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## International Journal of Surgery Open

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## Case Report

# Repair of anal stenosis using a prolapse and hemorrhoids (PPH) stapler procedure: A case report with excellent results

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## ARTICLE INFO

## Article history:

Received 15 September 2020

Received in revised form

30 October 2020

Accepted 31 October 2020

Available online 4 November 2020

## Keywords:

Anal stenosis  
Hemorrhoidectomy  
PPH Stapler  
Hemorrhoids  
Anal canal  
Case report

## ABSTRACT

**Introduction:** Anal stenosis post stapled hemorrhoidectomy is a rare but serious complication of anorectal surgery. Stenosis is uncomfortable, where there is a narrowing of the anal canal. A loose fibrous tissue replaces healthy tissue due to stapler manipulations, causing pain at the time of defecation.

**Presentation of case:** Here, we report the case of a 67-year-old male patient complaining of difficulties and pain when defecating. There was a history of stapler hemorrhoidectomy for 4th-grade hemorrhoids. On investigation, we found 3rd-degree anal stenosis. We performed repair of anal stenosis using a PPH Stapler No. 33. Defecation had improved by the fifth-day post-repair.

**Conclusion:** The PPH Stapler technique has the potential to be a promising procedure to treat anal stenosis.

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## 1. Introduction

Anal stenosis is a condition where the narrowing of the anal canal occurs so that the patient complains of difficulty and pain with each defecation [1]. Anal stenosis is characterized by an anatomical deformity in the form of changes in the diameter of the anal canal with cicatrices tissue and reduction of elasticity of the anal canal [2]. Also, patients complain of a change in the form of feces (small, thin, slender, and elongated), disposal difficulties, feeling unsatisfied after defecation, and pain during defecation [3,4].

Ninety percent of anal stenosis is caused by excessive hemorrhoidectomy [2,5]. Patients also sometimes complained of bleeding during defecation and flat stool. Fear of impacted feces and pain lead these patients to rely on laxatives or enemas. Physical

examination is performed to confirm the diagnosis [1,3,4]. Anesthesia can eliminate spasms associated with anal fissure (functional stenosis), but does not achieve additional cavity diameter [5]. Anorectal manometry is an objective method to evaluate muscle patterns anus, rectum deflated flowers, Anorectal sensation, and verify the integrity of the inhibitory rectoanal reflex [3,6]. We reported the case in accordance with the SCARE 2018 guidelines [7].

## 2. Presentation of case

A 67-year-old male was admitted to the hospital with a chief complaint of difficult and painful defecation. The patient complained of dissatisfaction after defecation and long stick-shaped feces. This condition has been manifested since 6 months after undergoing stapler hemorrhoidectomy surgery, 3 years previously. The patient reported urinating smoothly. No abnormality was detected by abdominal examination. The anal region looked darker than the surrounding area, and the digital rectal palpation gave an impression of narrowness and elasticity. Routine laboratory examination and routine blood chemistry analysis found no abnormalities. A chest x-ray examination found no abnormalities. The patient was diagnosed with 3rd-degree anal stenosis. We performed repair of anal stenosis using a PPH Stapler No. 33. The

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patient was placed in a prone position under the effect of regional anesthesia. The gluteus maximus muscles of both sides were stretched laterally using plaster. From a careful examination of the anal canal, we found that the anal canal narrowing was inflicted by stricture in three positions: in the direction of 3, 6, and 9 o'clock (Fig. 1). A gentle anal dilatation was conducted with the insertion of a Hill-Ferguson retractor into the anal canal. The incision was initially made in the anterior side (12 o'clock direction) of the dentate line and to be extended 1.5 cm distally through the anocutaneous line and proximally until reaching the rectal mucosa. The length of the incision was approximately 3 cm.

The mucosal and skin flaps were lifted from 1.5 cm of the right and left side of the primary incision. An anocutaneous Y incision was made in an upward direction, with both wings forming an angle of 90°.

The skin and mucosal flaps were gently removed by sharp dissection with a distance of 1–2 cm. When dissection had been completed, the anocutaneous point A was juxtaposed to point B on the mucosa without tension (Fig. 2). We continued to make a purse-string stitch  $\pm 1$  cm above the anterior part of the stenosis. After the purse-string stitch had been encircled completely, the circular mucosectomy was performed using a PPH stapler no. 33. The stenosis tissue was dissected in the shape of a complete circular tube with a length of  $\pm 3$  cm (Fig. 3).

