The new gold standard?

The management of complex recto-urinary fistulas with gracilis muscle interposition

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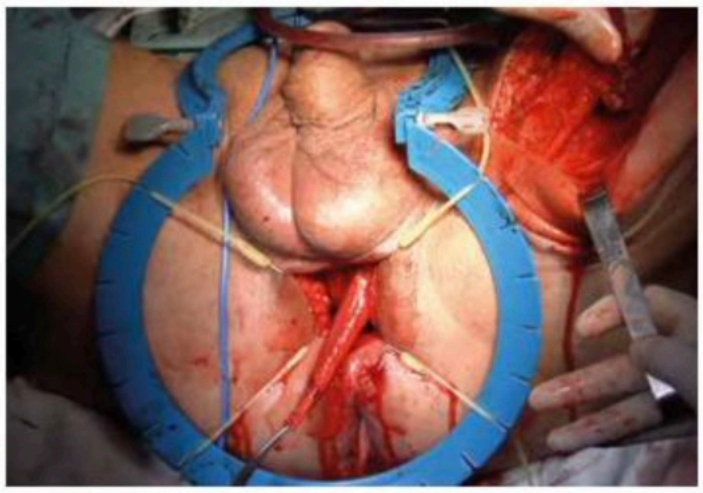
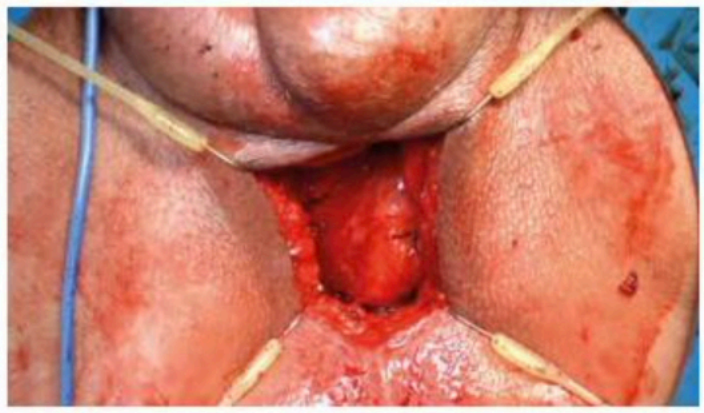


The gracilis muscle with both ends free and fixed by the pedicle only



The gracilis muscle interposed between the recto and bladder

The Reconstructive Surgery-Andrology Unit of Hospital Universitario 12 Octubre (UCRA12) and HM Hospitales (UCRA_ROC) is composed of four dedicated urologists, Javier Romero-Otero, José Medina-Polo, Borja García-Gómez, and Manuel Alonso-Isa, and a multidisciplinary team. We are one of the two referral centres in Spain that is recognised by the Spanish Health Minister for penile prosthesis, male urinary incontinence surgery, urethral strictures, Peyronie's surgery, recto-urinary fistulas, neophallus, bladder exstrophy, and other complex reconstructive surgeries.

Recto-urinary fistulas are a rare complication in patients with Crohn's disease or diverticular disease after radical prostatectomy, colorectal surgery, or cryosurgery. For after radical prostatectomy, the estimated incidence is lower than 2%. A rectourethral fistula is the most common type, with its highest incidence percentage identified in the combined treatment of surgery and pelvic radiotherapy for prostate cancer. Radiotherapy or a lesion in the rectal wall during radical prostatectomy are the leading causes. If a fistula occurs during the surgery, primary closure is needed. However, in some cases the urinary-rectal fistula is diagnosed in the postoperative period.

Surgical repair

The management of recto-urinary fistulas represent a challenging task. A surgical repair is required in most of the cases. Several surgical procedures are possible, including the resection of the fistula tract and direct closure of the fistula with the perineal approach, mucosal flaps, the instillation of fibrin glue, endorectal advancement flap, or York-Mason operation. An alternative would be a fistula closure with the abdominal approach. The less aggressive procedures report good outcomes in not-complex fistulas. However, complex fistulas in patients who had previous surgeries or prior radiotherapy may require an interposition of tissues in order to achieve fistula closure and reduce the incidence of recurrence. Among the tissues used for transposition in the recto-urethral fistula are the gracilis muscle, rectus abdominis, omentum, dartos, gluteus maximus, and latissimus dorsi.

