

## Case Report

# Graciloplasty for the Rectovaginal Fistula after Chemoradiation Followed by Total Mesorectal Excision for Rectal Cancer

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## Abstract

Rectovaginal fistula (RVF) is one of the intractable complications following chemoradiation and total mesorectal excision (TME) for rectal cancer. It is supposed that there is a strong possibility of this complication occurring in patients after radiation therapy and having underlying sepsis. We describe herein two female patients (73 and 40 years old) who developed RVF after chemoradiation and TME for rectal cancer, who were successfully managed by gracilis muscle transposition. Fecal diversion was done as a preliminary step to the fistula repair. Success was defined as healed fistula after stoma closure. The strategy in the present report is a useful option for RVF management in such patients as other successful modalities are very limited.

**Keywords:** Chemoradiation, graciloplasty, rectal cancer, rectovaginal fistula (RVF), total mesorectal excision (TME).

**Cite this article as:** Samalavicius NE, Gupta RK. Graciloplasty for the rectovaginal fistula after chemoradiation followed by total mesorectal excision for rectal cancer: *Arch Iran Med*. 2013; **16**(1): 54 – 55.

## Introduction

The etiologies of rectovaginal fistula (RVF) are various. These are mostly acquired (congenital is rare) due to infection, inflammation, malignancy, trauma, or iatrogenic.<sup>1,2</sup> Iatrogenic recto-vaginal or rectourethral fistulas occur after pelvic surgery and radiotherapy for the treatment of rectal and prostatic malignancy.<sup>3,4</sup> In these patients, fistula occurs possibly after external beam radiation, brachytherapy, or combination of both, and following low anterior resection or radical prostatectomy.<sup>3,5</sup> Various surgical methods to repair these fistulas have been reported, but there is no clear guidelines regarding the management of these fistulas.<sup>6</sup> Local repair in irradiated, traumatized, and infected tissue is usually difficult and unsuccessful. The clogging of healthy tissue with an independent blood supply is indispensable in those patients.<sup>7</sup>

The gracilis muscle flap is one of the choices among various muscle flap repairs for the treatment of fistulas. It is well vascularized with an adequate length, can be easily rotated in the perineum in the irradiated and traumatized tissue, and provide mechanical palisade between the rectum and the urethra or vagina.<sup>8</sup>

The aim of this study is to review our institutional experience with gracilis muscle flap for the treatment of iatrogenic RVF occurring after treatment for rectal malignancy.

## Case Report

Two female patients (73 and 40 years old) were presented to the Oncology Institute of Vilnius University in November 2005 and March 2006, respectively with diagnosis of rectal cancer (histopa-

thology - moderately differentiated adenocarcinoma). Proctoscopy revealed an approximately 4 cm fixed mass in the rectal wall, 6 cm from the anal verge. Endorectal ultrasound showed uT3uN2 stage. No distant metastases were detected. Both received neoadjuvant chemoradiation with a total dose of 50 Gy and two cycles of 5-FU + leucovorin. After six weeks, TME with a descending colonic J-pouch anal stapled anastomosis, and preventive loop ileostomy was performed. Histopathologic examination showed ypT0ypN0 and ypT2ypT1 stage, respectively.

The patients were stable postoperatively, but noticed stool discharge from the vagina and pelvic abscesses with sepsis (drained transvaginally) on the 7<sup>th</sup> and 14<sup>th</sup> postoperative days, respectively. Per rectal examination revealed a pouch-vaginal fistula of 1 cm in diameter, 5 cm from the anal verge. After six months, a simple closure of pouch-vaginal fistula was performed, separately suturing the defect in the pouch and the vagina sides in the first patient. The patient made an uneventful recovery, but one month later a recurrent pouch-vaginal fistula was detected. The second patient, after successful abscess drainage, was lost in follow-up for two years.

