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ARAŞTIRMA YAZISI / ORIGINAL ARTICLE

Martius Flap for Rectovaginal Fistula Repair: Operative Technique and Postoperative Outcomes

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ABSTRACT

Purpose: The most common reason for rectovaginal fistula (RVF) is obstetric trauma and the other most common cause is Crohn's disease (CD). Various surgical options, including sphincteroplasty, gracilis flaps, Martius flaps, fecal diversion and advancement flaps are discussed. The aim of this study is to present the techniques of Martius flap and present patients' long-term surgical outcomes, quality of life and sexual activity.

Methods: A total of six patients with RVF who underwent Martius flap procedure were included in this study. Patient demographics, perioperative outcomes, short and long-term results including quality of life (QOL), sexual function and complications were evaluated.

Results: Between April 2014 and August 2014 six female patients with RVF underwent Martius flap procedure. Mean age and body mass index were 47±14.17 (range, 33-68) and 25 (range, 20-36), respectively. The indications for operation were Crohn's disease (n=3), obstetrical trauma (n=1) and postsurgical complications including stapler misfire (n=1) and rectocele repair (n=1). The mean follow up was 32± 1.47 (range, 3-34) months. Cosmetic outcomes were good for all patients. As the result of the Female Sexual Function Index (FSFI), 66% (n=4) of patients have an active sexual life. QOL is well for all patients. The CGQL score was 0.8. Five patients are followed without recurrence but a patient with CD has recurrence at 18 mo. of operation.

Conclusion: Considering the aforementioned advantages, the Martius flap is a feasible technique for RVF repair when performed selectively by experienced hands.

Keywords: Martius, advancement, flap, rectovaginal, fistula

REKTOVAJİNAL FİSTÜL ONARIMI İÇİN MARTİUS FLEBİ: OPERATİF TEKNİK VE POSTOPERATİF SONUÇLAR

Amaç: Rektovajinal fistülün (RVF) en sık nedeni obstetrik travmadır, diğer en sık görülen neden ise Crohn hastalığıdır (CH). Bu konuda sfinkteroplasti, gracilis flepleri, Martius flepleri, fekal diversiyon ve ilerletme flepleri gibi çeşitli cerrahi seçenekler tartışılmaktadır. Bu çalışmanın amacı, Martius flep teknikğini ve mevcut hastaların uzun dönem cerrahi sonuçlarının, yaşam kalitesinin ve cinsel aktivite sonuçlarının sunulmasıdır.

Yöntemler: Martius flep prosedürü uygulanan RVF'li altı hasta bu çalışmaya dahil edildi. Hasta demografisi, perioperatif sonuçlar, yaşam kalitesi (QoL), cinsel fonksiyon ve komplikasyonları içeren kısa ve uzun dönem sonuçları değerlendirildi.

Bulgular: Nisan 2014 ve Ağustos 2014 arasında RVF'li altı kadın hastaya Martius flep prosedürü uygulandı. Ortalama yaş ve vücut kitle indeksi sırasıyla 47 ± 14.17 (dağılım, 33-68) ve 25 (dağılım 20-36) idi. Operasyon endikasyonları Crohn hastalığı (n = 3), obstetrik travma (n = 1), stapler yalnış tetiklenmesi (n = 1) ve rektosel onarımı (n = 1) içeren cerrahi sonrası komplikasyon idi. Ortalama takip süresi 32 ± 1.47 (3-34 ay) idi. Kozmetik sonuçlar tüm hastalar için iyi idi. Kadın cinsel işlev indeksi (FSFI) sonucunda hastaların% 66'sı (n = 4) aktif cinsel yaşantıya sahipti. QoL tüm hastalar için iyi idi. CGoL skoru 0.8 idi. Beş hasta nüks olmadan takip edilirken, CH'li bir hastada 18 ay sonra nüks saptandı.

Sonuç: Yukarıda belirtilen avantajlar göz önüne alındığında, Martius flebi deneyimli ellerde uygulandığında RVF onarımı için uygun bir teknik olarak görülmektedir.

