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**Case Report**

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**INTRODUCTION**

Hemorrhoids are common anorectal disorders characterized by symptomatic anal cushion expansion and displacement to the distal side, that affects millions of people worldwide, that affects millions of people worldwide. Hemorrhoids are a chronic disease that can reduce the quality of life (Crea et al., 2014; Maluku et al., 2014; Radwan et al., 2020). Annually, many people receive a diagnosis of hemorrhoids (Amsriza et al., 2023). Hemorrhoidal disease (HD) has an incidence rate of more than 4% of the population, with estimates ranging from 3% to 29% (Harvitkar et al., 2021). Internal hemorrhoids sit above the dentate line and are surrounded by the anal mucosa. External hemorrhoids sit beneath the dentate line and overlap with the anoderm (Ganz, 2013; Torrinha et al., 2022).

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**Laser Hemorrhoidoplasty Using Reusable Bare Fiber Combined Mucopexy on Grade IV Internal Hemorrhoid: A Case Report**

*Fadli Robby Amsriza*<sup>1\*</sup>, *Rizka Fakhriani*<sup>2</sup>

**Abstract**

**Background:** Hemorrhoids are the most common anorectal disease, affecting millions worldwide. Hemorrhoids are categorized as "internal" or "external" based on their proximity to the pectinate line, which separates the upper 2/3 and lower 1/3 of the anus. The hemorrhoidal disease can be treated in various ways, from non-invasive methods like rubber band ligation, cryotherapy, sclerotherapy, laser photocoagulation, and phototherapy to invasive methods like surgical excision for patients with severe symptoms, grade III or IV hemorrhoids, or persistent bleeding. This study described the results of Laser Hemorrhoidoplasty (LHP) using reusable bare fiber combined mucopexy, a diode laser with wavelengths of 980 nm and 1470 nm, specifically gallium aluminum arsenide (GaAlAs). **Methods:** a case of a 28-year-old male with complaints of rectal prolapse mass one day ago and could not be reinserted with a finger, bleeding while passing stool, and rectal pain with a Visual analog scale was 7. The patient had experienced similar symptoms and had a sclerobanding procedure four years ago. However, it has reappeared in the past year. The patient was diagnosed with grade 4 internal hemorrhoids and underwent **Conclusion:** Laser hemorrhoidoplasty using reusable bare fiber with combined mucopexy. After the laser hemorrhoidoplasty procedure on day 4, the patient felt no pain, rectal bleeding, rectal lumps, or soiling.

**Keywords:** Hemorrhoid, hemorrhoidoplasty, laser, sclerobanding, treatment

The treatment options for hemorrhoidal disease vary from non-invasive treatments, such as rubber band ligation, cryotherapy, sclerotherapy, laser photocoagulation, and phototherapy, to invasive treatments, such as surgical excision. Surgical excision tends to be for individuals exhibiting severe symptoms, grade III or IV hemorrhoids, or chronic bleeding that does not improve with non-invasive therapy (Radwan et al., 2020). Rubber band ligation is a less invasive treatment option for internal hemorrhoids. This method is affordable and less disagreeable, particularly beneficial for managing internal hemorrhoids in the first phases. The PILA pack combines modified rubber band ligation and sclerotic injection to treat hemorrhoids (Amsriza & Fakhriani, 2021; Gardner, 2019). Sclerobanding is a regular procedure using Rubber Band Ligation (RBL) to address hemorrhoids above the dentate line. After the ligation process, a foam containing 3% polidocanol is injected above the band on the same nodule to enhance the effectiveness of the treatment (Bracchitta et al., 2021). The rubber band ligation procedure is designed to constrict the mucosa and submucosa of the anal cushion. Binding leads to the formation of ischemia, necrosis, and inflammation in the bound region (Sun & Migaly, 2016). Laser hemorrhoidoplasty (LHP), a newly discovered invasive and painless procedure, has been shown to efficiently treat symptomatic hemorrhoids by addressing the functionality of the piles. Frequently employed laser energies in medical practice encompass diode, carbon dioxide, argon, and Nd: YAG (Jain et al., 2022). Bleeding and prolapsed hemorrhoids may only happen in 13% of LHP patients (Eskandaros & Darwish, 2020; Ng et al., 2020; Poskus et al., 2020).

