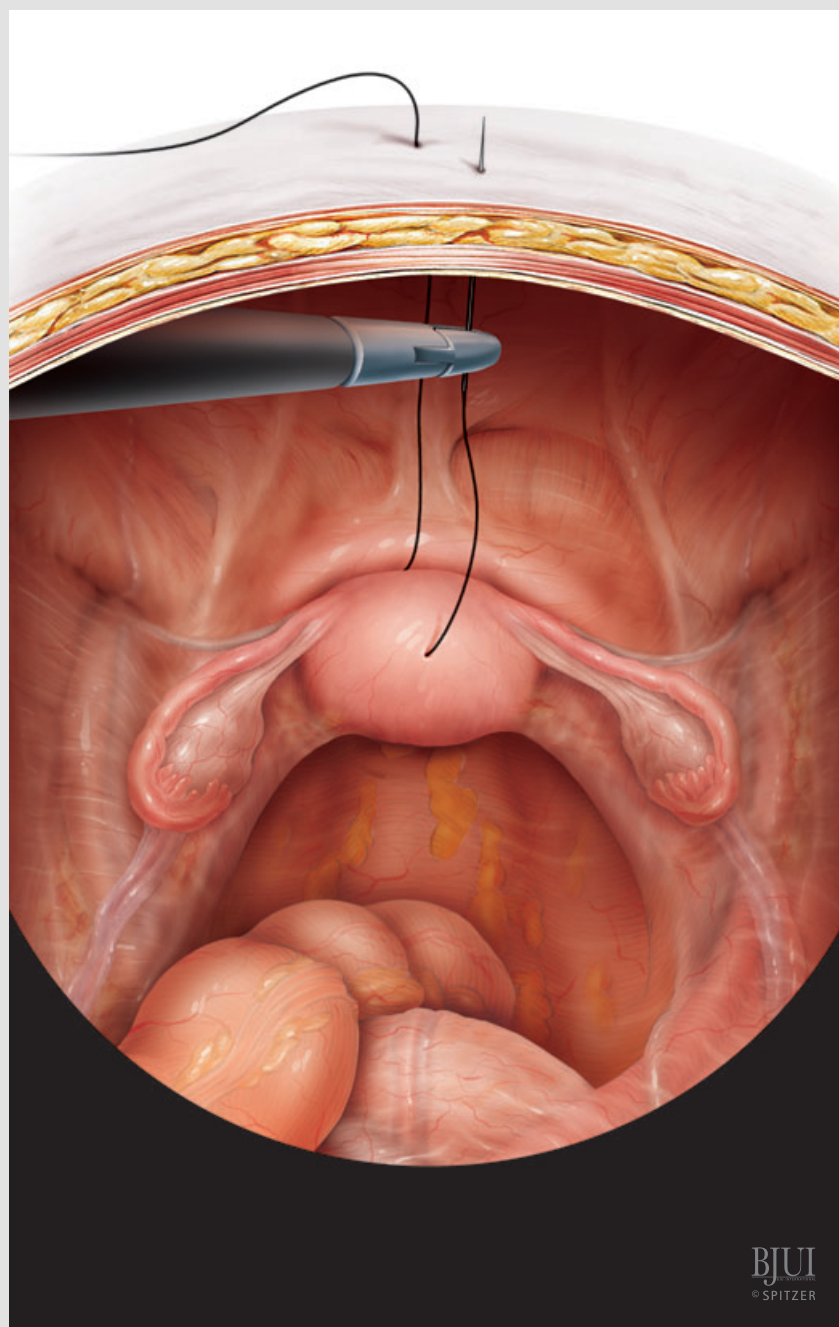


Figure 2

Pelvic exposure.

The first fundamental step in achieving adequate exposure of the pelvic organs is to mobilise both the ascending and descending colon as far as the pelvic brim. This will allow them to drop back into the abdomen leaving only the bladder, uterus and rectum in the surgical field. The assistant applies gentle retraction to the colon and the white line of Toldt is incised using monopolar scissors. To allow access to the posterior compartment, we secure the uterus to the abdominal wall using a percutaneous suture on a straight needle. This is passed suprapubically through the abdominal wall. It is then passed through the fundus of the uterus before being passed back out through the anterior abdominal wall and tied securely over a bolster.

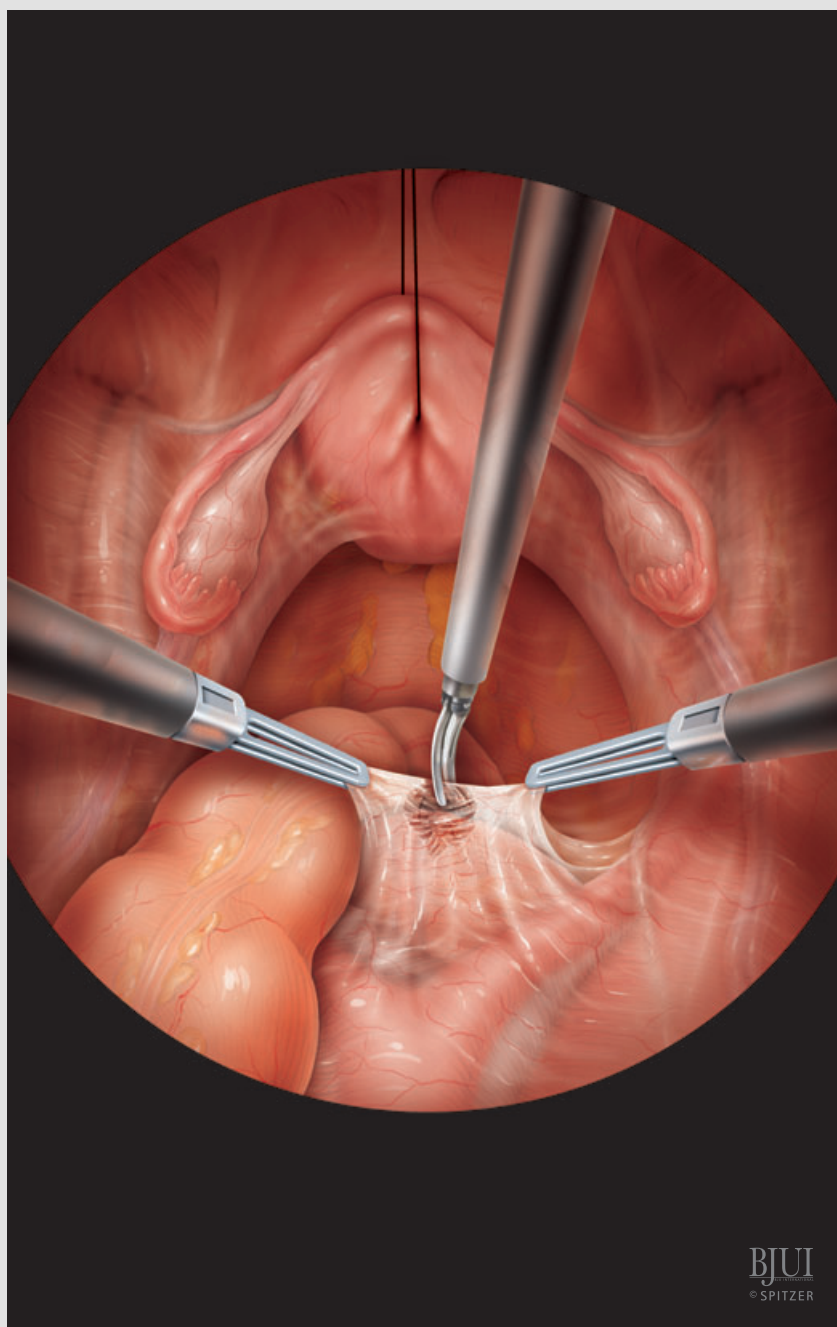


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Figure 3

Identification of the sacral promontory.