At the 5-day postoperative follow-up, the patient reported improved defecation, was able to defecate as usual, and was discharged in good condition. Postoperative management was a simple procedure; the patient was given a high-fiber diet, laxatives, and mineral oil. Sitz baths and showers were recommended for hygiene and comfort. Post-operation analgesics were necessary, especially for the first 24 h.

After the evacuation of feces, the operation area was washed with warm water and neutral soap. Sitz Bath can improve local hygiene, and is recommended three times per day for 10 days, starting from the first postoperative day. Patients could have a meal immediately after surgery. Providing a diet high in fiber and water can help the digestive function. When the patient is unable to defecate, spontaneous defecation can be improved by providing barium enema in small quantities. There was no need to perform a rectal slinger postoperatively.

At the 2-week, 1-month, and 3-month follow-ups, with observation in the operating area, there were no complications.

### 3. Discussion

Anal stenosis is an uncomfortable condition that results from morphological changes of the anal canal with a consequent reduction in the function of this organ [3,4]. Anal stenosis is a

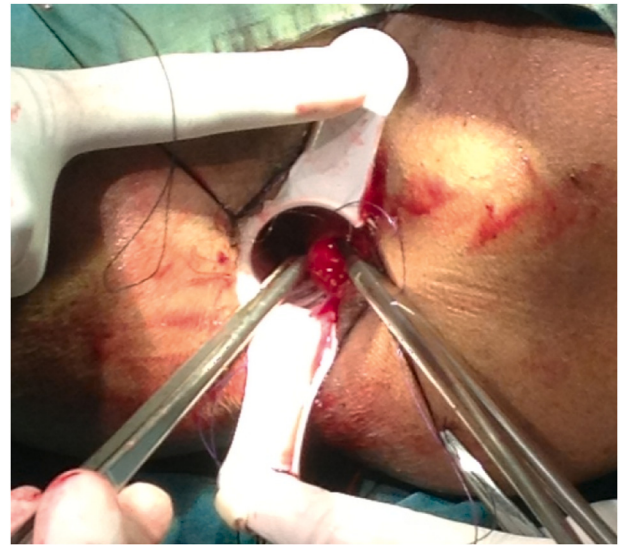


Fig. 2. Purse strings on the mucosa.

serious complication of anorectal surgery. Anal stenosis occurs when the normal pliable anoderm is replaced with fibrotic connective tissue causing the anal canal to be abnormally tight and inelastic [4]. Stenosis can be caused by intrinsic or extrinsic pathological processes. Anal stenosis can develop from a variety of conditions that cause non-cutaneous scarring sores [3,4]. The stenotic segment might be localized proximal or distal to the anal canal, but often the irregularities are noted to be circumferential involving the entire anal canal [4].

The causes of anal stenosis include trauma, surgery on the anal canal, inflammatory bowel disease, venereal diseases, radiation therapy, and chronic use of laxatives [3,8,9]. Hemorrhoidectomy is the most common cause of anal stenosis, with an incidence ranging from 1.5% to 3.8% [4]. In two retrospective studies, it was stated that the incidence of anal stenosis after PPH stapler was 8.8% and 1.6% [10,11]. Hemorrhoidectomy might strip a wide area of anoderm and rectal mucosa from the lining of the anal canal, leading to scarring and progressive chronic stricture formation making the anus less pliable. Anal stenosis can occur following stapling procedures for hemorrhoids, especially with staple line dehiscence or when the stapler is placed too superficially in the anal canal leading to scarring (stapled line stricture) [4]. Several factors have been considered to be related to anal stenosis after stapled hemorrhoidectomy. There is an attractive theory that stenosis develops as a result of

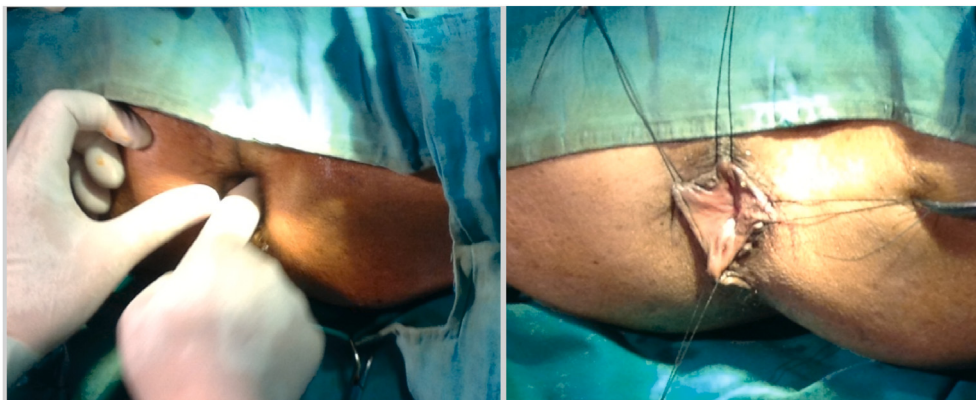


Fig. 1. Evaluation of the anal canal to identify the narrowed segment and grading of anal stenosis.



