

ISSN 1392-0995, ISSN 1648-9942 (online)

<http://www.chirurgija.lt>

LIETUVOS CHIRURGIJA

*Lithuanian Surgery*

2014, 13 (2), p. 123–126

# Graciloplasty of the rectovaginal fistula after chemoradiation followed by total mesorectal excision for rectal cancer: a single centre experience

Rektovaginalinės fistulės plastika *m. gracilis* po chemospindulinio gydymo ir totalios mezorektinės ekscizijos dėl tiesiosios žarnos vėžio

Paulius Misenko<sup>1</sup>, Narimantas Evaldas Samalavičius<sup>1,2</sup>, Edgaras Smolskas<sup>3</sup>

<sup>1</sup> Clinic of Oncosurgery, Oncology Institute of Vilnius University, Santariškių Str. 1, LT-08660 Vilnius, Lithuania

<sup>2</sup> Center of Oncosurgery Clinic, Oncology Institute of Vilnius University, Clinic of Internal Medicine, Family Medicine and Oncology, Medical Faculty of Vilnius University

<sup>3</sup> Vilnius university, Faculty of Medicine, M. K. Čiurlionio Str. 21, LT-03101 Vilnius, Lithuania  
E-mail: [garpass@hotmail.com](mailto:garpass@hotmail.com)

<sup>1</sup> Vilniaus universiteto Onkologijos instituto Onkochirurgijos centras, Santariškių g. 1, LT-08660 Vilnius

<sup>2</sup> Vilniaus universiteto Medicinos fakulteto Vidaus ligų, šeimos medicinos ir onkologijos klinika

<sup>3</sup> Vilniaus universiteto Medicinos fakultetas, M. K. Čiurlionio g. 21, LT-03101 Vilnius  
El. paštas: [garpass@hotmail.com](mailto:garpass@hotmail.com)

---

## Background / objective

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 in patients after radiation therapy and having an underlying sepsis. This complication was managed by gracilis muscle transposition.

## Methods

A retrospectively maintained database was used to identify patients who underwent gracilis muscle transposition for rectovaginal fistula at the Institute of Oncology, Vilnius University from November 2005 to November 2013.

## Results

Five gracilis muscle transposition were performed. Patients mean age was 57.2±17 years. All patients were female. They received neoadjuvant chemoradiation with a total dose of 50 Gy and two cycles of 5-FU + leucovorin and TME with a colonic J-pouch anal stapled anastomosis, and preventive loop ileostomy. All of them developed RVF during three weeks postoperatively. Graciloplasty was performed using the gracilis muscle from the right thigh. The median length of hospital stay was 10 days (9–13). Success was defined as a healed fistula after ileostomy closure, and/or was confirmed by proctoscopy, proctography, negative air–water and methylene blue tests prior to that. In our center, the success rate is 60 percent.

## Conclusions

Our data confirm that the strategy of gracilis muscle transposition is a useful option for RVF management in such patients as the number of other successful modalities are limited.

**Key words:** chemoradiation, graciloplasty, rectal cancer, rectovaginal fistula, total mesorectal excision

### **Įvadas / tikslas**

Rektovaginalinė fistulė (RVF) yra viena iš sunkiausiai gydomų komplikacijų po chemospindulinio gydymo ir totalios mezorektinės ekscizijos (TME) dėl tiesiosios žarnos vėžio. Manoma, kad šios komplikacijos tikimybė didesnė tiems ligoniams, kuriems buvo taikyta spindulinė terapija ir pooperaciniu laikotarpiu buvo išsivystęs sepsis. Ši komplikacija buvo gydoma atliekant *musculus gracilis* transpoziciją.

### **Ligoniai ir metodai**

Retrospektyviai buvo išanalizuoti 5 pacientai, kuriems nuo 2005 m. lapkričio 1 d. iki 2013 m. lapkričio 30 d. Vilniaus universiteto Onkologijos institute atliktos *m. gracilis* transpozicijos dėl rektovaginalinės fistulės.