"During the postoperative procedure, it is essential to adequately control the donor site in the thigh to minimise the incidence of wound infection or delayed healing."

The abdominal approach has the advantage of placing healthy, well-vascularised tissue in the affected area. On the other hand, the abdominal approach potentially has significant perioperative adverse sequelae. Gracilis interposition allows for a well-vascularised tissue using the perineal approach.

Simple technique

The repair of perineal fistulas with gracilis muscle interposition was first described by Garlock et al. in 1928. In 1952, Igelman-Sundberg described it as a technique for patients with vesicovaginal fistulas. The interposition of gracilis muscle is one of the procedures that provides satisfactory outcomes with limited functional limitation in the donor area as the gracilis muscle only has a vestigial function. Transposition of a gracilis muscle flap may be used for the surgical management of rectovaginal, rectourethral, pouch-vaginal, and pouch-urethral fistula.

"Complex fistulas in patients with previous surgeries or prior radiotherapy may require an interposition of tissues."

The gracilis muscle is situated in the thigh's medial part from the ischiopubic branch to its tibial insertion forming the goosefoot. It is the most medial and superficial muscle of the inner thigh, fulfilling adduction functions, internal rotation, and flexion of the hip. It has a very proximal pedicle consisting of the circumflex medial femoral artery, which allows adequate transposition to the perineal area. There is also a distal vascular pedicle from the deep femoral artery, which can be divided and ligated to achieve the flap's correct rotation. Other minor pedicles can be dissected. The main advantages of a flap in the gracilis muscle are that it provides low morbidity at the donor site and enough tissue from the donor site to correct interposition and limited functional loss. Moreover, when the procedure is carried out by an experienced surgeon, the gracilis muscle's dissection is a simple technique.

A complex urinary-rectal fistula

When a complex urinary-rectal fistula is diagnosed, a faecal and urinary diversion is recommended. At the beginning of the procedure, ureteral catheterisation may be performed as the fistula's orifice may be close to the ureteral meatus. The surgical procedure with the transposition of the gracilis muscle consists of the perineal approach with a dissection above the transversus perineum muscle and below the bulbocavernosus muscle. The dissection is carried out until the identification of the fistula. The fistula's edges are resected to leave soft, viable tissue for the closure of the fistula. The rectal wall and the urethra are closed with absorbable stitches. The suture must be done using healthy tissues. The gracilis muscle is dissected from the non-dominant leg and transposes to the perineum to preserve the proximal pedicle through a subcutaneous tunnel. For a gracilis muscle requiring an incision at the medial thigh, perform the incision immediately posterior to the saphenous vein from four to eight fingerbreadths distal to the anterior superior iliac spine. The gracilis muscle is then interposed between the rectal and urethral closure of the fistula and fixed with an absorbable suture.

The surgery is associated with a complication rate from 0% to 49%. The most common complication is a perineal wound infection or delayed healing. Although the donor site morbidity at the gracilis-muscle-harvesting site is low, during the postoperative procedure it is essential to adequately control the donor site in the thigh to minimise the incidence of wound infection or delayed healing. It is necessary to advise patients that in the postoperative period urinary incontinence and faecal incontinence is reported in 14% and 4,2% of the patients respectively.

The surgery must be carried out by a multidisciplinary team which include a urologist, colorectal surgeons, and urological reconstructive surgeons with the specific skills required for perineal surgery. Repair of the urinary-rectal fistula with transposition of the gracilis muscle is challenging as many patients have received prior radiotherapy and have had previous failed attempt to repair the fistula.

EAU Section of Genito-Urinary Reconstructive Surgeons (ESGURS)