Anahtar sözcükleri: Martisu, ilerletme, flep, rektovajinal, fistül

Obstetric trauma, Crohn's disease, pelvic radiation and surgical complications (stapler misfire, rectocele repair, etc.) are the common causes of rectovaginal fistula (RVF) (1-4). RVF is associated with poor quality of life (QOL) by causing further complications including pelvic infections and fecal incontinence (5). Among the perineal techniques, sphincteroplasty with flap procedures such as gracilis muscle flap, labial adipofascial turnover flap (Martius flap) and advancement flaps can be preferred based on the type and severity of the defect. Although simple RVF is repaired successfully with advancement flap techniques (6,7), these techniques are not successful and have poor functional outcomes when applied to complex RVF (8,9). While the Martius flap is used for the treatment of vesico-urethral and vesico-vaginal fistulas, it has been preferred for complex RVF repairs in selected cases (10).

Outcomes of RVF repairs with the Martius flap have been reported in several case series. In this study, we aimed to present our operative experience and postoperative outcomes on Martius flap repair for RVF in a case series.

Materials and methods

this study was performed after the approval (approval code number: 2017-8/3) was obtained from the Institutional Ethics Committee. Written informed consent was obtained from all patients.

Between April 2014 and August 2014, patients underwent RVF repair with the Martius Flap were included in the study. The medical records of all patients were reviewed retrospectively. All data were obtained from the patients' files. Patient demographics, perioperative outcomes, short and long-term results including QOL, sexual function and complications were evaluated.

Cleveland Global Quality of Life (CGQL) score was used for quality of life assessment. This scale includes three parameters: current QOL, current health, and current level of energy. Each parameter is scored between 0 to 10 (0, worst; 10, best). The final score is calculated by dividing the resulting number by 30 (range, 0 to 1; 0, worst; 1, best) (11).

Female Sexual Function Index (FSFI) was used for sexual function assessment. The questionnaire about FSFI includes 19 items; it evaluates sexuality including desire, arousal, lubrication, orgasm, satisfaction, and pain. FSFI score of less than 26.55 has been defined as sexual dysfunction and higher than this score defined as a higher sexual function (12).

Patients were contacted by telephone and questions about the QOL questionnaire and the Female Sexual Function Index (FSFI) were queried.

Surgical technique

after endotracheal intubation, lithotomy position was given to all patients. The urethral catheter was introduced to all patients. Thefirst horizontal incision was made over the perineal body (Figure 1-a). Then rectovaginal septum was explored and the fistula tract exposed. Fistula tract was excised and the internal orifice of the fistula tract in rectum and vagina was closed with 3/0 absorbable suture materials.

After having done this, a lazy-S incision was made on one of the labia majora to prepare a bulbocavernosus fat pad (Figure 1-b) as a pedicled flap. The skin and superficial fascia were raised bilaterally and the labial fat pad was exposed. The blood supply for the flap pedicle is from an external branch of the external pudendal artery. The fat pad was dissected from anterior to posterior via sharp dissection leaving bulbocavernosus muscle fascia. Multiple small veins and one or two musculocutaneous perforators were ligated and divided. With this dissection, one can raise a 7-9 cm long and 3-4 cm wide adipofascial flap with a wide arc of rotation. After mobilization of the

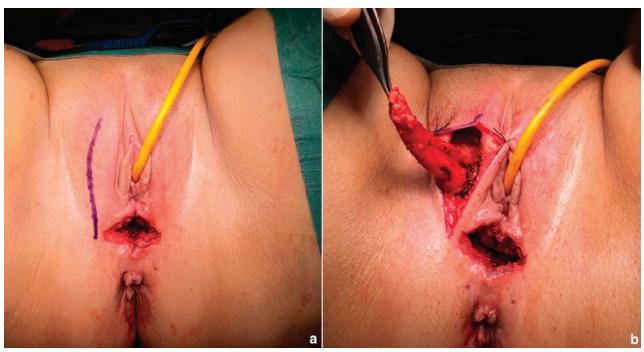

Figure 1. **A-** Horizontal incision over the perineal body, **B-** Mobilized fat pad

fat pad, subcutaneous tunnel (Figure 2-a) was prepared. Mobilized Martius flap was transposed through this subcutaneous tunnel into the rectovaginal septum (Figure 2-b) thus healthy tissue separate rectum and vagina. The flap was secured in place with 3/0 absorbable sutures. Both incisions were closed with absorbable sutures. One or two minivac drains were put into the flap donor area and rectovaginal septum (Figure 3-a). Figure 3-b shows the long-term appearance of one of the patients.

