



Outcomes of Advancement Flaps Used in the Treatment of Anal Stenosis Developing After Hemorrhoid Surgery: One Center Experience

Hemoroid Cerrahisi Sonrası Gelişen Anal Stenoz Tedavisinde Uygulanan İlerletme Flepleri ve Tedavi Sonuçlarımız

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ABSTRACT

Aim: Anal stenosis develops due to anoderm scarring caused by any pathologic condition but usually secondary to surgical trauma. It is a preventable problem with negative social and medical implications for patients. In our study we intend to share our results with the use of advancement flaps in the treatment of anal stenosis.

Method: The demographic and clinical characteristics of 10 patients who underwent surgery for anal stenosis due to hemorrhoidectomy between 2012 and 2018 were retrospectively reviewed.

Results: Nine (90%) of the patients were male and 1 (10%) was female. Mean age of the patients was 54 (27-81) years. A total of 11 procedures were performed on 10 patients. Hemorrhoidectomy was the common etiology for all patients. Most common presenting complaints were painful defecation and difficulty passing stool in 5 patients (50%) each. In this study, 4 (40%) patients had V-Y, 3 (30%) had house, 2 (20%) had diamond, and 1 (10%) had dufourmental advancement flap. Mean length of hospital stay was 2 (1-3) days. One patient developed surgical site infection that was successfully managed medically. Mean follow-up period was 39 (6-72) months. One patient had a subsequent contralateral diamond flap advancement because of persistent complaints and recurrence. No other recurrence was observed during follow-up.

Conclusion: The best remedy for anal stenosis is prevention. Therefore, during common surgical procedures like hemorrhoidectomy, one must refrain from interventions that will result in anal stenosis. However, advancement flaps used in the treatment of moderate to severe anal stenosis are effective and offer commendable results.

Keywords: Anal stenosis, hemorrhoidectomy, advancement flap

ÖZ

Amaç: Anal stenoz anodermde skar oluşumuna neden olan tüm patolojiler sonrasında ortaya çıkabilen ancak sıklıkla cerrahi travmalara bağlı olarak görülen bir durumdur. Hasta açısından ciddi sosyal ve medikal sorunlara yol açan ancak önlenebilir bir durum olması nedeni ile özel öneme sahip bir sorundur. Çalışmamızda anal stenoz nedeni ile ilerletme flepleriyle ameliyat ettiğimiz hastaların sonuçlarını sunmayı amaçladık.

Yöntem: Kliniğimizde 2012-2018 yılları arasında hemoroidektomiye bağlı oluşan anal stenoz nedeni ile ameliyat edilen 10 hastanın demografik ve klinik özellikleri geriye dönük (retrospektif) olarak incelendi.

Bulgular: Hastaların 9'u (%90) erkek, 1'i (%10) kadındı. Ortalama yaş 54 (27-81) idi. Toplam 10 hastaya 11 ameliyat uygulandı. Tüm hastaların etiolojisinde hemoroidektomi vardı. En sık başvuru şikayetleri 5 (%50) hastada dışkılama sırasında ağrı, 5 (%50) hastada ise dışkılamada güçlük idi. İlerletme flebi olarak hastaların 4'üne (%40) V-Y, 3'üne (%30) house, 2'sine (%20) diamond, 1'ine (%10) dufourmental flepleri ile cerrahi tedavi uygulandı. Hastanede kalış süresi 2 (1-3) gün idi. Bir hastada yara yeri enfeksiyonu görüldü ve medikal tedavi uygulandı. Takip süresi 39 (6-72) ay idi. Bir hastada şikayetlerin devam etmesi ve nüks nedeni ile diğer taraftan ikinci kez diamond ilerletme flebi uygulandı. Takiplerinde nüks izlenmedi.

Sonuç: Anal stenozun en iyi tedavisi bu komplikasyonun ortaya çıkışının önlenmesidir. Bu nedenle hemoroidektomi gibi sık uygulanan cerrahi işlemlerde anal stenozu ortaya çıkarabilecek cerrahi girişimlerden kaçınılmalıdır. Orta ve şiddetli anal stenozun tedavisinde uygulanan ilerletme flepleri ile etkin ve iyileştirici sonuçlar alınmaktadır.