With the uterus retracted and colon mobilised, the sacral promontory is easily identified where the pelvis drops away at the pelvic brim on the right. Accurate position is confirmed by tactile feedback and the peritoneum is incised over the bony prominence taking care to avoid the ureter as it crosses the pelvic brim.



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Figure 4

Perirectal dissection.

The peritoneal incision is continued lateral to the rectum until the pelvic floor muscles become visible deep in the pelvis. Care is taken to preserve perirectal fat, thus minimising risk of iatrogenic bowel injury or neurovascular damage.

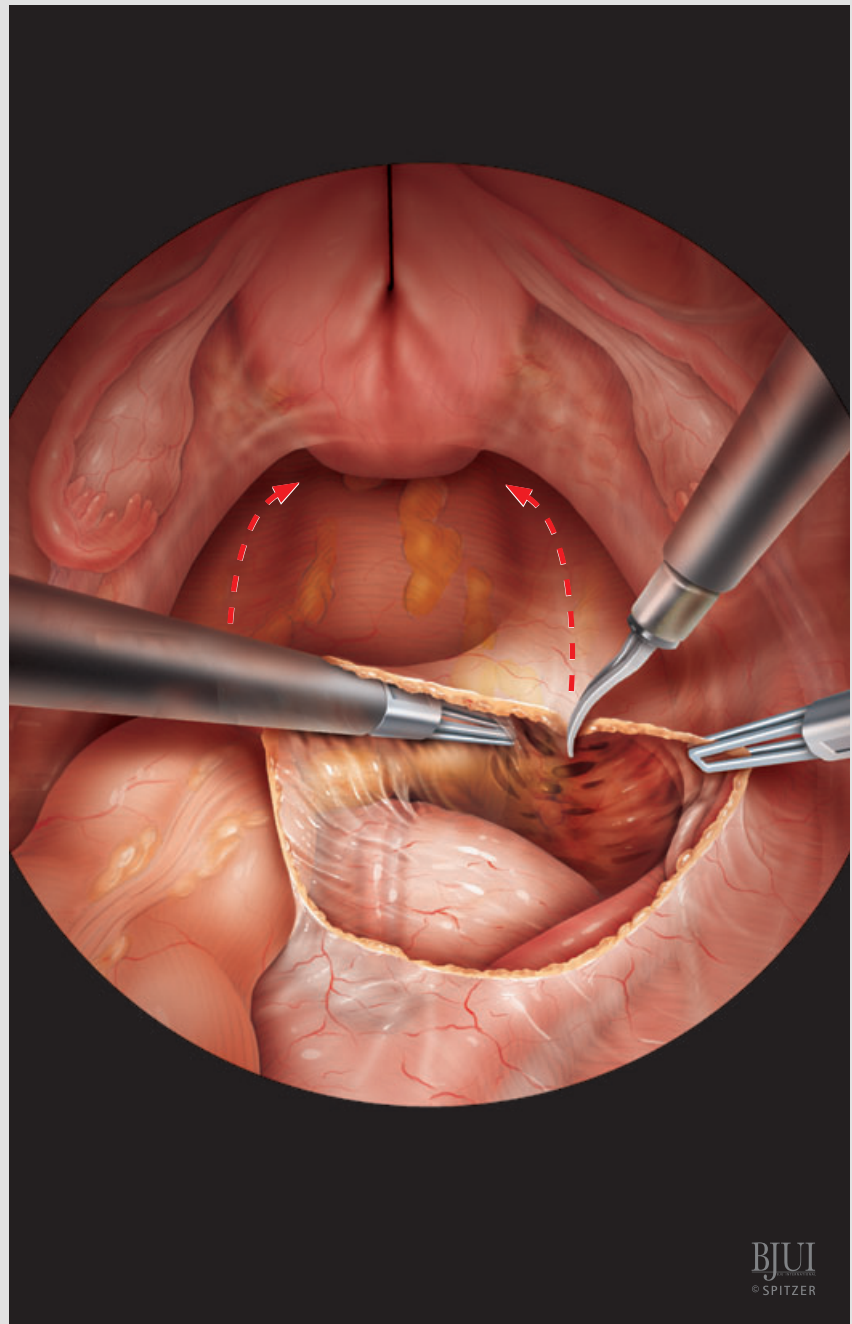
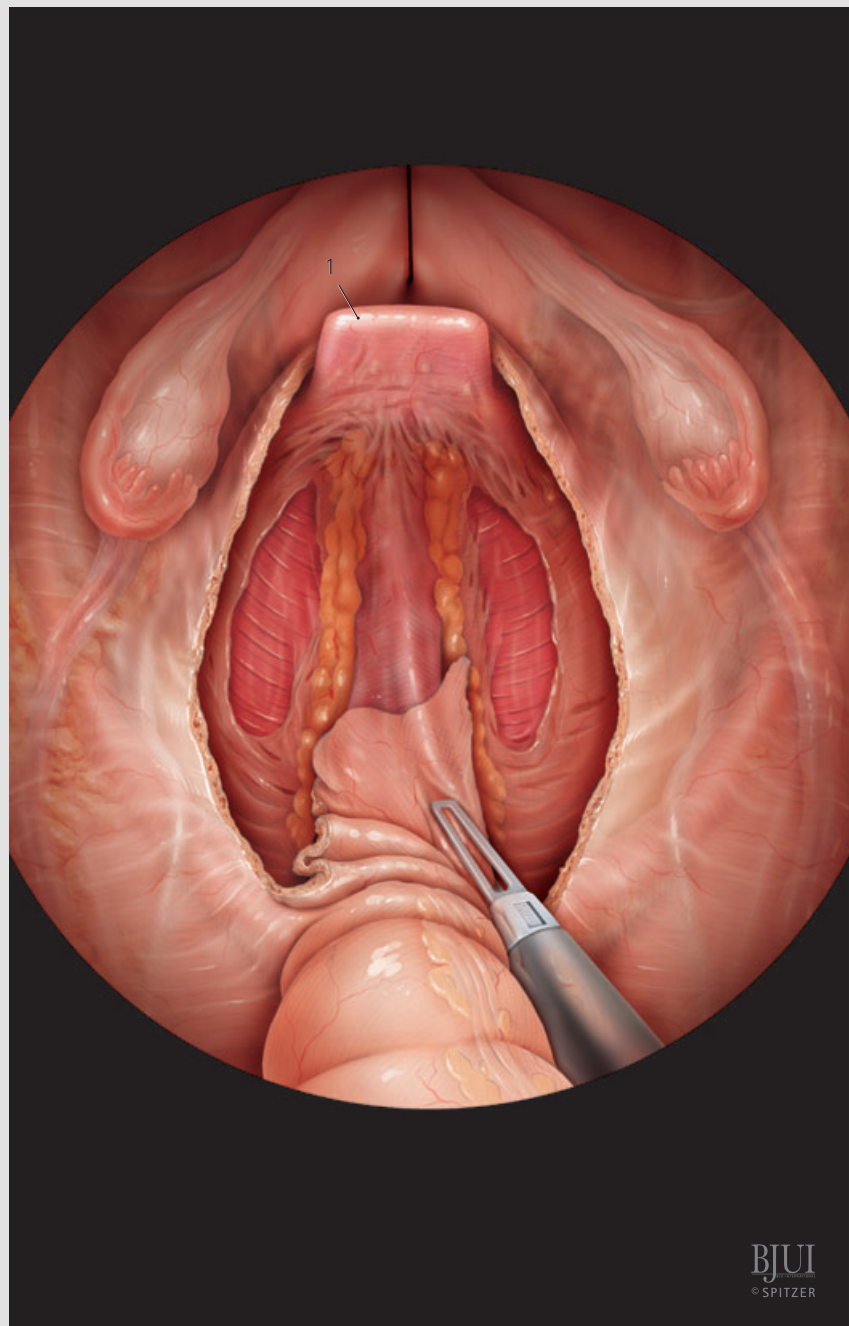