This study described the results of LHP using reusable bare fiber combined mucopexy and diode laser with wavelengths of 980 nm and 1470 nm, specifically gallium aluminum arsenide (GaAlAs). We provide a case of grade IV hemorrhoids that emerged four years after receiving sclerobanding therapy and had expressed the same symptoms for a year (VAS 7). The VAS was decreased to 3 after LHP procedure.

## **CASE PRESENTATION**

A 28-year-old male visited the surgery clinic with symptoms of rectal prolapse, difficulty being readmitted, bleeding after bowel movements, and rectal pain, scored at seven on a Visual Analogue Scale. One year ago, the patient observed a rectal mass that had prolapsed, but it was able to be manually reinserted. The patient had experienced such problems and had a sclerobanding treatment four years before. But it has returned within the last year. The patient is a graphic designer with an irregular eating pattern, minimal consumption of vegetables, and a bowel movement frequency of 2-4 times per week.



**Figure 1.** Grade IV internal hemorrhoid

During the clinical examination, it was observed that the hemorrhoids could not be reduced and prolapsed continuously (Figure 1). The patient was diagnosed with severe internal hemorrhoids

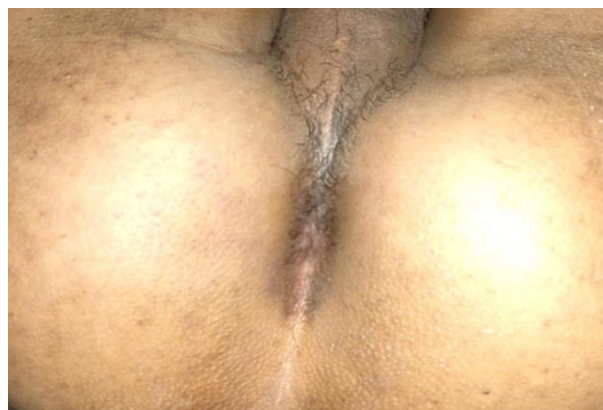
classified as grade 4. The patient received Laser hemorrhoidoplasty, which involved using a reusable bare fiber with mucopexy (Figure 2). Following the injection of regional anesthesia, the patient was positioned in the lithotomy position. The hemorrhoid mass was detected at positions equal to 7, 11, and 3 o'clock. A mucosal puncture was made at the distal end of the hemorrhoid on patients with laser hemorrhoidoplasty.



**Figure 2.** The reusable bare fiber



**Figure 3.** Post-operative



**Figure 4.** 1-week post-operative

A 0.6mm reusable bare fiber was inserted into the submucosal area and moved forward to the root of the hemorrhoid. The hemorrhoidal tissue was confirmed to turn pale after delivering a pulsed bolus of radiation from a gallium aluminum arsenide (GaAlAs) laser operating at 13 watts. This effect was achieved by combining two wavelengths, 980 nm and 1470 nm, in continuous wave mode. Following laser ablation, a procedure known as mucopexy was performed (Figure 3). After the procedure, from days 1 to 3, the Visual Analogue Scale (VAS) score was 3, indicating moderate pain. No evidence of rectal bleeding or rectal lumps was found. However, soiling was still present. After the fourth day, the patient experienced a complete absence of pain, rectal bleeding, lumps, or soiling (Figure 4).

## **DISCUSSION**

Hemorrhoids are common anorectal disorders characterized by symptomatic anal cushion expansion and displacement to the distal side (Khan et al., 2021). Hemorrhoids are classified as either "internal" or "external" depending on their location relative to the pectinate line, which serves as the separation between the upper two-thirds and lower one-third of the anus. Internal hemorrhoids form superior to the pectin line and are covered by cells like those in the intestines. External hemorrhoids develop beneath the skin's surface and are covered by cells resembling skin. Hemorrhoids will not cause any problems as long as one does not experience swelling, itching, pain, or bleeding (Sharma, 2019).

The present case involves a male patient who has an internal hemorrhoid located above the pectinate line. Internal hemorrhoids are categorized into four grades. Here, the patient has grade IV hemorrhoids that are consistently prolapsed and irreducible, as shown in Figure 1. The patient's Visual Analog Scale (VAS) score was 7. Due to their location above the dentate line and lack of innervation by skin nerves, internal hemorrhoids do not cause skin pain.