Postoperatively, intravenous antibiotics were given to the patients. Soft diet started on the operative day. The

patients were mobilized on the first day of operation. Drains were removed within 24-48 h postoperatively. Patients were discharged on postoperative day two.

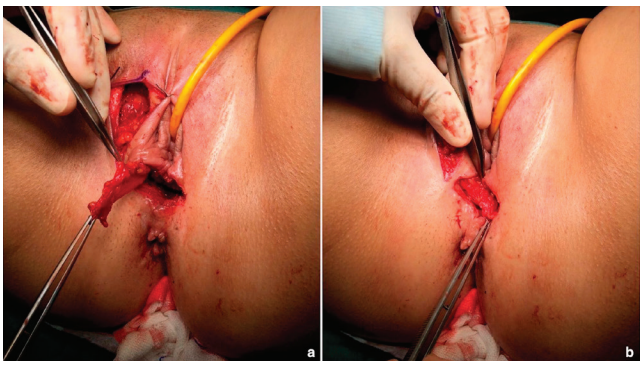

Figure 2. A- Preparation of subcutaneous tunnel, B- Transposition of fat pad trough subcutaneous tunnel

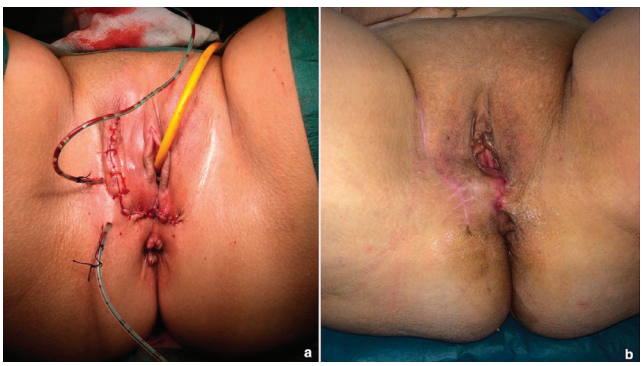

Figure 3. A- Placement of drain, B- Three months after operation

Results

There were six female patients with a mean age and a mean body mass index of 47±14.17 years and 25 (range, 20-36) kg/m^2, respectively. Indications for operation were Crohn's disease (n=3), obstetrical trauma (n=1) and post-surgical complications including a stapler misfire (n=1) and rectocele repair (n=1).

Patients with Crohn's disease (CD) had a history of multiple loose seton interventions and all patients underwent medical treatment (infliximab, prednisone, adalimumab, mesalamine and azathioprine) for CD. None of the patients with CD had active disease at the time of surgery. None of the patients had other co-morbid factors. While five patients had a diverting stoma prior to surgery, no fecal diversion was performed for one patient. Anal sphincter damage was identified in one patient. An overlapping sphincteroplasty was performed in one patient in addition to the Martius flap repair. None of the patients experienced any morbidity during the hospital stay. The mean follow up was 32±1.47 (range, 3-34) months. As the result of FSFI, 66% (n=4) of patients had an active sexual life. QOL was good for all patients. The CGQL score was 0.8. Five patients were followed up without recurrence but a patient with CD had a recurrence at 18 mo. of operation. Through the follow-up period, no recurrence was seen after the reversal of the diverting ostomy of four patients; however, a patient with CD still has defunctioning ileostomy because of complex perianal fistula and recurred RVF.