Figure 5

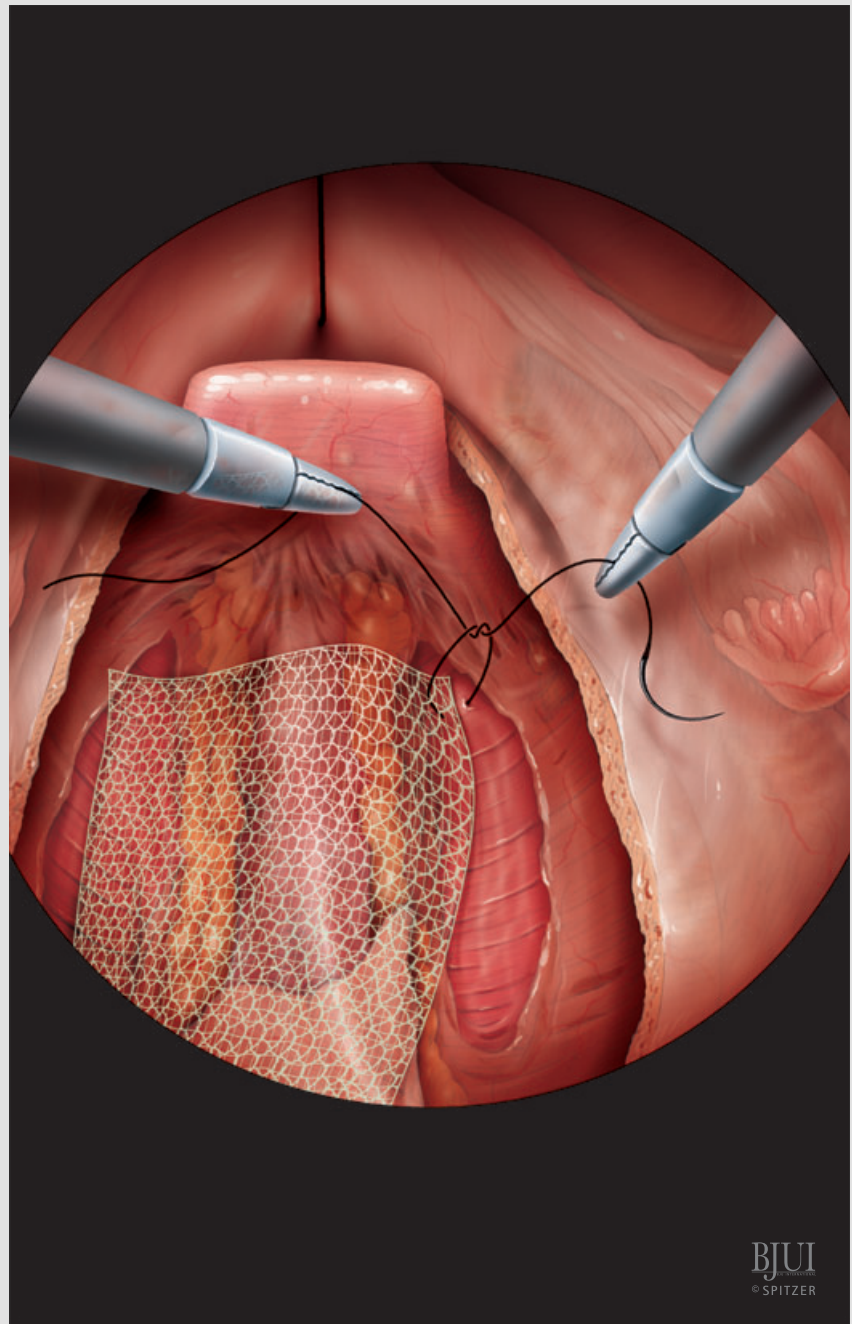
The process is repeated on the left with gentle cephalad retraction on the rectum aiding dissection. Dissection is facilitated by the assistant placing a malleable retractor in the vagina (1) to show the limits of the vaginal wall. Ischaemic injury to the vaginal vault is a recognised complication but careful dissection should allow an adequate vaginal wall thickness to be preserved. At the end of this stage, good anchor points on the levator ani should be visible bilaterally in preparation for mesh placement.

