This study was designed to assess the efficacy of gracilis muscle transposition in repairing recto-vaginal and rectourethral fistula. All patients had fecal diversion as a preliminary or concurrent step to fistula repair. Success was defined as healed fistula after stoma closure. Results: Six females and four males underwent gracilis muscle transposition from 1999 to 2006. Gracilis muscle transposition is a viable option for repairing fistulas between the urethra, vagina and the rectum, especially after failed perineal or trans-anal repair. It is associated with low morbidity and good success rate. Underlying Crohn’s disease and previous radiation are associated with poor prognosis.

Key words: gracilis muscle, rectovaginal fistula, rectourethral fistula

INTRODUCTION

The major cause for recto-vaginal/urethral fistula (RVUF) is iatrogenic injury during delivery or pelvic-perineal surgery such as radical prostatectomy and restorative proctectomy, especially in patients with inflammatory bowel disease or before/after radiation therapy.

Conventional surgical techniques to repair RVUF include fecal diversion, primary repair and endorectal advancement flap with or with out sphincter reconstruction. These types of repair are more suitable for uncomplicated first attempt in non-irradiated non IBD patient with a success rate of 85% 1,2. For complicated or recurrent RVUF more complex procedures have been suggested including coloanal sleeve anastomosis and transposition flaps. 1-8

We report our experience with Gracilis muscle transposition (GMT) for the repair of RVUF.

PATIENTS

Between 1999 and 2006 we have treated 10 patients with RVUF by means of GMT. Three of the 4 males developed recto-urethral fistula (RUF) after radical prostatectomy (Table 1). Five of the 6 female develop rectovaginal fistula (RVF) after previous radiation therapy or had underlying ano-rectal Crohn’s disease (Table 2). Three males and 3 females have had previous attempt at surgical repair.

SURGICAL TECHNIQUE

A transverse skin incision was made at the perineal body. Dissection of the rectovaginal/urethral septum was carried out. The fistula tract was divided and dissection of the septum was further continued to a level of at least 3 cm cephalic. The opening in the rectum, vagina or urethra were primarily closed with 3/0 vycril. To mobilized the Gracilis muscle two longitudinal skin incisions were made along the medial aspect of the thigh, and the Gracilis muscle was released from its Tibial insertion. It was then dissected while preserving the neurovascular pedicle. The muscle was rotated and its end brought to the perineal area through a subcutaneous tunnel. The muscle was rotated and its end brought to the perineal area through a subcutaneous tunnel. The muscle was rotated and its end brought to the perineal area through a subcutaneous tunnel. The muscle was rotated and its end brought to the perineal area through a subcutaneous tunnel.
RESULTS

Mean follow after closure of stoma was 26 month. Fistula persisted in one CD patient with severe diseased rectum. One patient with rectal ca on the background of UC who received pre restorative proctocolectomy irradiation neoadjuvant therapy refused to close her ileostomy because of moderate incontinence which has existed already prior to RVF repair although the RVF healed on EUA and was asymptomatic clinically. In the other 8 patients, no recurrence was observed (Table 3). Three of the males with RUF after radical prostatectomy had impaired erection and urinary continence. The direct cause-effect relationship with the GMT repair was difficult to establish since patients had a indwelled urinary catheter prior to fistula repair and per history have not experienced erection also before the RUF repair.

DISCUSSION

Several factors have been previously reported as influencing the outcome of surgical repair of fistulas. An internal opening higher than 2 cm from the dentate line, a co-existing active rectal Crohn’s disease, and persistent or undrained sepsis in the recto vaginal septum have been implicated as factors associated with poor prognosis. Irradiated recto vaginal septum, traumatized tissue, or chronic sepsis lead to the result of a thin fibrotic perineal body and septum hence there often is inadequate viable tissue for any local repair to close fistulas. In these cases. It is essential to separate the organs and interpose healthy tissue with an independent blood supply, repairing a recto urethral fistulas through the rectum is prone to fail because it does not close the high pressure (urethral) side, and therefore the goal should be to interpose a viable flap between the rectum and the urethra. The gracilis muscle is an excellent pedicle graft because it is easily mobilized and has adequate length. The gracilis muscle had been previously described for repair of chronic unhealed perineal wounds after proctectomy in patients with Crohn’s disease, with a success rate varying from 60 to 100 percent in different series. It also has been used for creating a neosphincter.