The graciloplasty was performed after six months and two years, respectively. For graciloplasty, 3 to 5 cm-long incisions were made alongside the inner part of the right thigh. The gracilis muscle tendon was disconnected from the tibial plateau, and then dissected free, creating a tunnel between the incisions, and delivered through the proximal incision. The patient was then turned to the prone jack-knife position. A horizontal incision was made between the anus and vagina and was deepened in the space between the vagina and the rectum. The dissection was undertaken to divide the fistula tract and reach cephalad to noninflamed tissue. The rectal and vaginal defect was closed primarily with interrupted absorbable sutures. The subcutaneous tunnel between the perineum and thigh was approached through the perineal side, and the gracilis muscle was rotated and placed in the space between the rectum and the vagina (Figure 1). Four to six polypropylene sutures were applied at the apex of the incision to hold the muscle in place. Before skin closure, a small suction drain was placed in the perineal wound.

Both patients had uneventful postoperative recovery and were

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Accepted for publication: 16 May 2012



**Figure 1.** Showing mobilized gracilis muscle through the superior thigh incision, the perineal skin incision, and tunneling of the gracilis muscle from the thigh to the perineum.

discharged on the 7<sup>th</sup> postoperative day. Approximately three months postoperatively, proctoscopy and rectal contrast enema revealed complete healing of the fistula without a recurrence. The diverting loop ileostomy was closed three months later, and both patients are well (six and five years, respectively) on regular follow-up.

## Discussion

Iatrogenic RVF is a rare, debilitating complication following the treatment of rectal cancer. These fistulas do not have propensity to heal spontaneously, and are challenging to repair.

There are two principal aims in the treatment of RVF. First is to close the rectal defect with or without advancement flap. In RVF, the rectal side is with the high pressure of the fistula, thus the rectal side repair must be imperious.<sup>9</sup> The rectal lumen can be approached via the anorectal lumen or through the posterior wall of the rectum (either transsphincteric plane or transsacral incision).<sup>1</sup>

The second aim is to interpose a viable tissue between the rectum and the vagina. After dividing and repairing the fistula, a viable tissue flap is then interposed to separate the rectum from the vagina.

The gracilis flap has been used widely for reconstruction of RVF, recto-urethral, and other perineal skin defects complicated by a variety of surgical procedures. The gracilis muscle provides a well vascularized rotational flap, without any significant complication, without any effect on the strength and range of motion of the lower limb. While rotating the muscle to the perineum, care must be taken to avoid any tension on the neurovascular bundle. The gracilis muscle length required to fill the dissected rectovaginal space must be adequate.

Rius et al. had success rate of 60% with graciloplasty in treating complicated and unhealed perianal wound in patients with Crohn's disease.<sup>11</sup> Zmora et al. performed gracilis muscle transposition in 11 patients having rectourethral fistula after surgery or pelvic radiotherapy for prostatic cancer with a success rate of 82%.<sup>2</sup> These authors also performed gracilis muscle transposition in nine heterogeneous patient's population with diverse etiologies of fistulas, reported success rate of 78%. MacRae et al. performed a successful gracilis muscle transposition in complex RVFs in two patients, who failed an advancement flap.<sup>12</sup> Gorenstein et al. achieved excellent results with gracilis muscle interposition flaps in two patients with RVFs.<sup>13</sup>

In patients with vesicoperineal fistulas, after removal of the rectum and iatrogenic prostate-rectal fistulas, gracilis muscle transposition is a very good option.

In our study, using the gracilis muscle transposition method to repair a fistula between colonic pouch and vagina achieved 100% success rate in two patients, which is consistent with other studies.

The protective stoma for the repair until fistula is healed is debatable. In our study, protective stoma was used as these patients have limited number of attempts to a successful repair, and thus must have the best possible conditions in the first repair.

There are concerns regarding postoperative dyspareunia following gracilis muscle transposition which is affecting quality of life substantially. This was not found in our patients. More studies are needed to find out the true incidence of dyspareunia postoperatively using gracilis muscle transposition.

Endoscopic approach for gracilis muscle harvesting is described, which may reduce the invasiveness and numbness in the upper medial thigh.<sup>10</sup> Although we harvest the muscle using three vertical incisions of approximately 5 cm each.

This case report has been presented due to the rarity of this complication. We believe that appropriate surgical management needed for reducing morbidity and recurrence. The principle of early referral and repair of RVF is the key for preventing the recurrence as well as the associated morbidity and mortality.

Graciloplasty for RVF repair is a good option which is safe in patients with RVF post-neoadjuvant therapy and TME for the treatment of rectal cancer.

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