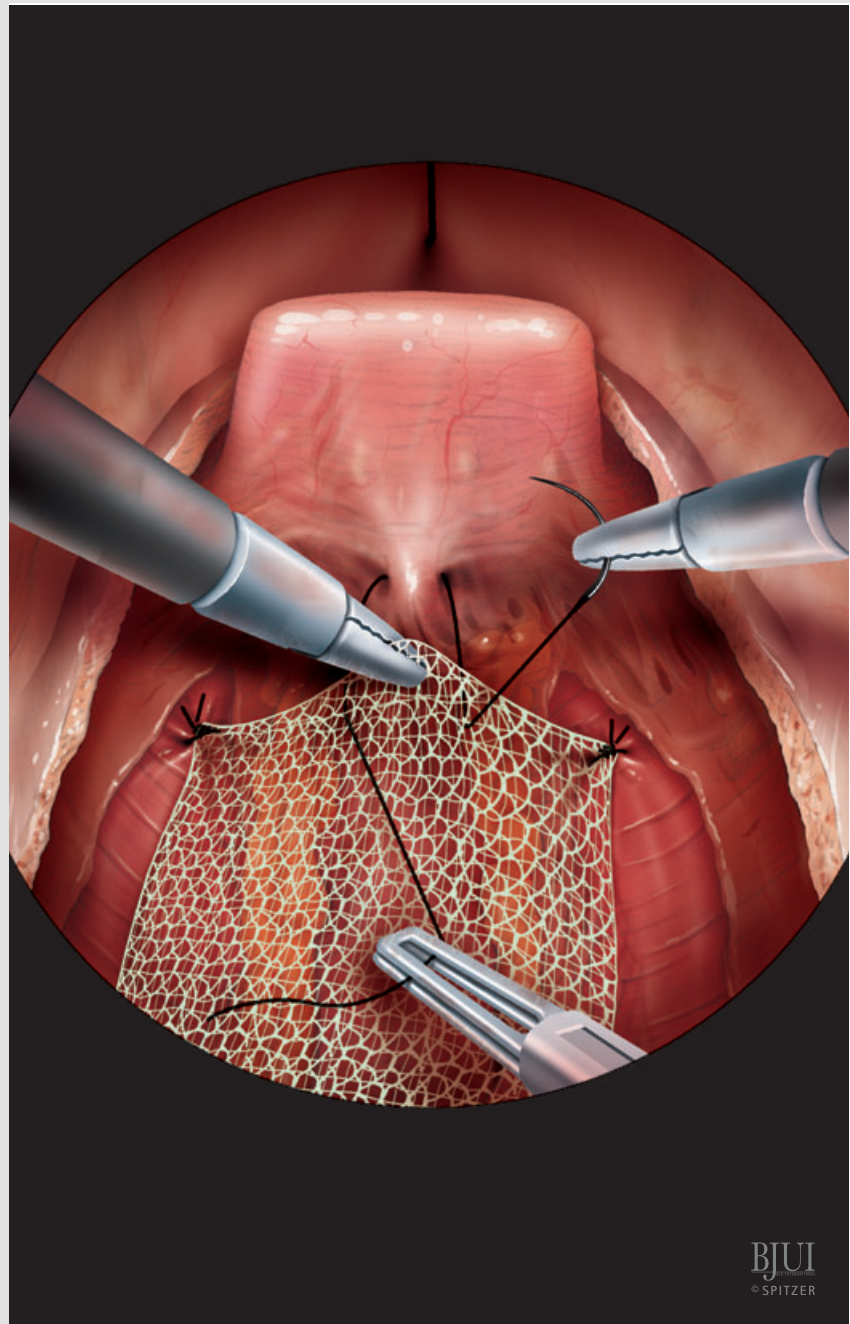
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Figures 6–9**Posterior mesh placement.**

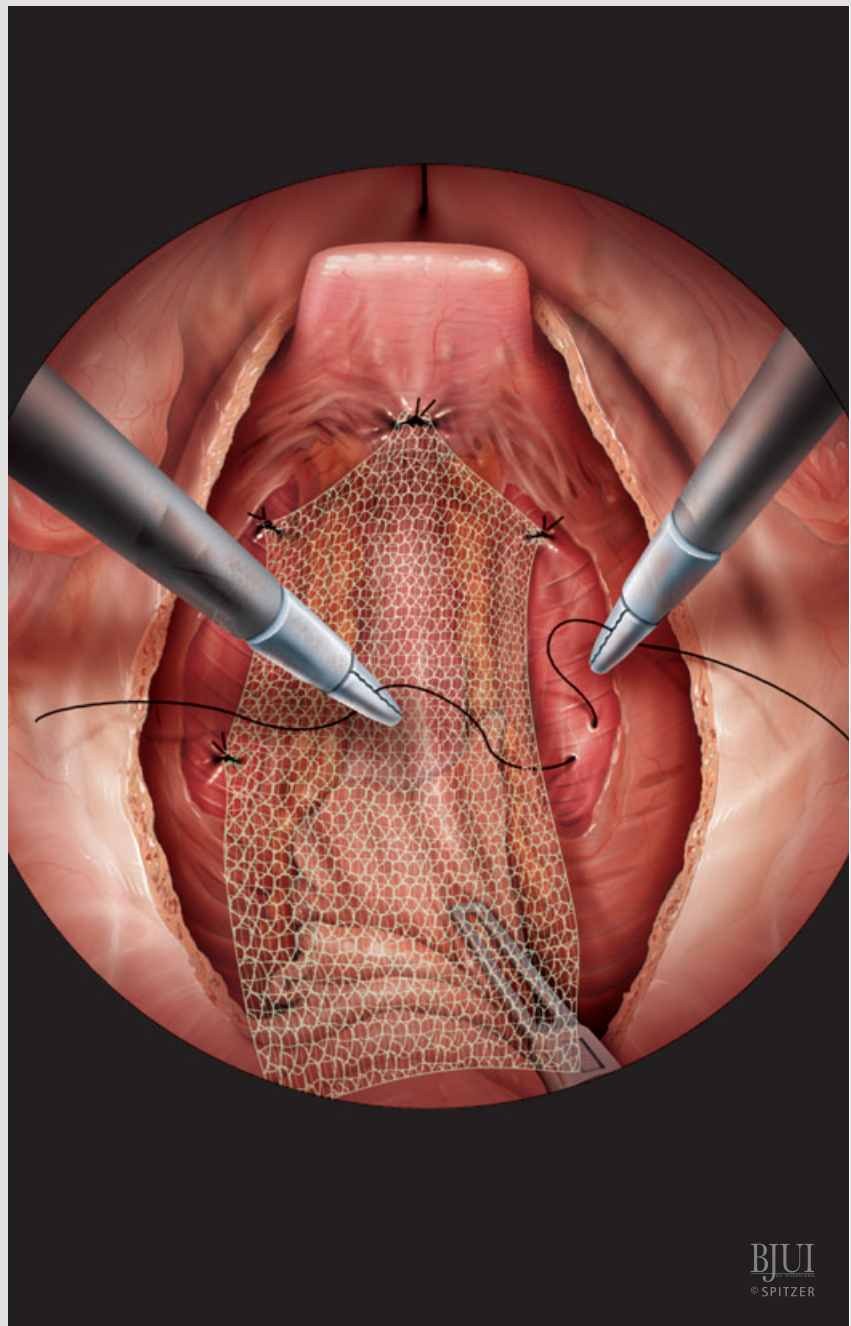
We use a two-part mesh set with pre-cut posterior and anterior components (polypropylene). The broad end of the posterior mesh is anchored to the levator ani bilaterally as well as to the vaginal vault in the midline. A nonabsorbable monofilament should be used. Intracorporeal suturing is essential at this stage. The long tongue of the posterior mesh is left long at this stage and will be trimmed later after fixation to the sacral promontory.