The reported success rate for the repair of rectovaginal or rectourethral fistulas using the gracilis muscle transplantation technique is generally much higher than that reported for other repair techniques. Rius et al. reported a success rate of 60 percent in a series of four patients with Crohn’s disease and recto vaginal recto urethral, and pouch vaginal fistulas. Zmora et al. described as series of 11 males with iatrogenic recto urethral fistulas after surgery or pelvic radiotherapy for prostate cancer. Eighty three percent of 12 transplantation flaps resulted in complete healing, although in two cases further surgical procedures were required with eventual complete healing. Other groups reported a 100 percent success rate for gracilis muscle transplantation repair of persistent complex rectovaginal fistulas that had failed previous advancement flap repairs, recto urethral fistulas and for pouch vaginal fistulas in ulcerative colitis patients after restorative proctocolectomy. It also was successfully applied for repair of vesico vaginal urethra perineal, iatrogenic prostato rectal fistulas, and even for various fistulas in pediatric patients.

We believe that the important technical features of the gracilis transplantation procedure are fecal diversion, meticulous hemostatis, tension free primary repair of the rectum after dissection and mobilization to level of at least 3

<table>
<thead>
<tr>
<th>Underlying disease</th>
<th>Previous repair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectal Ca anterior resection</td>
<td>Y</td>
</tr>
<tr>
<td>Rectal Ca UC restorative proctocolectomy</td>
<td>Y</td>
</tr>
<tr>
<td>Cervical Ca (TAH+BSO)</td>
<td>Y</td>
</tr>
<tr>
<td>Chron’s disease</td>
<td>N</td>
</tr>
<tr>
<td>Obstetric trauma</td>
<td>N</td>
</tr>
</tbody>
</table>

Y:yes, N:no
cm above the fistulas site, and a viable tension free, well vascularized muscle pedicle.

CONCLUSION

The gracilis muscle transposition technique has a high success rate for repair of fistulas between the rectum and vagina or urethra arising from various etiologies. It is effective after failed previous repairs. Given the high success rate and low complication rate, we would recommend it for fistulas with unfavorable local condition, such as those present after radiation or subsequent to long term persistent infection, and especially after failed previous repair. The prognosis of success in Crohn’s proctitis is still poor, however, that should not contraindicate attempting the gracilis transposition. Previous pelvic irradiation also presages poor prognosis but to a lesser extent and with the expectation of eventual healing.

SUMMARY

REKTO-VAGINALNA/URETRALNA FISTULA: REPARACIJA SA TRANSPOZICIJOM M. GRACILIS -a

Studija je dizajnirana da utvrdi efikasnost transpozicije m. gracilisa u reparaciji rektovaginalnih i rektouretralnih fistula.

Kod svih pacijenata je radjena diverzija fekalnih masa kao prvi korak u lećenju fistula. Lećenje je smatrano uspešnim ukoliko je došlo da sanacije fistule nakon uspostavljanja kontinuiteta digestivnog trakta.

Rezultati

U periodu 1999-2006 je kod šest žena i četiri muškarca radjena transpozicija m. gracilisa.


Transpozicija m. gracilisa je uspešna metoda za reparaciju fistula između uretre, vagina i rektuma pogotovu nakon neuspešne transperinealne ili transanalne reparacije. Ova procedura ima nizak morbiditet i visok stepen uspeha. Fistule na bazi Crohnove bolesti i nakon iradijacione terapije imaju lošu prognozu.

Ključne reči: rekto-vaginalna fistula, rekto-uretralna fistula, transpozicija m. gracilisa, hirurgija

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