Anahtar Kelimeler: Anal stenoz, hemoroidektomi, ilerletme flebi



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Introduction

Anal stenosis is a clinical condition with unique importance because, although it causes serious social and medical problems, it is preventable.¹ This uncommon disease is characterized by narrowing of the anal canal due to varying degrees of transformation of the epithelial lining into fibrous connective tissue. Anal stenosis can occur after any pathology that causes scar formation in the anoderm,^{2,3} but is most frequently associated with surgical trauma. The main causes of anal stenosis include history of perianal surgery, radiotherapy, sexually transmitted diseases, trauma due to various causes, inflammatory bowel disease, chronic laxative use, and tuberculosis. It has been shown that approximately 90% of anal stenosis develops after hemorrhoidectomy,⁴ and it occurs after 1.5-3.8% of all hemorrhoidectomies.^{5,6,7,8} Clinical symptoms typically include constant urge to defecate, straining during bowel movements, incomplete defecation, constipation, or bleeding.^{9,10} Medical and surgical treatment should be planned according to the degree of stricture. Surgical treatment is preferred for patients with moderate to severe anal stenosis for which conservative treatment is inadequate. In this study, we aimed to present the outcomes of patients who developed anal stenosis after hemorrhoidectomy and underwent surgery using advancement flaps.

Materials and Methods

The records of 10 patients who underwent surgical treatment due to anorectal diseases and developed anal stenosis between 2012 and 2018 were retrospectively reviewed. All patients included in our study had undergone hemorrhoidectomy surgeries at different centers and been referred to our hospital. All patients had undergone hemorrhoidectomy with the Milligan-Morgan method prior to stenosis surgery. This study was approved by the Başkent University Medical and Health Sciences Research Council (project no: KA 18/102) and was supported by the Başkent University Research Fund. Patients were evaluated in terms of age, sex, history of previous perianal surgery, presenting complaints, physical examination findings, type of advancement flap applied, length of hospital stay, complications, follow-up physical examination findings, length of follow-up period, and recurrence. Cases of anal stenosis due to non-surgical causes and patients with mild stenosis who had conservative treatment and were treated with anal dilation were excluded from the study. Caliber of the anal canal was evaluated by digital examination before and during surgery. Broad-based or narrow-angle flaps were preferred depending on the severity of stenosis. The patients were hospitalized the day before surgery and were fasted

after midnight. Preoperatively, patients underwent bowel cleansing (2 doses of 45 cc sodium phosphate and a single dose of fleet enema), deep vein thrombosis prophylaxis (compression socks, low molecular weight heparin), and antibiotic prophylaxis (intravenous ciprofloxacin 500 mg and metronidazole 500 mg 30 minutes before induction). The surgical procedure was performed under general anesthesia with patients in the jackknife position. Because our study was retrospective, no preliminary statistical evaluation was done.

Results

Nine (90%) of the patients were male and 1 (10%) was female. The mean age was 54 (27-81) years. A total of 10 patients underwent 11 operations. Etiology was hemorrhoidectomy in all cases. The most common complaints were painful defecation in 5 (50%) patients and straining to defecate in 5 (50%) patients. The procedure was conducted using a V-Y flap in 4 (40%) patients, house flap in 3 (30%) patients, diamond flap in 2 (20%) patients, and dufourmentel flap in 1 (10%) patient. The mean length of hospital stay was 2 (1-3) days. One patient had a surgical site infection which was managed medically. The mean follow-up period was 39 (6-72) months. In 1 patient, a second diamond advancement flap was taken from the other side due to continuing complaints and recurrence. No further recurrence was observed in follow-up. Data regarding anal continence from long-term postoperative follow-up were not available. The clinical and demographic characteristics of the patients are summarized in Table 1.

Table 1. Demographic and clinical characteristics of the patients

Gender	9 male/1 female
Mean age (years)	54 (27-81)
Most common presenting complaints	Painful defecation: 5 patients (50%) Difficulty defecating: 5 patients (50%)
Advancement flap (number of patients)	V-Y: 4 (40%) House: 3 (30%) Diamond: 2 (20%) Dufourmentel: 1 (10%)
Length of hospital stay (days)	2 (1-3)
Complications	1 surgical site infection
Recurrence	1 (second dufourmentel flap was made on opposite side)
Follow-up period (months)	39 (6-72)

