

Laser in Management of Third Degree Piles

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Abstract

Background: Symptomatic hemorrhoids are treated using a combination of non-surgical treatments, conservative medical management, and various surgical procedures. In the past, hemorrhoidectomy and its closed variation method constituted the bulk of open surgical procedures. Complications, pain, and discomfort following surgery are common with these two approaches. Laser treatments for hemorrhoids of Grade II and III have shown a range of 83.6% to 100% relief in symptoms in prior research.

Aim of the study: This research focused on the application of laser technology in treating third-degree piles.

Patient and methods: The prospective investigation was carried out at a specialized hospital in Egypt from January 2022 to January 2023, involving a total of 200 patients, comprising 90 (45%) females and 110 (55%) males, with an average age of 45 ± 2.45 years. The follow-up duration for these patients was 1.55 ± 0.50 years. Adult individuals aged 17 to 70 with third-degree hemorrhoids, featuring minimal or no mucosal prolapse, were selected, particularly those who had not responded to conservative treatments.

Results: The findings indicated that 75% of patients experienced grade hemorrhoid symptoms, with bleeding reported in 160 (80%) participants, and hemorrhoidal syndrome noted in 50 (25%) of the cases. Furthermore, prolapsed hemorrhoids were observed in 100 (50%) patients, and thrombosed hemorrhoids were noted in 20 (10%) individuals.

Conclusion: Second- and third-degree hemorrhoids are effectively treated with the He-LP method, which has a short operation and recovery time, can be done in a day surgery environment, causes low intra- and postoperative discomfort, and significantly improves symptoms. More invasive therapies for early-stage HD may not be necessary with this approach.

Keywords: Laser; Management; Third degree; Piles

1. Introduction

P ILES is a common disorder that affects a large number of people around the world and causes specific types of disability.¹

Treatment for symptomatic hemorrhoids involves conservative medical management, non-invasive methods, and various surgical approaches. Traditionally, the most frequently performed open surgery is hemorrhoidectomy, along with its closed variant. However, these two procedures are associated with a significant risk of complications and post-surgical pain and discomfort. As a result, healthcare providers are leaning toward less invasive alternatives to minimize pain, enhance symptom control, and ensure quicker recovery.¹

Despite the numerous techniques available for hemorrhoid treatment, debates persist regarding the optimal procedure that balances

efficacy and patient comfort.²

Conventional hemorrhoidectomy, Rubbini et al.,³ serves as an effective solution for piles; however, patients often endure severe postoperative discomfort.² This method employs Doppler-guided identification and surgical ligation to reduce blood flow to the hemorrhoidal arteries' terminal branches.¹

Grade II and III hemorrhoidal disorders are now treatable with non-excisional laser therapy. This is especially helpful for Grade I to II instances with less severe prolapse.⁴ Research indicates that symptom improvement in Grade II and III hemorrhoids treated with laser procedures ranges from 83.6% to 100%, with recurrence rates noted at 5–11.3%.⁴ Thus, non-excisional laser treatments are deemed safe and effective for cases unresponsive to conservative measures, addressing Grade I, II, and III hemorrhoids.⁵

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The success rates of laser therapies diminish for Grade IV hemorrhoids, with recurrence observed at 59.3%. Surgical interventions are advised for such cases, with conventional hemorrhoidectomy remaining the primary approach for Grade IV hemorrhoids due to significant prolapse and hypertrophic skin features.⁶

The hemorrhoidal laser procedure (HeLP) represents a minimally invasive, painless option where a specialized laser device reduces and constricts the terminal branches of the superior hemorrhoidal artery for the treatment of symptomatic Grade II and III hemorrhoids⁸. In our research, we aimed to evaluate the clinical outcomes and efficacy of laser therapy.¹

This study focused on analyzing the application of laser treatment in managing third-degree piles.

2. Patients and methods

This prospective study ran from January 2023 to January 2024 in an Egyptian specialty hospital. Standard blood tests and physical evaluations (digital rectal examination and anoproctoscopy) were performed on patients before surgery, in addition to taking a detailed medical history. Patients with third-degree hemorrhoids, limited or no mucosal prolapse, and no response to conservative treatment were included in the study. The patients' ages ranged from 17 to 70.

Surgical Interventions and Practical Approaches:

Hemorrhoid treatment at our clinic depends on the patient's preferences, the severity of their condition, and our clinical knowledge. The primary approach includes dietary changes, lifestyle adjustments, medical intervention, and conventional treatment for Grade III hemorrhoids. Our mainstays for acute symptoms involve local anesthetics, anesthetic ointments, and creams with steroids, suppositories, and laxative medications.