The posterior element of the procedure is now complete and the suture placed earlier to retract the uterus can be removed.

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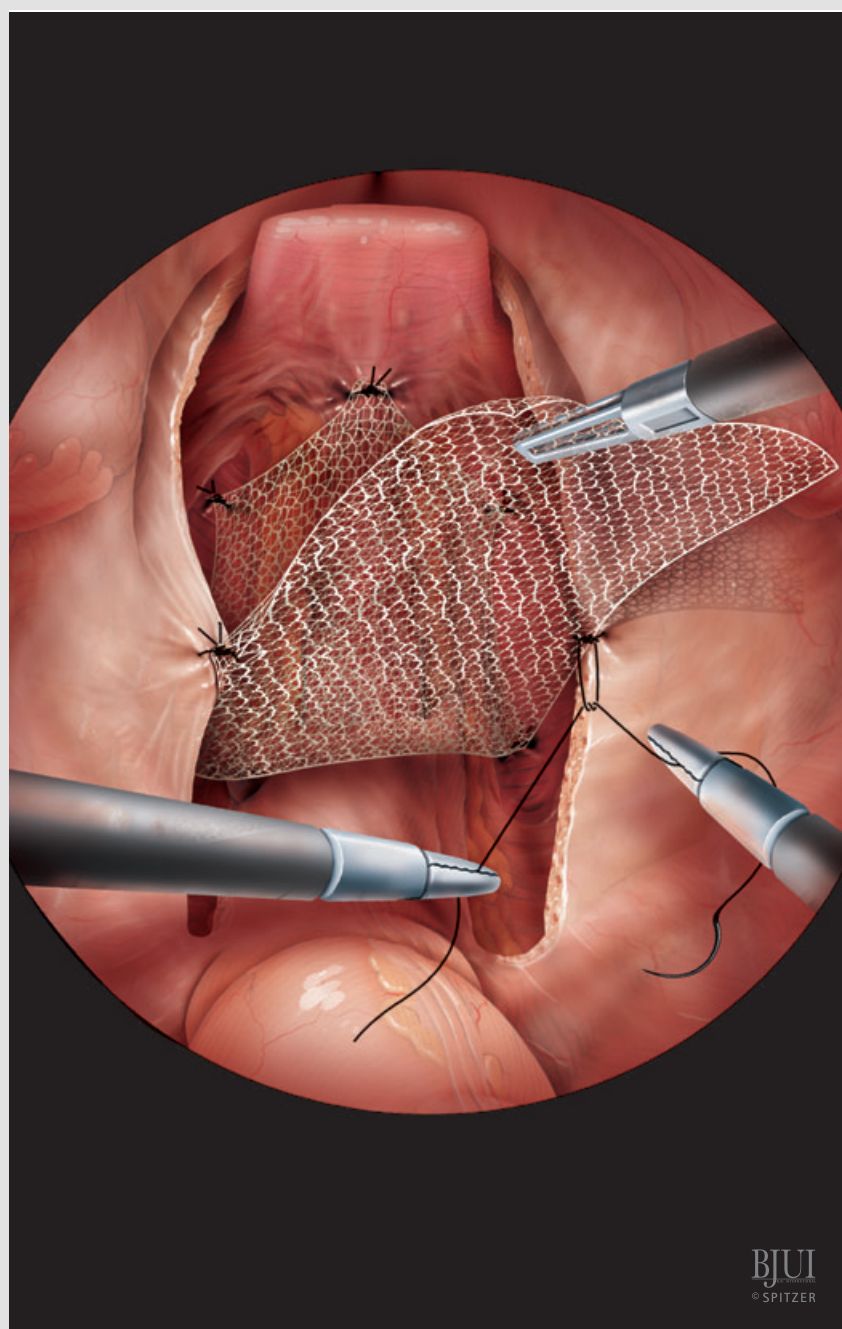
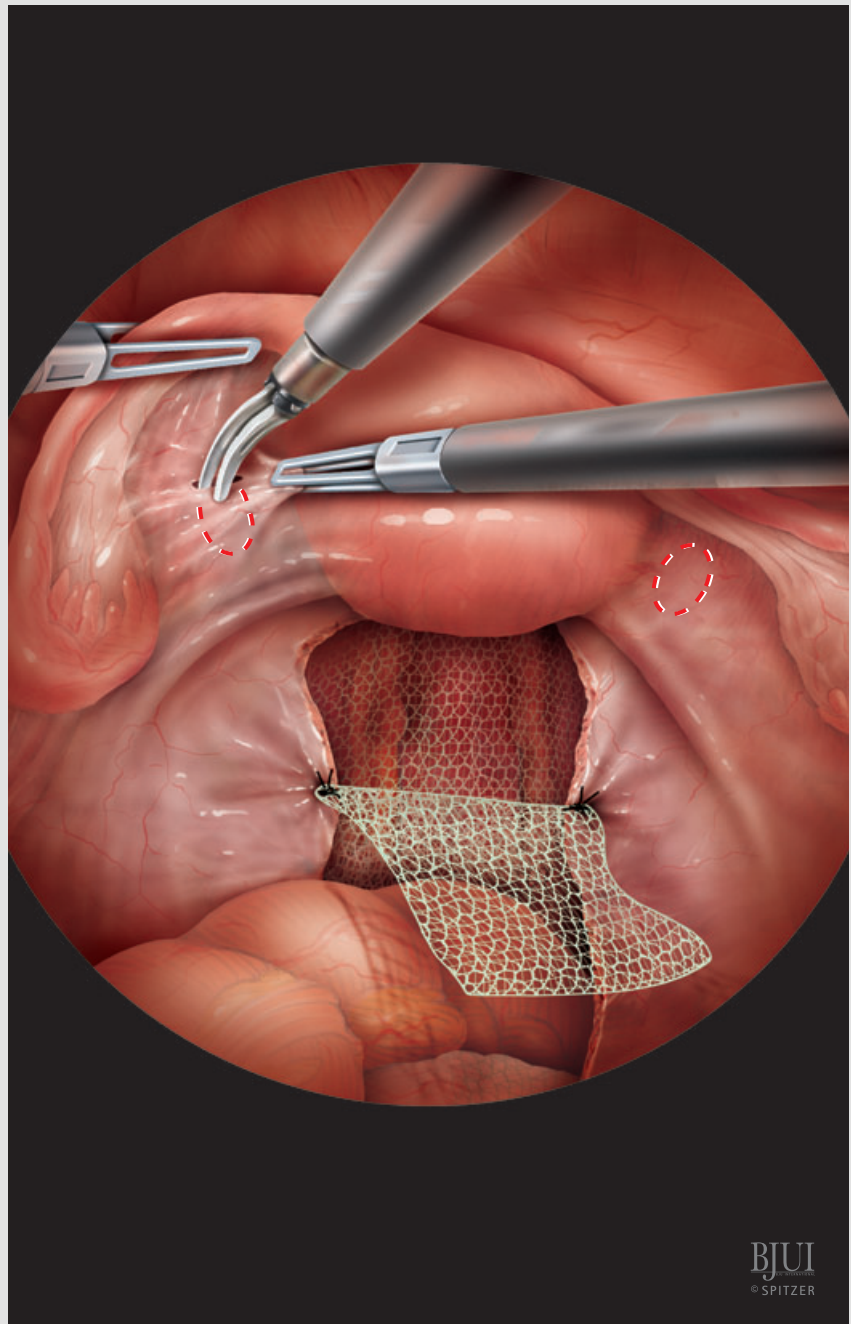


Figure 10

Fenestration of the broad ligaments.