Discussion

Anal stenosis is one of the most feared complications that can occur after surgical treatment of various common anorectal diseases. It is difficult to treat and leads to serious medical problems in the patient. Symptoms vary and are specific to the individual. While some patients are able to cope quite well despite anal stricture, others complain of symptoms such as reduced stool caliber, constipation, fecal incontinence, difficult defecation, anal pain, and diarrhea.⁷ The most common complaints among the patients included in our study were difficult and painful defecation. Anal stenosis is classified as mild, moderate, or severe depending on the extent of stricture. Digital examination findings and a Hill-Ferguson retractor are used to make this classification.^{9,11} The level of anal stenosis, on the other hand, is classified as lower, middle, or upper based on its location and anatomical proximity to the dentate line.^{9,11} Anal stenosis was lower-level and moderate to severe in all of our patients. We utilized advancement flaps in all procedures. Prevention is the best treatment for anal stenosis. Therefore, interventions that may cause anal stenosis should be avoided during commonly practiced surgical procedures such as hemorrhoidectomy. Aggressive hemorrhoidectomy results in scar development in the anal canal and progressive chronic stenosis due to extensive excision of anodermal tissue and hemorrhoidal rectal mucosa.⁹ For this reason, a basic rule of hemorrhoidectomy is to only remove anodermal tissue to an extent that will not cause anal stenosis when removing external hemorrhoids; care should be taken to leave intact anoderm bridges between areas of hemorrhoidectomy, and if possible, surgery should not be performed during acute episodes of hemorrhoidal disease.¹² Conservative approaches can be used to treat mild anal stenosis symptoms. These include a high-fiber diet, laxatives, and manual anal dilation.^{8,10} If these approaches are not effective, dilation with plugs may be done.^{5,6,7} However, attempts at manual self-anal dilation and examination can result in hemorrhage, fibrosis, and contracture of the external sphincter if not performed properly.^{7,13} Surgical treatment is preferred for moderate to severe anal stenoses that do not benefit from conservative treatment. However, while surgical treatment for anal stenosis can yield effective results, the procedure is challenging. Several surgical techniques have been described and utilized, depending on the severity and location of stenosis.^{1,13,14,15,16,17} These surgical procedures are intended to transfer rectal mucosa or perianal skin to the anal canal and improve the elasticity of the anodermal tissue.^{5,6} Anoplasty options are considered when conservative measures fail. The principle of anoplasty is to enlarge the anal orifice by internal sphincterotomy and removal of cutaneous scar tissue, then maintain the

correction using proximal advancement of skin flaps or distal advancement of mucosa. Simpler techniques usually yield better results and produce fewer complications. The V-Y and diamond advancement flaps are preferred techniques with very good results.^{10,18,19} The house advancement flap has been used successfully, especially in full circumferential stenoses, because it provides a large skin flap.^{20,21} The broad-based house advancement flap was used in 3 patients with severe anal stenosis (Figures 1a, b, c).

Although several flap options are utilized in the surgical treatment of anal stenosis, there have not been comparative prospective randomized studies demonstrating the superiority of any of these flap types over the others. In the few comparative studies found in the literature, patients were not classified according to the etiology, level, or severity of anal stenosis, and the efficacy of the various flaps was not compared within homogenous patient groups. In addition, it is not clear in these studies what the ideal anal canal caliber should be after flap application, or which flap method best enables this caliber to be achieved. In one study, using diamond advancement flaps to achieve an anal canal caliber of 35-26 mm resulted in favorable outcomes.¹⁶ According to a prospective randomized study by Farid et al.,¹⁷ the house advancement flap resulted in longer operative time but was associated with fewer complications and better clinical improvement, patient satisfaction, and quality of life compared to V-Y and rhomboid flaps for the treatment

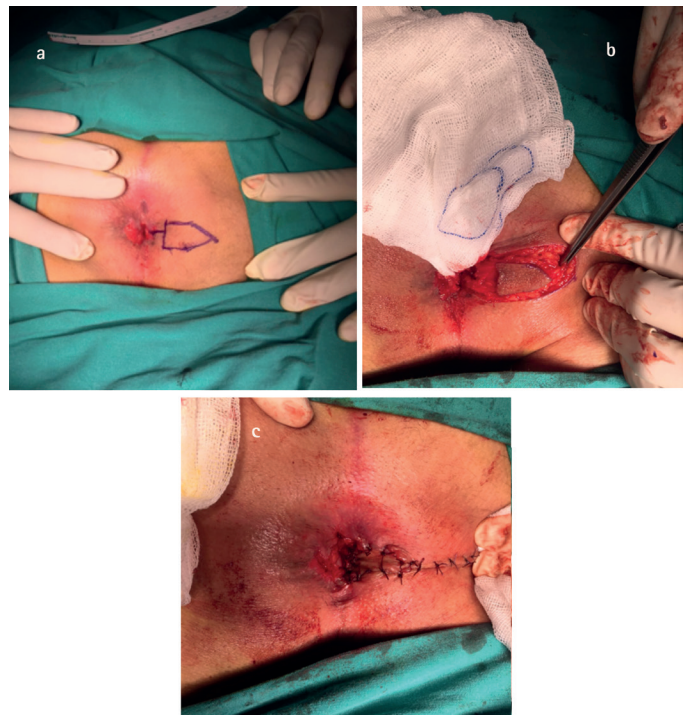


Figure 1. a) Preoperative marking of house advancement flap, b) liberation of the house advancement flap, c) advancement of the flap toward the anal canal and suturation

of anal stenosis. The ideal surgical technique should be practical for the surgeon, tolerable for the patient, and cause little morbidity. Furthermore, it should provide the patient a good level of long-term medical (continence, etc.) and social comfort. However, there is no ideal treatment method that provides completely satisfactory medical and social outcomes.¹ Therefore, the patient's clinical condition and disease severity should be taken into account when selecting a surgical technique. Besides all of these considerations, the experience and preferences of the surgeon and clinic are also important in deciding which technique will be used. Although our study did not include a sufficient number of patients, the low recurrence and complication rates achieved in this study are promising for future procedures. However, the inability to evaluate the long-term postoperative continence of our patients due to inadequate data is a limitation of our study. In summary, anal stenosis is a rare complication of hemorrhoidectomy, and the best treatment is prevention by adhering to surgical principles. However, when it does occur patients should be evaluated based on the clinical presentation and physiological examinations. Surgical options include advancement flaps, which can be used to provide effective and curative treatment.