Traditional treatments include 15-minute hot sitz baths 3–4 times daily alongside hygienic care of the perianal area with soapy water. Oral flavonoids are predominantly utilized in our clinic [(Diosmin 450 mg + Hesperidin 50 mg), (Daflon®, Servier, France)] combined to address acute hemorrhoid symptoms, utilizing a dosage of 3000 mg/day for 4 days, followed by 2000 mg/day for 3 days, or 1000 mg/day of Calcium Dobesilate.

Our primary objective is to alleviate symptoms. Cases unsuccessful with these treatment modalities, alongside Grade III cases that did not achieve results through medical and conventional means in other facilities, were

included in the study. The LHP Procedure was implemented for these instances. Additionally, low-grade hemorrhoids resistant to medical and traditional interventions, patient non-compliance due to treatment duration and recovery time (3–4 weeks), and recurrences after medical management were defined as failures in conservative treatment. Individuals with liver cirrhosis, bleeding disorders, chronic liver illness, inflammatory bowel disease, perianal abscesses, those under 18 years old, and patients diagnosed with colorectal cancers or other malignancies were excluded from the study.

All patients were admitted on the morning of their surgical procedure. They were allowed to consume food and liquids 8–10 hours prior. Bowel preparation was considered unnecessary. Two enemas were provided 2 hours before the procedure. The laser treatment was executed as a one-day surgical procedure. After a thorough physical examination and proctoscopy, the LHP utilized a 1470 nm diode laser. All surgical operations were completed by the same team of surgeons skilled in coloproctological surgery. Anesthesia, whether spinal or local, was administered in accordance with the patients' clinical conditions. The LHP was conducted with patients in the lithotomy position. A disposable proctoscope was inserted into the anal canal. Typically, five to six shots were applied to each hemorrhoidal pack using a 1470 nm diode laser probe.

The tissues receive energy uniformly in 5–6 applications to each hemorrhoidal pile. The energy dose for each hemorrhoidal pile in our clinic was 50–100 J/cm. This approach thermally seals each hemorrhoidal pile. Following the procedure, the hemorrhoidal pile is externally cooled, with hemorrhoidal artery ligation not performed simultaneously. An illustration of the LHP process is depicted in [Figure 1](#). Patients were discharged 12–18 hours after the treatment. Follow-up data over a 1–3 month period were analyzed concerning recovery, pain, and resumption of normal activities.



Figure 1. The LHP process

Exclusion criteria were: Written informed consent was obtained from patients with a history of pile surgeries, significant mucosal prolapse,

fourth-degree hemorrhoids, fecal incontinence, anal stenosis, concurrent anal disorders (such as fissures or fistulas), and inflammatory bowel disease. Acute issues (like thrombosis) and fecal incontinence were also considered.

Before surgery, patients were given a Verbal Rating Scale (VRS) with zero being no pain, one being light, two being moderate, and three being severe to measure bleeding and discomfort. At each post-op appointment, patients were asked to keep track of their symptoms and rate them using the same scale. Any bleeding that drops hemoglobin levels by 3g/dL or more, or that requires transfusion of two units of red blood cells, was considered major postoperative hemorrhage. Following surgery, patients' postoperative improvements were assessed using the PGI-I, a seven-point scale: Numbers 1 through 7 indicate degrees of improvement: very much improved = 2, significantly improved = 3, no change = 4, slightly worsened = 5, much worsened = 6, and severely worsened = 7.⁷

Patients came back to see us at the six-month mark. When symptoms that had gone away after surgery returned during follow-up and were bothersome, we said that there had been a recurrence.

If needed, an extra three-spot sequence was provided after verifying the true closure of each artery using the Doppler transducer. The evening prior to surgery, patients were administered enemas with a volume of 250 mL. Thirty minutes prior to the surgery, patients were consistently given prophylactic antibiotics containing 500 mg of metronidazole. The procedures of the HE-LP were carried out under spinal anesthesia during a one-day surgical procedure (Figures 2 and 3).



Figure (2): The HeLP kit comprises a dedicated proctoscope (a), a Doppler probe (b), and a laser fiber probe (c).