To allow the anterior mesh to be fixed to the sacral promontory, it will later need to be passed through windows in the broad ligaments. The peritoneum on either side is incised taking care to avoid damage to the uterine arteries and fallopian tubes.



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Figure 11

Anterior dissection.

Ventral deflection of the malleable retractor is used to show the anterior limit of the vaginal vault and to guide dissection of the bladder from the vagina using a combination of monopolar and bipolar diathermy. The dissection is continued until the outline of the catheter balloon can be discerned.

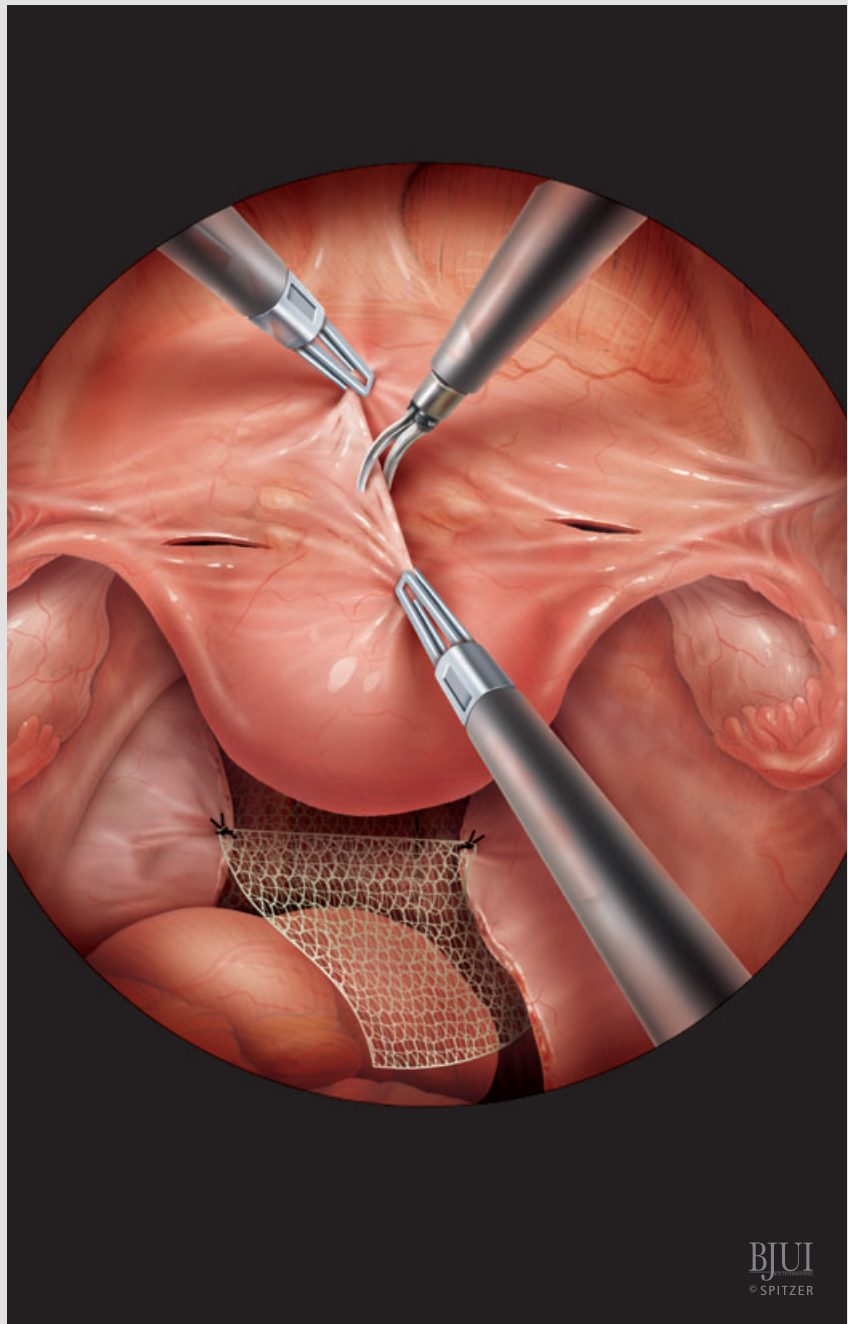


Figure 12

The anterior mesh is now secured to the vaginal vault with nonabsorbable sutures at the apex and along the lateral aspects (1 = malleable retractor). The two 'tails' of the mesh can be seen here lying anterior to the uterus and fallopian tubes.