Ethics

Ethics Committee Approval: This study was approved by Başkent University Institutional Review Board (project no: KA18/102).

Informed Consent: Consent form was filled out by all participants.

Peer-review: External and internal peer-reviewed.

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References

- Altuntaş YE, Öncel M. Anal Stenoz. İçinde: Menteş B, Bulut T, Alabaz O, Leventoğlu S, eds. Anorektal bolgenin selim hastalıkları.1.Baskı, Ankara; 2011:145-164.
- Eryılmaz R, Okan İ, Baş G, Işık A, Şahin M. Hemoroidektomiye bağlı anal stenoz tedavisinde V-Y anoplasti. Turk J Colorectal Dis 2009;19:32-35.
- Gonzalez AR, de Oliveira O Jr, Verzaro R, Nogueras J, Wexner SD. Anoplasty for stenosis and other anorectal defects. Am Surg 1995;61:526-529.
- Brisinda G. How to treat haemorrhoids. Prevention is best; haemorrhoidectomy needs skilled operators. BMJ 2000;321:582-583.
- Liberman H, Thorson AG. How I do it. Anal stenosis. Am J Surg 2000;179:325-329.
- Lagares-Garcia JA, Nogueras JJ. Anal stenosis and mucosal ectropion. Surg Clin North Am 2002;82:1225-1231.
- Khubcandani IT. Anal stenosis. Surg Clin North Am 1994;74:1353-1360.
- Mentes BB, Cihan A, Tatlıcıoğlu E, Ferahköşe Z. Diamond flap anoplasty for cicatricial anal stenosis following Fournier gangrene. GMJ 1998;9:183-186.
- Liberman H, Thorson AG. How I do it. Anal stenosis. Am J Surg 2000;179:325-329.
- Maria G, Brisinda G, Civallo IM. Anoplasty for the treatment of anal stenosis. Am J Surg 1998;175:158-160.
- Milsom JW, Mazier WP. Classification and management of postsurgical anal stenosis. Surg Gynecol Obstet 1986;163:60-64.
- Aliosmanoğlu İ, Gül M, Tekeş F, Ülger BV, Oğuz A, Hakseven M, Baç B. Anal Stenoz Nedeniyle Cerrahi Tedavi Uygulanan Hastaların Sonuçlarının Değerlendirilmesi. Turk J Colorectal Dis 2013;23:173-177.
- Duieb Z, Appu S, Hung K, Nguyen H. Anal stenosis: use of an algorithm to provide a tension-free anoplasty. ANZ J Surg 2010;80:337-340.
- Szeto P, Ambe R, Tehrani A, Cagır B. Full-thickness skin graft anoplasty: novel procedure. Dis Colon Rectum 2012;55:109-112.
- Casadesus D, Villasana LE, Diaz H, Chavez M, Sanchez IM, Martinez PP, Diaz A. Treatment of anal stenosis: a 5-year review. ANZ J Surg 2007;77:557-559.
- Gülen M, Leventoğlu S, Ege B, Menteş BB. Surgical Treatment of Anal Stenosis with Diamond Flap Anoplasty Performed in a Calibrated Fashion. Dis Colon Rectum 2016;59:230-235.
- Farid M, Youssef M, El Nakeeb A, Fikry A, El Awady S, Morshed M. Comparative study of the house advancement flap, rhomboid flap, and y-v anoplasty in treatment of anal stenosis: a prospective randomized study. Dis Colon Rectum 2010;53:790-797.
- Angelchik PD, Harms BA, Starling JR. Repair of anal stricture and mucosal ectropion with Y-V or pedicle flap anoplasty. Am J Surg 1993;166:55-59.
- Caplin DA, Kodner IJ. Repair of anal stricture and mucosal ectropion by simple flap procedures. Dis Colon Rectum 1986;29:92-94.
- Sentovich SM, Falk PM, Christensen MA, Thorson AG, Blatchford GJ, Pitsch RM. Operative results of House advancement anoplasty. Br J Surg 1996;83:1242-1244.
- Christensen MA, Pitsch RM Jr, Cali RL, Blatchford GJ, Thorson AG. House advancement pedicle flap for anal stenosis. Dis. Colon Rectum 1992;35:201-203.