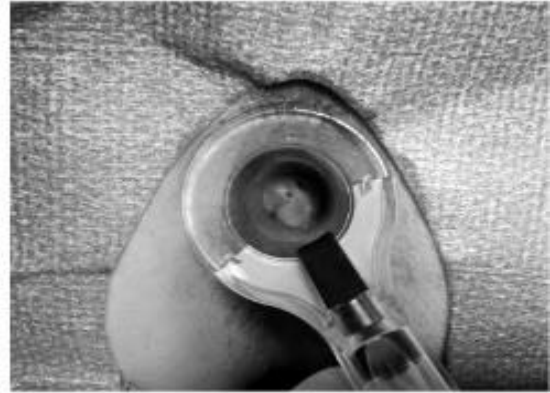


Figure (3): HeLP technique: The necrosis in the rectal mucosa, corresponding to the terminal hemorrhoidal arteries, can be clearly seen through the proctoscope.

Statistical analysis:

When comparing pre- and postoperative outcomes, the t-test and χ^2 tests for continuous and categorical variables, respectively, were employed. For this study, a p-value of less than 0.05 was considered statistically significant.

3. Results

Our results on the demographic and pre-operative clinical data of patients with grade iii hemorrhoids, cleared that, 200 patients 90 (45 %) females and 110 (55 %) males with a mean age of 45 ± 2.45 year the length of the follow up-period in these patients was 1.55 ± 0.50 year.

The hemorrhoid symptoms of patients includes 75 % of the patients are grade in hamorrhoids, bleeding observed in 160 (80 %) of the examined patients, while, the hemorrhoidal syndrome observed in 50 (25 %) of the examined patients, Prolapsed hemorrhol observed in 100 (50 %) of the examined patients, thrombosed hemorrhoid observed in 20 (10 %) of the examined patients.

The results of early pre-operative period analgesic need (nonsteroidal anti-inflammatory drugs, piracetam observed in 40 (20 %),

While, the results about epidemiology and risk factors of hemorrhoid results cleared that, constipation observed in 130 (65 %), pregnancy 50 (25 %), diarrhea 36 (18 %), and observed in others (nutrition, socioeconomic level) observed in 170 (85 %) (Table 1).

Table 1. Demographic and pre-operative clinical data of patients with grade iii hemorrhoids

PARAMETERS		
SOCIODEMOGRAPHIC INFORMATION		Sex
	female	90 (45 %)
	male	110 (55 %)
	age (years)	45 ± 2.45
	number of patients	200
	length of follow-up	1.55 ± 0.50
HEMORRHOID SYMPTOMS OF PATIENTS	grade iii	(75.0%)
BLEEDING	hemorrhoids	160 (80 %)
HEMORRHOIDAL SYNDROME		50 (25 %)
PROLAPSED HEMORRHOI		100 (50 %)

THROMBOSED HEMORRHOID	20 (10 %)
EARLY PRE-OPERATIVE PERIOD ANALGESIC NEED (NONSTEROIDAL ANTI-INFLAMMATORY DRUGS, PARACETAMOL)	40 (20 %)
EPIDEMIOLOGY AND RISK FACTORS OF HEMORRHOID	
CONSTIPATION	130 (65 %)
PREGNANCY	50 (25 %)
DIARRHEA	36 (18 %)
OTHERS (NUTRITION, SOCIOECONOMIC LEVEL)	170 (85 %)

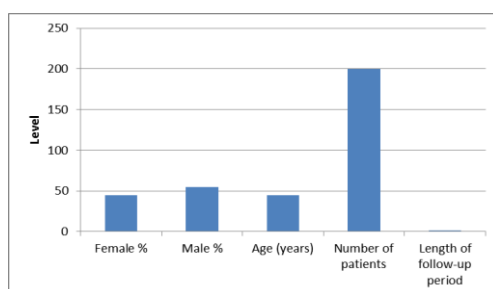


Figure 4. Demographic characters of examined patients.