In contrast, internal hemorrhoids have the potential to cause bleeding, protrusion, and perianal itching and irritation due to the accumulation of irritants on the thin perianal skin. Internal hemorrhoids can cause perianal pain by protruding and causing contractions of the sphincter complex that surrounds them. The pain is experienced when a prolapsed hemorrhoid becomes exposed. The sphincter complex commonly induces distressing contractions, often leading to simultaneous external thrombosis (Gajjar et al., 2019; Sharma, 2019).

Acute hemorrhoids are a bunch of symptoms that require immediate treatment. Bleeding without pain during bowel movements is usually internal hemorrhoid. During bowel movements, strain can damage the surrounding epithelium and cause the underlying veins to bleed. Internal hemorrhoidal veins can rupture when the sphincter complex goes into spasm and there is an increase in pressure. Internal hemorrhoids may also secrete mucus in the perianal tissues along with prolapse. In addition to these conditions, some things that can occur include anal pruritus and localized dermatitis due to mucus (Ansari, 2016; Lohsiriwat, 2015).

The factors influencing hemorrhoid treatment are usually based on the shape and severity of the hemorrhoids and the doctor's experience treating similar conditions. Treatment options for low-grade internal hemorrhoids include medical treatment, diet and lifestyle modifications, rubber band ligation, and sclerotherapy. Whereas high-grade and strangulated hemorrhoids usually require surgery. However, external hemorrhoids typically do not necessitate targeted intervention unless they become intensely thrombosed or cause discomfort to the patient (Lohsiriwat, 2015). In this case, the patient had undergone a sclerobanding procedure four years ago but had a prolapse, and symptoms reappeared in the past year.

The severity of hemorrhoids differs from patient to patient. The severity of symptoms can determine how complex the management is. A subjective assessment of the severity of the haemorrhoidal condition determines the need for action. Hemorrhoidal therapy can be performed with LHP. The procedure is painless and uses a diode laser to measure hemorrhoidal shrinkage. Similar to endovenous laser therapy, LHP has a thermal action that seals the arterial wall, causing the vascular component of the hemorrhoid to be destroyed (Awazli, 2019; A. Hassan & El-Shemy, 2021).

According to a study by Hassan et al., the LHP procedure is a good choice for treating hemorrhoidal disease. The main advantage of the LHP procedure is its ability to minimize disruption and allow patients to return to work immediately. Post-LHP pain scores were much lower compared to other regular methods (Dursun et al., 2023; Naderan et al., 2017). The process only lasts briefly, with a mean time of about 20.97 minutes (M. S. Hassan et al., 2021). Maloku et al. found that open surgical hemorrhoidectomy took an average of 26.76 5.8 minutes, which is longer than the patient who underwent LHP, who underwent the procedure in an average of 15.94 3.5 minutes (Maloku et al., 2014). According to a study conducted by Mohammed et al., people who had LHP reported significantly lower levels of postoperative discomfort compared to those who underwent standard

hemorrhoidectomy ( $p < 0.01$ ) (Mohammed et al., 2019). Maloku et al. found that patients who received LHP experienced less postoperative pain than those who underwent open surgical hemorrhoidectomy (Maloku et al., 2014). Another study by Alsisy et al. comparing LHP to open hemorrhoidectomy and Milligan-Morgan revealed that the postoperative discomfort was considerably reduced in the laser treatment group ( $p < 0.001$ ) (Alsisy et al., 2019). In this case, we also found that post-laser hemorrhoidoplasty pain also decreased. Before LHP, the VAS score was 7; 3 days after LHP, the VAS score was 3. Moreover, 4 days after the action, the patient no longer experienced pain.

In this case, we also discovered that post-laser hemorrhoidoplasty using reusable bare fiber pain decreased. Before the procedure, the Visual Analogue Scale (VAS) score was 7. Three days following the procedure, the VAS score decreased to 3. Furthermore, the patient no longer experienced pain four days following the procedure. Surprisingly, the reusable bare fiber can be utilized for over 100 patients, in contrast to regular procedures that employ disposable cone fibers. Therefore, this cost-efficient strategy can be incorporated into the National Health Insurance (JKN) claims budget. Due to its high efficiency, we recommend LHP procedure using reusable bare fiber over another procedure.

## CONCLUSION

A 28-year-old male patient diagnosed with grade 4 hemorrhoids had received sclerobanding therapy four years ago and then experienced prolapse with a VAS score of 7. After examination, the patient was given laser hemorrhoidoplasty using reusable bare fiber combined mucopexy. After 4 days of treatment, the patient has no pain, bleeding, rectal lumps, or soiling.

## CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest in this study.

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