### **Rezultatai**

Buvo atliktos penkios *m. gracilis* transpozicijos. Ligonų amžius – 57,2±17 metų. Ligonėms RVF išsivystė po taikyto chemospindulinio gydymo (50 Gy ir dviejų ciklų 5-FU + leukovorinas) ir TME, po kurios suformuota prevencinė ileostoma dėl tiesiosios žarnos vėžio. Rektovaginalinė fistulė susiformavo per tris savaites po operacijos. Graciloplastikoms naudotas dešinės šlaunies *m. gracilis*. Sėkmingu gydymu laikyta užgijusi fistulė po ileostomos likvidavimo ir (arba) patvirtintas jos užgijimas proktoskopija, proktograma, oro–vandens ir metileno mėlio mėginiais. Mūsų centre operacijos sėkmė buvo 60 procentų.

### **Išvados**

Mūsų duomenys patvirtina, kad graciloplastika yra naudinga rektovaginalinių fistulių gydymo metodika, juolab kad sėkmingų būdų šiai patologijai gydyti nėra daug.

**Reikšminiai žodžiai:** chemospindulinis gydymas, graciloplastika, tiesiosios žarnos vėžys, rektovaginalinė fistulė, totali mezorektinė ekscizija

## **Introduction**

The etiologies of rectovaginal fistula (RVF) are various. These are mostly acquired (congenital cases are rare) due to infection, inflammation, malignancy, trauma, or iatrogenically [1, 2]. Iatrogenic recto-vaginal or recto-urethral fistulas occur after pelvic

surgery and radiotherapy for the treatment of rectal and prostatic malignancy [3, 4]. In these patients, fistula occurs after external beam radiation, brachytherapy, or combination of both, and following a low anterior resection or radical prostatectomy [3, 5]. Various surgical methods to repair these fistulas have been reported, but there are no clear guidelines regarding the management of these fistulas [6]. Local repair in an irradiated, traumatized, and infected tissue is usually difficult and unsuccessful. The clogging of a healthy tissue with an independent blood supply is indispensable in those patients [7].

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 [8].

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

## **Patients and methods**

We report five female patients, aged between 30 and 82 years (mean, 57.2), who were treated for rectovaginal fistula at the Institute of Oncology, Vilnius University from November 2005 to November 2013 with the diagnosis of rectal cancer. All had the preoperative clinical diagnosis of stage III rectal cancer. Histopathology – moderately differentiated adenocarcinoma. No distant metastases were detected prior to initial treatment.

Before surgery, all patients had received neoadjuvant chemoradiation with a total dose of 50 Gy and two cycles of 5-FU + leucovorin. After 6 to 8 weeks, TME with colonic J-pouch anal stapled anastomosis and preventive loop ileostomy was performed. All developed RVF during three weeks postoperatively, and four of them developed RVF during the first 10 postoperative days. In one case, the postoperative course was uneventful, and the patient underwent early ileostomy closure (day 9) and was successfully discharged. She noted gas

and fecal material exiting through the vagina on day 21, and the ileostomy was redone.

Graciloplasty was performed after four months to two years after fistula development. On hospitalization, the patients complained of discharge from the vagina. Prior the operation, a rectal examination was performed. Proctoscopy revealed a J-pouch-vaginal fistulas of different diameter in the anterior wall, on the average 4–5 cm from the anal verge.

To harvest the gracilic muscle, a total of three, on the average 5 cm long, incisions were made alongside the inner part of the right thigh. The gracilis muscle tendon was disconnected from the tibial plateau, 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 the vagina and was deepened in the space between the vagina and the rectum. The dissection was undertaken to divide the fistula tract and to reach cephalad a noninflamed tissue. The rectal and vaginal defects were closed primarily with interrupted absorbable sutures. The subcutaneous tunnel between the perineum and the thigh was approached through the perineal side, and the gracilis muscle was rotated and placed in the space between the rectum and the vagina. Four to six 3.0 vicryl sutures were applied at the apex of the incision to hold the muscle in place. Before skin closure, a small suction drain had been placed in the perineal wound for all patients.

## Results

All patients had an uneventful postoperative recovery and were discharged on the 9th–13th postoperative day. Approximately three months postoperatively, a water air test and methylene blue tests were performed. In addition, proctoscopy and rectal contrast enema revealed a complete healing of the fistula without a recurrence for three patients. The success rate was 60 percent (3 out of 5). The diverting loop ileostomy was closed in two patients. One patient refused ileostomy closure, on the grounds of being afraid of additional surgery and the general satisfaction with a stoma as permanent (the latter patient was 82 years old). Unfortunately, in two cases rectovaginal fistula recurred.