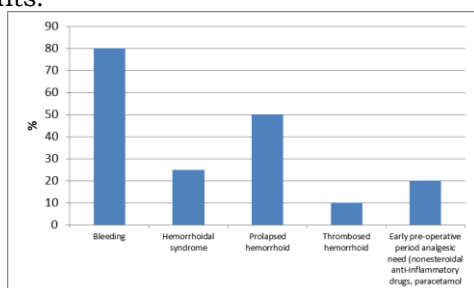


Figure 5. Hemorrhoid symptoms of patients

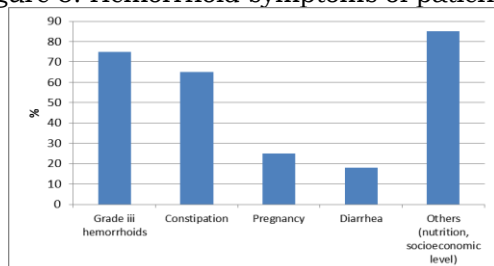


Figure 6. Epidemiology and risk factors of hemorrhoid

While, our results on the intra- and post-operative clinical data of patients with grade III hemorrhoid, cleared that, the duration of surgery reached to 18 minutes, return to regular activity was 14 days, the length of stay period reached to 16 days and no-patients need for blood transfusion.

While, our results on the early post-operative period analgesic need

(nonsteroidal anti-inflammatory drugs, paracetamol, opioids) cleared that, relapse or recurren observed in 2 (1 %), the urinary retention observed in 12 (6 %) of the examined patients.

While, our results on the early complications cleared that, abscess 2 (1 %), bleeding observed in 2 (1 %), long-term complications observed in 20 (10 %), Anal fissure observed in 32 (16 %) of

the examined patients, stenosis observed in 1 (0.5 %) and incontinence observed in 1 (.5 %) (Table, 2).

Table (2): Intra- and post-operative clinical data of patients with grade III hemorrhoid:

PARAMETERS	
DURATION OF SURGERY, MINUTES $\pm$ SD	18 $\pm$ 2.4
RETURN TO REGULAR ACTIVITY, DAYS $\pm$ SD	14 $\pm$ 1.15
LENGTH OF HOSPITAL STAY (HOURS)	16 $\pm$ 3.15
NEED FOR BLOOD TRANSFUSIO	0
EARLY POST-OPERATIVE PERIOD ANALGESIC NEE (NONSTEROIDAL ANTI-INFLAMMATORY DRUGS, PARACETAMOL, OPIOIDS) (DAYS)	
RELAPSE OR RECURREN	2 (1 %)
URINARY RETENTION	12 (6 %)
EARLY COMPLICATIONS	
ABSCESS	2 (1 %)
BLEEDING	2 (1%)
LONG-TERM COMPLICATION	
ANAL FISSURE	20 (10 %)
STENOSIS	32 (16 %)
INCONTINENCE	1 (0.5 %)
	1 (0.5 %)

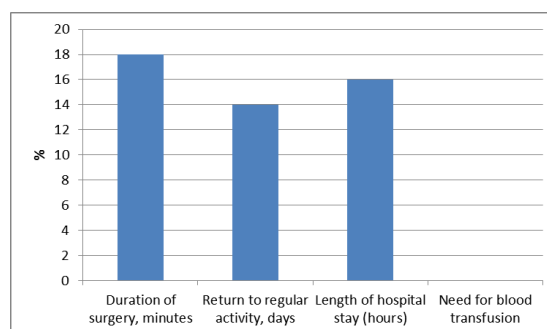


Figure 7. Operation procedure characters

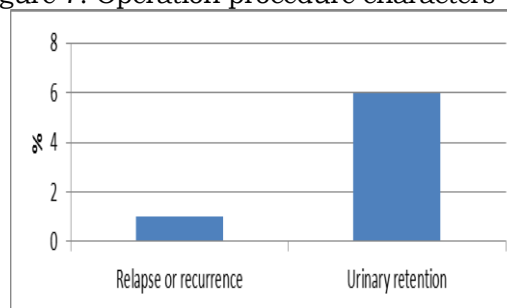


Figure 8. Early post-operative period analgesic need (non-steroidal anti-inflammatory drugs, paracetamol, opioids) (days)

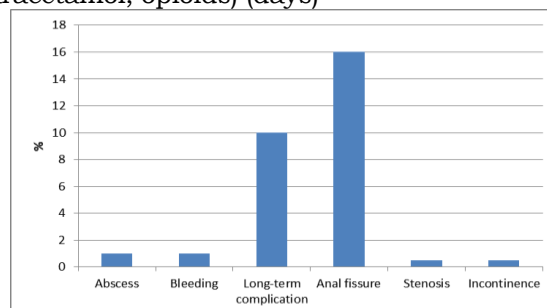


Figure 9. Early complications after the operation

4. Discussion

Hemorrhoidal disease is typically categorized according to the traditional Goligher classification.³ In our investigation, we employed the Goligher staging system, focusing specifically on grade III hemorrhoids.⁸