Discussion

Our results reveal that the use of the Martius flap for RVF repair is a valuable alternative treatment providing good QOL and results. The overall success rate was 84% (n=5). In a report, RVF was repaired with gracilis muscle flap transposition and the total success rate was 72.7% within 46.36 months of mean follow up period (13). Lowry et al. reported an overall success rate of 88% with Martius flap repair in RVF. However, in this study, only simple fistulas were included in the study (14). In a review article, it has been reported that the success rate of Martius flap varied between 60% and 100% (15). In addition to operative experience, patient selection seems like/to be an important factor for a successful treatment.

In Mayo Clinic series, it was reported that 54% of their patients' RVF were due to inflammatory bowel disease whereas 11% were secondary to other reasons (16). Similarly, in our series, 50% (n=3) of patients' RVF were secondary to CD. This may be due to the fact that our institution is one of the highest volume colorectal and inflammatory bowel disease surgery units.

RVF repair in CD is difficult because of the poor wound healing[9]. Despite improvements in medical treatment, spontaneous healing with conservative management cannot be expected in these patients so surgical repair is recommended. However, the success rate is controversial. Pitel et al. reported that the success rate of Martius flap in CD was 50% (17). In our patients, the success rate was 66.6% (n=2). Sogen et al. reported a 70% cure rate with Martius flap in RVF with CD (18). In CD, recurrence rate of RVF repair is generally related to disease activity (19). In our study, two out of three patients with CD had active disease after the Martius flap procedure and in one of these patients RVF recurred.

The role of diverting stoma is controversial. Some authors recommend diverting stoma in inflammatory bowel disease, fistulas secondary to radiotherapy, recurrent RVFs,

and high complex fistulas (20). However, some authors argue against the role of the stoma (21,22). In our opinion, fecal diversion may relieve symptoms and can be helpful in facilitating the healing process. In our series, there were prior diverting stomas in five patients at the time of the Martius flap procedure. After the RVF repair, we performed stoma closure on four patients. One patient is being followed up with stoma because of recurrent perineal fistula. In a study, it is reported that 80% of success rate in the presence of diversion stoma for the repair of RVF in CD (23), but nowadays it is generally reserved for patients with severe symptoms or in refractory cases. Patients undergoing RVF repair should be informed about risk factors associated with recurrence and the requirement of fecal diversion during treatment.

RVF may have psychosocial and sexual effects that might affect the (QOL). Leroy et al. reported that surgical management of RVF might improve the QOL and emotional status of the patients (5) but in other studies, it is revealed that despite surgical outcomes, QOL and sexual function were similar between the pre and postoperative periods (24). In our study, all patients answered the questionnaire of the QOL and FSFI. In the postoperative period, patients pointed out that after the operation, QOL of the patients improved and they were still sexually active. Cosmetic outcomes were good for all patients. Our results were in line with the literature and confirmed that this operation had no negative effect on QOL and sexual function.

Increased age, local sepsis, smoking, obesity, repeat surgery, radiotherapy and CD are the factors associated with poor outcomes after RVF repair (25-27). In our study, patients had no history of radiotherapy, smoking and local sepsis after Martius flap surgery and they all had normal BMI. There was one unsuccessful case that had CD. The overall recurrence rate of fistula within 32 months follow up period was 16% and is comparable (in comparison with) with other studies (22).

Martius flap is an adipofascial pedicled flap. Adipose tissue has diverse regenerative capabilities due to its robust mesenchymal cell content. The labial fat pad is rich with a stromal fraction of adipose tissue harboring mesenchymal cells and this makes it an even more capacitive tissue. Adipose-derived mesenchymal cells have been shown to have anti-inflammatory, proangiogenic, pain-relieving and antifibrotic properties (28,29). These effects are exactly the ones necessary for healing a wound caused by chronic inflammation.

The limitations of this study are being retrospective and having a relatively small sample size.

Considering the aforementioned advantages, the Martius flap is a feasible technique for RVF repair when performed selectively by experienced hands. In our opinion, diverting ostomy prior to Martius flap procedures can be helpful for perianal sepsis and can be helpful in facilitating the healing process.

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