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Diamond Flap Technique in the Surgical Treatment of Anal Stenosis Following Hemorrhoidectomy: Two Case Reports

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ABSTRACT

Anal stenosis, characterized by fibrotic narrowing of the anal canal, commonly arises as a postoperative complication, particularly following hemorrhoidectomy. It significantly impairs quality of life, manifesting with symptoms such as pain, straining, and incomplete evacuation. The diamond flap procedure is a reconstructive surgical technique aimed at restoring the anatomical and functional integrity of the anal canal by excising scar tissue and transposing well-vascularized tissue to the stenotic area. This study presents two cases of post-hemorrhoidectomy anal stenosis treated with the diamond flap technique. Both patients exhibited marked improvement in symptoms and anal canal diameter postoperatively, with no complications or recurrence at 6-8 weeks of follow-up. Flap viability, symptom resolution, and patient satisfaction were satisfactory in the short term. These cases are consistent with published reports of the diamond flap as a surgical option in the management of anal stenosis; longer follow-up and larger series are needed.

Keywords: Diamond flap, anal stenosis, hemorrhoidectomy

Introduction

Anal stenosis is characterized by the fibrotic narrowing of the anal canal and significantly impacts the quality of life of affected individuals. This condition is often a result of surgical procedures, congenital anomalies, or inflammatory diseases, and is commonly associated with symptoms such as pain, straining, and the sensation of incomplete evacuation during defecation. Treatment options vary depending on the etiology and severity of the stenosis, ranging from conservative approaches to surgical interventions[1,2].

The diamond flap procedure is a surgical technique used in the treatment of anal stenosis with the aim of preserving the anatomical and functional integrity of the anal canal. This method focuses on excising scar tissue and expanding the anal canal through the transfer of well-vascularized tissue. The diamond flap technique is considered to be highly successful and carries a low risk of complications, as it provides primary repair with minimal tension[3,8].

This report describes the diamond flap procedure in two patients with a history of hemorrhoidectomy who developed anal stenosis. The case presentations aim to provide a detailed account of the surgical outcomes and postoperative recovery process, thereby contributing to the literature. In this context, these cases illustrate the technique and its short-term course in the treatment of anal stenosis.

Case Presentation 1

A 44-year-old female patient presented with complaints of straining and pain during defecation, which had persisted for approximately two months. The patient also experienced intermittent abdominal bloating and noticed fresh blood after defecation. Due to these symptoms, she had been avoiding eating. No other gastrointestinal symptoms were reported. The patient, who had no known chronic illnesses, stated that she had undergone an open hemorrhoidectomy six months prior. Medical treatment consisting of sitz

baths, proctoglyvenol, anrecta, doxium, and dietary management was administered for one month without clinical response.

On rectal examination, an anal fissure was identified at the 6 o'clock position in the lithotomy position. During the rectal examination, the anal canal was found to be significantly narrowed, allowing only the passage of a small finger, indicating anal stenosis that was moderate according to the Milsom and Mazier classification[12] but clinically severe, with a marked impairment of quality of life (Figure 1). Laboratory test results were within normal limits.



Figure 1 – Examination of anal stenosis

Based on these findings, the patient was planned for lateral internal sphincterotomy, indicated by the accompanying anal fissure (Figure 2a) and a diamond flap procedure. After the scar tissue was excised, a diamond-shaped flap was carefully prepared while maintaining vascular integrity (Figure 2b) and was fixed to the anal canal with 3/0 Vicryl sutures without tension (Figure 2c). Postoperatively, the diameter of the anal canal was measured with a calibrated Hegar dilator to be approximately 2 cm.

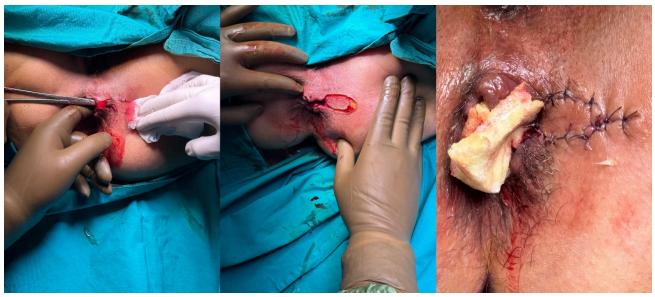


Figure 2a, 2b, and 2c – Steps of the procedure

In the postoperative period, the patient was discharged on the second day without any complications, with instructions for sitz baths and dietary recommendations. On the tenth postoperative day, the flap was found to be in good condition during follow-up, and the patient's complaints of constipation and rectal bleeding had resolved. The patient expressed satisfaction with the surgical outcome even at the tenth postoperative day. At the 8-week follow-up, complete wound healing was observed. The anal canal remained patent, and no signs of restenosis or flap ischemia were detected. No incontinence was reported.