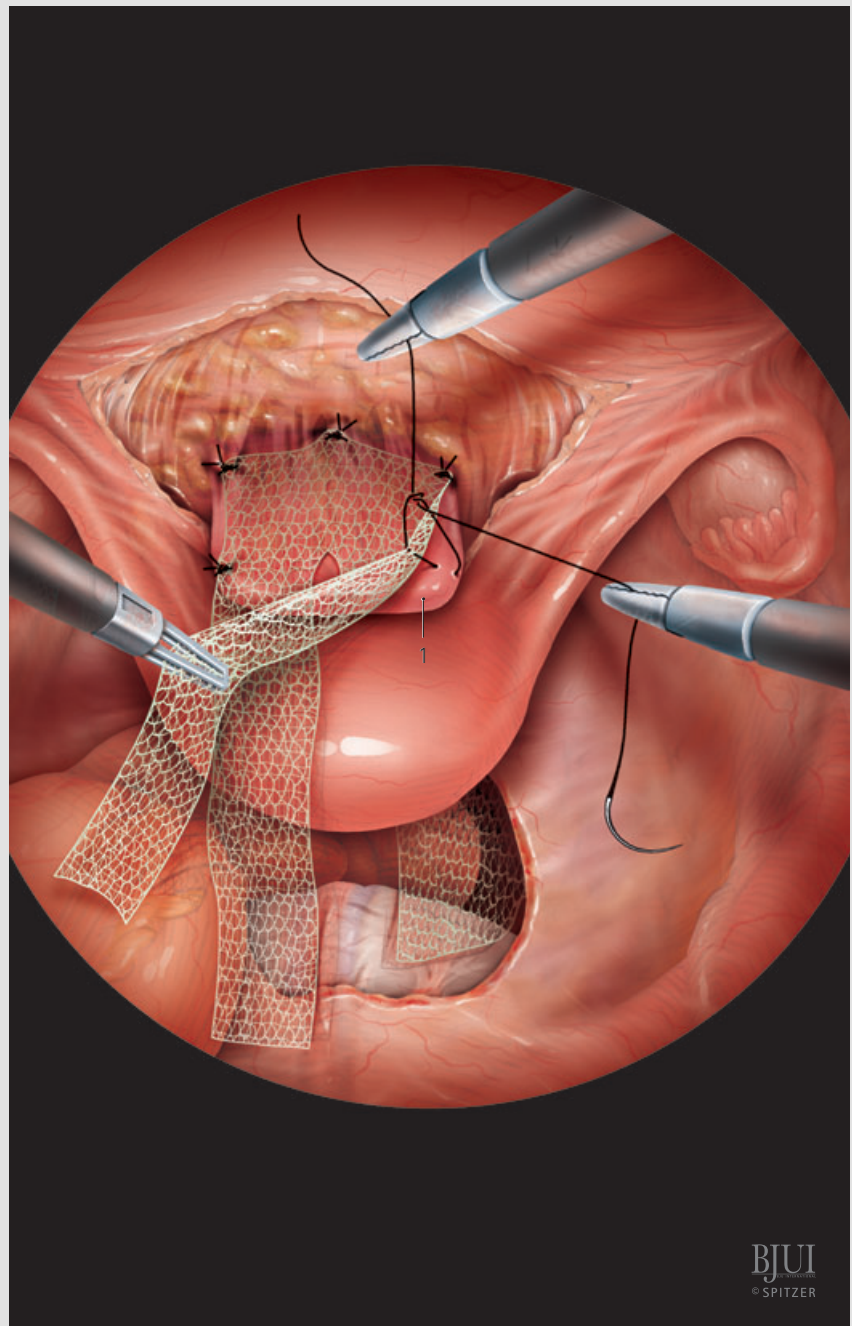
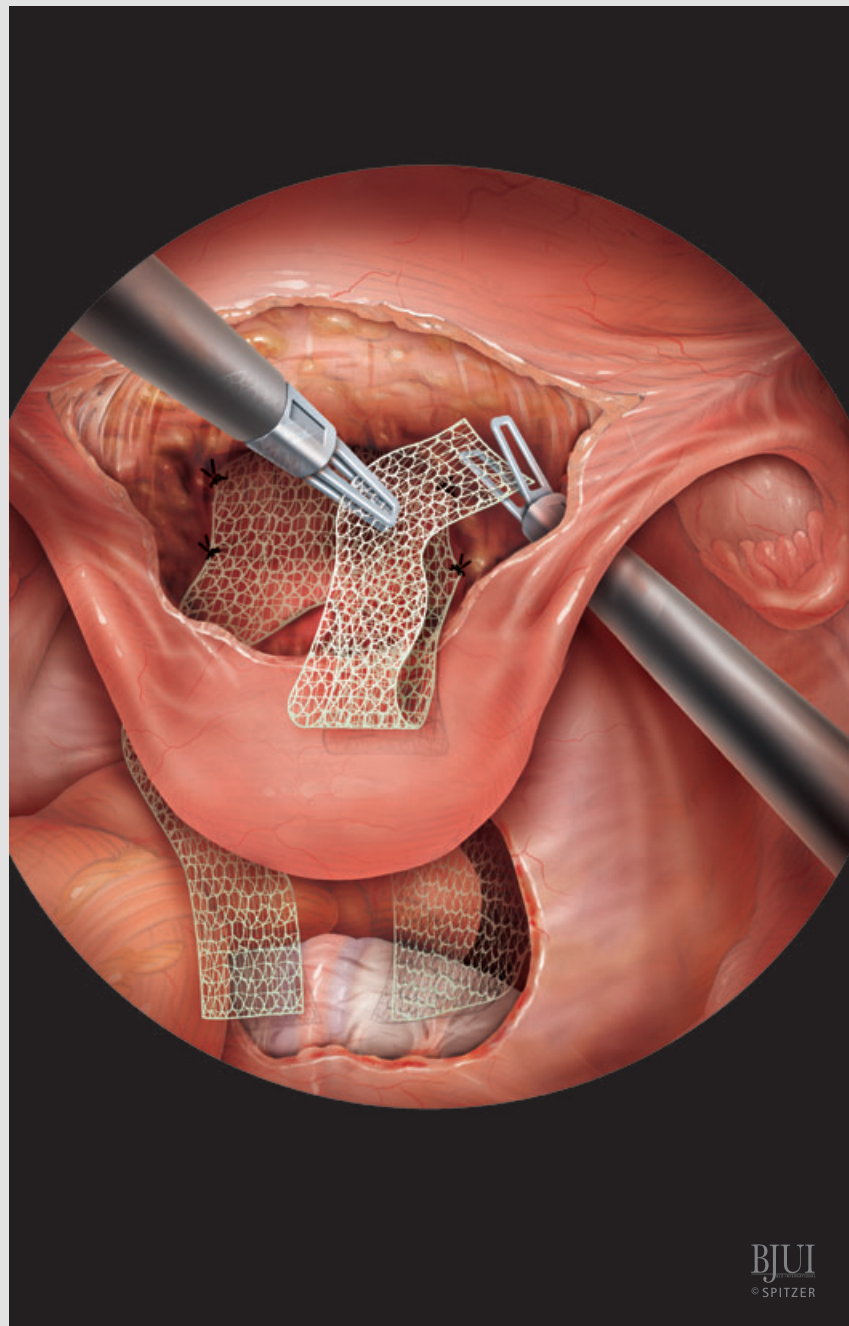
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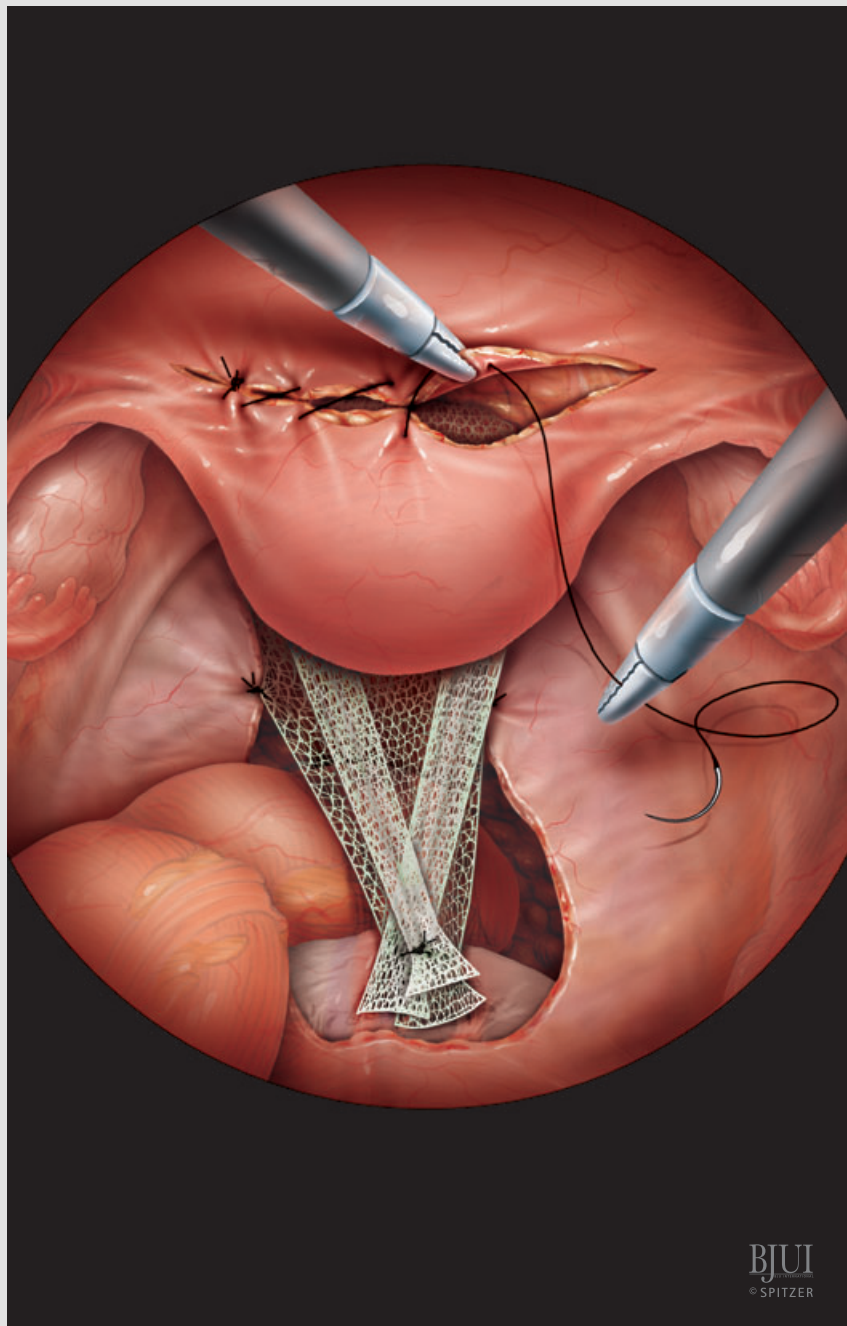
Figure 13