Contributing factors for hemorrhoids are often linked to excessive straining and/or heightened intra-abdominal pressure (constipation, firm stools, pregnancy).⁹ Constipation and/or firm stools are considered the most prevalent causes of hemorrhoids.¹⁰ However, some research did not find a significant correlation between hemorrhoids and constipation.¹⁰ Various dietary elements have been implicated, including low-fiber intake, spicy foods, and alcohol consumption.⁹

Our findings confirm that the HeLP treatment is a safe and effective way to treat hemorrhoids. It is shown that the good effects last and that patients are happy with the results. In order to treat hemorrhoids, several non-excisional methods have emerged in the last several decades. A key component of these surgical procedures is the relocation of hemorrhoidal cushions inside the anal canal Corman et al.,¹¹ or reducing blood supply to the hemorrhoidal plexus by ligating the ends of the hemorrhoidal arteries under Doppler guidance.^{4,12}

Research has indicated that laser hemorrhoid treatments are safe, with bleeding identified as the most common early complication. Various studies have shown that bleeding occurred in 5.5–16.7% of cases following the LHP. The overall rate of postoperative complications following the LHP was found to be 23.3%.⁵ In our study, complications following the HeLP approach aligned with existing literature, with bleeding being prevalent in the early phase at a rate of 9.7%.¹³

Our study recorded a recurrence rate of 5.8% after a follow-up period of 1.3 ± 0.7 years. Trends in the research indicate that complication rates associated with the HeLP technique diminish and success rates improve with increased clinical experience. Urinary retention, a potential complication after the LHP, was reported to occur at rates between 4.1% and 20.1%.¹³

In the early period, incidences of infection and/or abscess were at 1%¹⁹. Our findings revealed that urinary retention occurred in 12 patients (6%). We demonstrated that infections or abscesses developed at a rate of 0.9% among early complications. Studies have shown that long-term complications included anal fissure at a rate of 1–2.6%, anal stenosis at 1%, and anal incontinence at 0.4%³. Our research found long-term complication frequencies to be 3.2% for anal fissure, 0.2% for anal stenosis, and 0.2% for anal incontinence. A review of the literature suggests that both short- and long-term complications are infrequent, which is consistent with our findings. Our study, along with others, suggests that the LHP technique is novel, non-excisional, minimally invasive, secure, and

successful for patients dealing with grade III hemorrhoids.¹⁴

In our study, the duration of postoperative analgesic consumption ranged from 0 to 7 days, with many patients not requiring any analgesics. The average time taken to resume normal activities post-LHP was 11.2 ± 4.8 days. The LHP method represents a minimally invasive, painless, safe, and swift procedure with high efficacy, as evidenced in our study involving patients with grade III hemorrhoidal disease. After reviewing the literature, we have concluded that this technique is the best option for patients with grade II and grade III hemorrhoids who have not responded to conservative treatments. It is associated with a low risk of complications, a short recovery time, minimal pain and discomfort, and high patient satisfaction. Sadly, there is still no painless and effective solution. Results from treating third-degree hemorrhoids using Dearterialization procedures have been promising.⁴

Nonetheless, randomized trials found no statistically significant difference between the post-excisional and pre-excisional recovery processes.¹⁵ Research has shown that this procedure is effective, with minimal risk of problems before and after surgery, and that patients should anticipate very little pain as a result. Most of our patients reported only mild discomfort after surgery, and they were able to undergo the procedure with just a local anesthetic cream. This part is consistent with what other research has shown.¹⁶, additionally, benefits from the method. Patients were able to go home just a few hours following the treatment because no anesthesia was administered. There was a marked decrease in the postoperative discomfort and bleeding, and the positive effects shown after three months persisted into the following year.¹

Patients reported a high degree of improvement in their clinical state; in fact, 84.3% of patients rated it as very much or substantially improved. We utilized the Patient Global Improvement (PGI-I), which was developed to gauge a patient's perception of progress or deterioration over time, to assess this modification. It has never been used to assess a patient's perception of treatment efficacy in relation to hemorrhoid surgery, despite its frequent use in clinical studies. Nevertheless, it has been proven effective following treatments for rectal prolapse and urine incontinence Corman et al.,¹¹ while also looking like a reliable way to measure the effect of an intervention. We feel a consistent patient group should be reviewed to appraise a new procedure, so we strictly excluded individuals with various anorectal disorders. The limited patient sample is one

disadvantage of our study. Patients were able to get back to their regular lives and jobs more quickly, which reduced the overall societal cost of therapy. Good short-term symptom alleviation was shown in the present investigation. Results after a year are comparable to those after other non-surgical procedures.⁴ To determine the exact function of this treatment, however, controlled-randomized trials and studies with long follow-up periods are required.¹

4. Conclusion

Second- and third-degree hemorrhoids are effectively treated with the He-LP method, which has a short operation and recovery time, can be done in a day surgery environment, causes low intra- and postoperative discomfort, and significantly improves symptoms. More invasive therapies for early-stage HD may not be necessary with this approach.