## Discussion

Iatrogenic RVF is a rare, debilitating complication following the treatment of rectal cancer. These fistulas have no propensity to heal spontaneously and are challenging to repair.

There are two principal aims in the treatment of RVF. The first is to close the rectal defect with or without an advancement flap. In RVF, the rectal side feels the high pressure of the fistula, thus the rectal side repair must be imperious [9]. The rectal lumen can be approached via the anorectal lumen or through the posterior wall of the rectum (either the transsphincteric plane or a trans-sacral incision) [1].

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 widely used for the 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 the 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 a success rate of 60% with graciloplasty in treating complicated and unhealed perianal wounds in patients with Crohn's disease [11]. 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% [2]. These authors also performed gracilis muscle transposition in nine heterogeneous patients population with diverse etiologies of fistulas and reported the success rate of 78%. MacRae et al. performed a successful gracilis muscle transposition in complex RVFs in two patients who failed an advancement flap [12]. Gorenstein et al. achieved excellent results with gracilis muscle interposition flaps in two patients with RVFs [13].

In patients with vesicoperineal fistulas, upon removing 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 the colonic pouch and the vagina showed a 60% success rate in five patients, which is consistent with other studies.

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

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

## REFERENCES

1. Boushey RP, McLeod RS, Cohen Z. Surgical management of acquired rectourethral fistula, emphasizing the posterior approach. *Can J Surg* 1998; 41(3): 241–244.
2. Zmora O, Tulchinsky H, Gur E, Goldman G, Klausner JM, Rabau M. Gracilis muscle transposition for fistulas between the rectum and urethra or vagina. *Dis Colon Rectum* 2006; 49(9): 1316–1321.
3. Rex JC Jr, Khubchandani IT. Rectovaginal fistula: complication of low anterior resection. *Dis Colon Rectum* 1992; 35(4): 354–356.
4. Fengler SA, Abcarian H. The York Mason approach to repair of iatrogenic rectourinary fistulae. *Am J Surg* 1997; 173(3): 213–217.
5. Harpster LE, Rommel FM, Sieber PR, Breslin JA, Augusta VE, Huffnagle HW, et al. The incidence and management of rectal injury associated with radical prostatectomy in a community-based urology practice. *J Urol* 1995; 154(4): 1435–1438.
6. Oomen JW, Spauwen PH, Bleichrodt RP, van Goor H. Guideline proposal to reconstructive surgery for complex perineal sinus or rectal fistula. *Int J Colorectal Dis* 2007; 22(2): 225–230.
7. Zacharin RF. Grafting as a principle in the surgical management of vesicovaginal and rectovaginal fistulae. *Aust N Z J Obstet Gynaecol* 1980; 20(1): 10–17.
8. Rist M, Krupp S, Rutishauser G. Gracilis flap plasty in the treatment of chronic pelvic infections following radiation therapy and cystoprostatectomy. *Urologe A* 1983; 22(2): 95–97.
9. Lee PY, Fazio VW, Church JM, Hull TL, Eu KW, Lavery IC. Vaginal fistula following restorative proctocolectomy. *Dis Colon Rectum* 1997; 40(7): 752–759.
10. Hallock GG. Minimally invasive harvest of the gracilis muscle. *Plast Reconstr Surg* 1999; 104: 801–805.
11. Rius J, Nessim A, Nogueras JJ, Wexner SD. Gracilis transposition in complicated perianal fistula and unhealed perineal wounds in Crohn's disease. *Eur J Surg* 2000; 166(3): 218–222.
12. MacRae HM, McLeod RS, Cohen Z, Stern H, Reznick R. Treatment of rectovaginal fistulas that has failed previous repair attempts. *Dis Colon Rectum* 1995; 38(9): 921–925.
13. Gorenstein L, Boyd JB, Ross TM. Gracilis muscle repair of rectovaginal fistula after restorative proctocolectomy. Report of two cases. *Dis Colon Rectum* 1988; 31(9): 730–734.