The two tails of the anterior mesh are pulled through the windows in the broad ligaments and brought together with the posterior mesh.

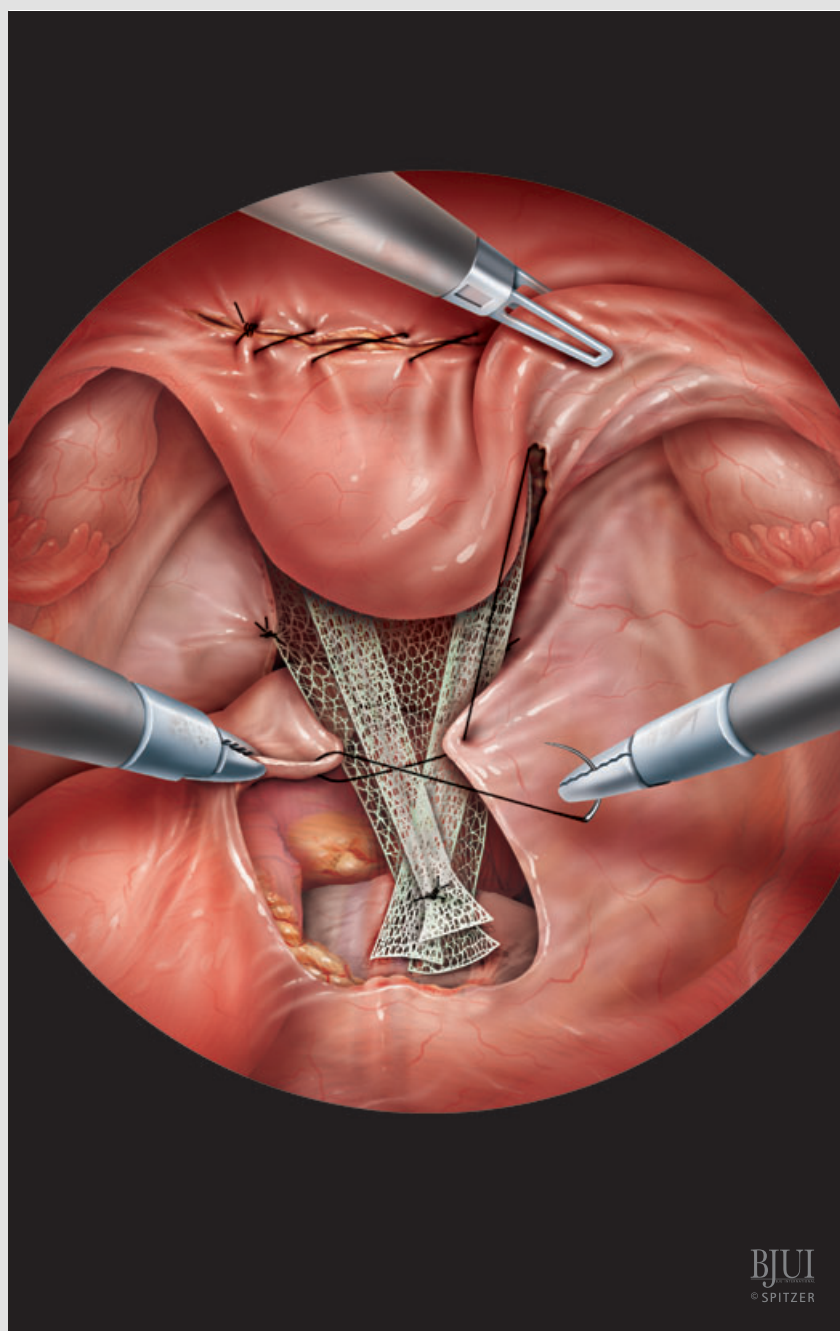


Figures 15–16

Finally, any excess mesh is trimmed and the peritoneum is closed so that no mesh is left exposed.



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PERIOPERATIVE CARE

- A urethral catheter is left *in situ* until the patient is ambulant; normally 24 h.
- Prophylactic antibiotics, third generation cephalosporin is given at induction.

FROM SURGEON TO SURGEON

Sacrocolpopexy should be a relatively straightforward procedure for the experienced laparoscopist.

In our experience, there are several pitfalls which should be avoided. Correctly identifying the correct planes is essential for a bloodless dissection and a mesh free from haematoma. Furthermore, careful identification of the correct pararectal plane will avoid the risk of neurovascular damage to the rectum. Vaginal wall necrosis can occur many years after surgery, typically 3 or 4 years after. The risk of this can be minimised by ensuring that any sutures placed in the vaginal wall are as superficial as possible,

particularly on the posterior wall that has a less reliable blood supply. Finally, the surgeon (and patient) should always be aware of a risk of postoperative incontinence which may be unmasked by correcting the prolapse.

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