Case Presentation 2

A 26-year-old male patient presented with complaints of straining and the sensation of incomplete evacuation during defecation. No additional gastrointestinal symptoms were reported. His medical history revealed no known chronic diseases, but he had undergone an open hemorrhoidectomy approximately one year earlier. Medical treatment consisting of sitz baths, proctoglyvenol, anrecta, doxium, and dietary management was administered for one month without clinical response. On rectal examination, anal stenosis that was moderate according to the Milsom and Mazier classification[12] but clinically severe, with a marked impairment of quality of life was detected, with a significantly narrowed anal canal allowing only the passage of a small finger. No pathological findings were identified in the laboratory tests.

Based on the clinical findings, the patient was scheduled for a diamond flap procedure. After the scar tissue was excised, the diamond-shaped flap was prepared while preserving vascular integrity (Figure 3a) and was fixed to the anal canal using 3/0 Vicryl sutures without creating tension (Figure 3b). Postoperative measurement with a calibrated Hegar dilator revealed the anal canal diameter to be approximately 2 cm. At the 6-week postoperative evaluation, complete epithelialization of the surgical site was observed. The anal canal remained adequately patent without evidence of recurrence or complications. No incontinence was reported.



Figure 3a and 3b – Preparation of diamond flap and the final result

In the postoperative period, the patient was discharged after less than 24 hours of hospitalization, at his request. At the two-week follow-up, the flap was in good condition, and the patient reported no active symptoms, expressing satisfaction with the surgical outcome.

Discussion

Anal stenosis is characterized by the narrowing of the anal outlet and is a pathology that leads to significant discomfort, including difficulty in defecation, pain, and a marked decrease in quality of life. Various etiological factors contribute to the development of this condition, with a history of anorectal surgeries, particularly hemorrhoidectomy, being the most common cause[1,2]. Excessive proliferation of scar tissue resulting from surgical interventions leads to the loss of elasticity in the anal canal, causing the formation of stenosis. Treatment approaches vary depending on the severity of the stenosis, with surgical interventions becoming prominent when conservative methods are insufficient[2,3].

The diamond flap procedure is one of the preferred reconstructive techniques in the surgical treatment of anal stenosis. This method involves the excision of scar tissue and the expansion of the anal canal through the transposition of well-vascularized tissue. The diamond flap technique is considered advantageous due to its ability to provide primary repair with minimal tension and preserve the functional integrity of the anal canal[2,4]. In the two cases presented, the short-term postoperative course was satisfactory, and the recovery process was uncomplicated.

In both cases, the postoperative measurement of the anal canal diameter, approximately 2 cm, indicates an anatomical improvement. The diamond flap method has been reported to increase the anal canal width, and the vascular integrity of the flap is thought to accelerate wound healing and minimize ischemic complications[5,8]. Repairs performed using this technique have been reported to yield good outcomes with low recurrence rates[8,11].

Various flap techniques for the treatment of anal stenosis have been described in the literature, including V-Y advancement flaps, rotation flaps, and mucosal advancement flaps. However, the diamond flap technique is considered advantageous due to its symmetric structure and its ability to completely excise scar tissue[4,8]. Additionally, in surgical procedures accompanied by lateral internal sphincterotomy, a reduction in sphincter pressure has been reported, which may improve postoperative pain control and reduce the risk of recurrent narrowing[6,7,10].

In both patients, conservative management including sitz baths, topical and oral agents (proctoglyvenol, anrecta, doxium), and dietary regulation had been attempted without response prior to surgical referral. Anal dilatation alone was not preferred because both cases demonstrated fibrotic stenosis that was moderate by the Milsom and Mazier classification but clinically severe with a rigid scar ring that would not be expected to respond adequately to simple dilatation. In such cases, forceful dilatation may increase the risk of mucosal tears, recurrence, or incontinence.[7] Therefore, definitive reconstructive surgery was considered more appropriate.

In the cases presented, the diamond flap procedure was applied to treat anal stenosis following hemorrhoidectomy, with resolution of symptoms at short-term follow-up. The patients were discharged early and expressed satisfaction with the outcome. Similarly, in the literature, this technique is emphasized as a reliable option with high patient satisfaction and low complication rates[8,9].

In conclusion, in these two patients with post-hemorrhoidectomy anal stenosis, the diamond flap procedure resulted in a patent anal canal, resolution of symptoms, and no reported incontinence or recurrence at 6–8 weeks of follow-up, in keeping with published series. The limitations of this report are the small number of cases, the short follow-up, the absence of comparative data, and the assessment of continence by patient report rather than a standardized score; efficacy and long-term outcomes of this method need to be evaluated in larger cohorts with longer follow-up.

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