Disclosure

The authors have no financial interest to declare in relation to the content of this article.

Authorship

All authors have a substantial contribution to the article

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Conflicts of interest

There are no conflicts of interest.

References

1. Aksoy E, Ocak OK, Ertürk Z, et al. Laser Therapy for Grade II and III Hemorrhoids: Threeyear Clinical Experience II. ve III. Derece Hemoroidlerde Lazer Tedavisi: Üç Yıllık Klinik Deneyim. *Kafkas J Med Sci*. 2024; 14(2):109–114.
2. Lumb KJ, Colquhoun PH, Malthaner RA, Jayaraman S. Stapled versus conventional surgery for hemorrhoids. *Cochrane Database Syst Rev*. 2006;2006(4):CD005393.
3. Rubbini M, Ascanelli S. Classification and guidelines of hemorrhoidal disease: Present and future. *World J Gastrointest Surg*. 2019;11(3):117–121.
4. Dal Monte PP, Tagaritello C, Sarago M, et al. Transanal haemorrhoidal dearterialisation: Nonexcisional surgery for the treatment of haemorrhoidal disease. *Tech. Coloproctol*. 2007;11: 333–8.
5. Longchamp G, Liot E, Meyer J, et al. Nonexcisional laser therapies for hemorrhoidal disease: a systematic review of the literature. *Lasers Med Sci*. 2021;36(3):485–496.
6. Altomare DF, Giuratrabocchetta S. Conservative and surgical treatment of haemorrhoids. *Nat Rev Gastroenterol Hepatol*. 2013;10(9):513–21.
7. APA: Handbook of psychiatric measures. APA, Washington, 2000.
8. Hardy A, Chan CL, Cohen CR. The surgical management of haemorrhoids—a review. *Dig Surg*. 2005;22(1–2):26–33.
9. Pigot F, Siproudhis L, Allaert FA. Risk factors associated with hemorrhoidal symptoms in specialized consultation. *Gastroenterol Clin Biol*. 2005;29(12):1270–4.
10. Lohsiriwat V. Hemorrhoids: from basic pathophysiology to clinical management. *World J Gastroenterol*. 2012;18(17):2009–17.
11. Corman ML, Gravie JF, Hager T, et al. Stapled haemorrhoidopexy: A consensus position paper by an international working party: Indications, contra-indications and technique. *Colorectal Dis*. 2003;5:304–10.
12. Gerbershagen HJ, Aduckathil S, van Wijck AJ, Peelen LM, Kalkman CJ, Meissner W. Pain intensity on the first day after surgery: a prospective cohort study comparing 179 surgical procedures. *Anesthesiology*. 2013;118(4):934–944.
13. Giamundo P, De Angelis M, Mereu A. Hemorrhoid laser procedure with suture-pxy (HeLPexx): a novel effective procedure to treat hemorrhoidal disease. *Tech Coloproctol*. 2020;24(2):199–205.
14. Faes S, Pratsinis M, Hasler-Gehrer S, et al. Shortand long-term outcomes of laser haemorrhoidoplasty for grade IIIII haemorrhoidal disease. *Colorectal Dis*. 2019;21(6):689–696.
15. De Nardi P, Carpetti G, Corsaro A, et al. A prospective, randomized trial comparing the short-and long-term results of Doppler-guided transanal hemorrhoid dearterialization with mucopexy versus excision hemorrhoidectomy for grade III hemorrhoids. *Dis. Colon. Rectum*. 2014;7: 348–53.
16. Weyand G, Theis CS, Fofana AN, et al. Laserhemorrhoidoplasty with 1470 nm diode laser in the treatment of second to fourth degree hemorrhoidal disease-a cohort study with 497 patients. *Zentralblatt fur Chirurgie*. 2017; 144(4): 355–363.