Fig. 3. Inclusion of stapler tool procedure, with a 3-mm Hemorrhoidal Circular Stapler.

**Table 1**

Classification of anal stenosis [2,5,14].

	Classification based on the severity
Mild Stenotic	Stenotic anal canal can be examined by a well-lubricated index finger
Moderate	Forceful dilatation is required to do a digital rectal examination
Severe	Digital rectal examination is impossible

micro-dehiscences of the suture line, followed by a submucosa phlogosis and the subsequent formation of retractile scar tissue. Certainly, stenosis can be caused by the incorrect execution of the suture line, too low and/or with wide resection of hemorrhoidal tissue, or asymmetrical, or too deep, or rather at full thickness [12]. Chew et al. proposed the explanation of the development of the stapled line stricture, which is related to the formation of an exceeding anastomotic scar, which creates a hypertrophic fibrous circumferential cord [13].

In our case, the anal stenosis was caused by complications of surgery by using a stapled hemorrhoidectomy mucosectomy. From our analysis, this complication occurred as a consequence of the purse string-forming sutures within the rectal mucosa not being placed at the same layer of depth during the previously stapled hemorrhoidectomy, which caused a narrowing of rectal mucosa after the mucosectomy with a stapler was conducted. The third-degree anal stenosis occurred a few months post-operation.

Anatomical canal stenosis can be classified by the severity of the stricture and level of involvement in the anal canal (Table 1) [2,5,14]. In this case, the patient was diagnosed with severe anal stenosis because of the difficulty of performing a digital rectal examination, even with forced dilation with a little finger.

The treatment approaches must be planned precisely with a careful diagnosis and assessment of stenosis severity [15]. Mild stenosis can be given conservative treatment, such as laxatives and anal dilatation, with or mechanical fingers to be done every day. Sphincterotomy can be performed for moderate stenosis. Regarding the severe degree, an anoplasty procedure can be performed to overcome the loss of the anal canal function [1].

Some studies have identified suitable treatments for anal stenosis, but no anoplasty procedures are universally applicable [3,16]. Several anoplasty techniques have been proposed from various reports. In this case report, we performed an anoplasty procedure using the PPH stapler No.33 to repair anal stenosis, and the patient had an improvement in defecation after the surgery. This technique was a new invention that had never been reported before.

We chose this method with the rationale that the anal stenosis was inflicted by circumferential stapled line stricture after the stapled hemorrhoidectomy procedure. Using the PPH stapler, the

stapled line stricture could be resected circumferentially at the same level as the circumferential stricture.

Anal stenosis repair with PPH stapler has the potential to be a promising procedure to treat anal stenosis, especially stapled hemorrhoidectomy-related anal stenosis. However, we need longer observation and experimental studies to ensure the efficacy and safety of this new procedure. We hope this case report can trigger further experimental studies.

Complications that might arise after anoplasty include pain, obstruction, bleeding, constipation, incontinence, dehiscence, failure to repair stenosis, infection, alvi incontinence, fistula, tenesmus, perforation, and urinary retention [2,3,15].

#### 4. Conclusion

The anal stenosis repair with a PPH stapler has the potential to be a promising procedure to treat anal stenosis. However, experimental studies must be conducted to ensure the efficacy and safety of this new procedure.

#### Ethical approval

The study is exempt from ethical approval in our institution.

#### Funding

No funding or sponsorship.

#### Author contribution

WS, MID, MIK, and MF researched the literature and wrote the manuscript. WS, MID, and MF operated on the patient and had the idea for this case report. WS, MID, MIK, and MF checked the manuscript and made corrections. WS, IL, and MID provided the overall guidance and support. All authors read and approved the final manuscript.

**Conflict of interest statement**

The authors declare that they have no conflict of interests.

**Research registration number**

None.

**Guarantor**

Warsinggih.

**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

**Appendix A. Supplementary data**

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijso.2020.10.013>.

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