

Abdominal procedures

There are no RCTs comparing abdominal and vaginal approaches. Repair by the abdominal route is indicated when high fistulae are fixed at the vaginal vault and are inaccessible via a vaginal approach. A transvesical repair has the advantage of being entirely extraperitoneal. A simple transperitoneal repair is used less often although it is favoured by some using the laparoscopic approach. A combined transperitoneal and transvesical procedure may be utilised for fistula repair following caesarean section. Results of secondary and subsequent repairs are not as successful as the initial repair [718].

Laparoscopic and robotic procedures

Small series (single figures) have reported using these techniques. In a recent analysis of the American NSQIP dataset, transvaginal and robotic/laparoscopic approaches were associated with lower morbidity compared to the open abdominal approach [719].

Trimming of fistula edge

A single RCT compared trimming of the fistula edge with no trimming. There was no difference in success rates but failed repairs in trimmed cases had larger recurrences than untrimmed cases, which were smaller [720].

Tissue interposition

Tissue flaps are often added as an additional layer of repair during VVF surgery. Most commonly, such flaps are utilised in the setting of recurrence after a prior attempt at repair, for VVF related to previous radiotherapy (described later), ischaemic or obstetric fistulae, large fistulae, and finally those associated with a difficult or tenuous closure due to poor tissue quality. However, there is no high-level evidence that the use of such flaps improves outcomes for either complicated or uncomplicated VVF.

Postoperative management

There is no high-level evidence to support any particular practice in postoperative management, but most reported series used catheter drainage for ≥ 10 days and longer periods in complex or radiation-associated fistulae (up to three weeks). The performance of post-operative cystography prior to catheter removal can theoretically miss a persistent fistula if not done with a micturition phase or if the fistula is located at the bladder neck.

4.8.4.1.3 Management of complications of vesico-vaginal fistulae

The complications of VVF repair are varied and can include:

- Persistence or recurrence of fistula;
- Persistence or recurrence of UI;
- Persistence of LUTS or occurrence of new LUTS, including *de novo* OAB and/or SUI;
- Infections: wound and UTIs/urosepsis;
- Ureteric obstruction (ligation, fibrosis or injury);
- Bladder outlet obstruction (meatal stenosis, urethral stricture or bladder neck obstruction);
- Bladder contracture;
- Vaginal stenosis;
- Sexual dysfunction (vaginismus/dyspareunia).

The literature on the treatment and management of complications of fistula repairs is scarce and is mostly experienced based. It is impossible to provide any specific evidence-based guidance.

4.8.4.2 Management of radiation fistulae

Modified surgical techniques are often required, and indeed, where the same techniques have been applied to both surgical and post-radiation fistulae, the results from the latter have been consistently poorer [721]. Due to the wide field abnormality surrounding many radiotherapy-associated fistulae, approaches include permanent urinary and/or faecal diversion [721, 722] or preliminary urinary and faecal diversion, with later undiversion in selected cases following reconstruction. In cases where life expectancy is deemed to be short, ureteric occlusion and nephrostomy insertion might be more appropriate.

4.8.4.3 Management of ureteric fistulae

Uretero-vaginal fistula occurring in the early post-operative phase predominantly after hysterectomy is the most frequent presentation of upper urinary tract fistulae in urological practice. An RCT in 3,141 women undergoing open or laparoscopic gynaecological surgery found that prophylactic insertion of ureteric stents made no difference to the low risk (1%) of ureteric injury [723].