Monopolar Cautery Ablation as a Minimally Invasive Treatment Option for Grade II–III Hemorrhoidal Disease

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AIM: Hemorrhoidal disease (HD) is a common condition worldwide that significantly impairs quality of life. This study aims to compare the effectiveness of excisional hemorrhoidectomy (EH) and monopolar cautery ablation (MPCA).

METHODS: This retrospective study included 61 patients who underwent surgery for symptomatic grade II–III hemorrhoidal disease between January 2022 and December 2023. Patients were divided into two groups according to the surgical technique: the EH group and the MPCA group. All patients were followed for at least one year. The groups were compared in terms of operative time, postoperative pain scores (at the 12th hour, postoperative days 1, 7, and 14), duration of analgesic use, patient satisfaction, time to return to daily activities, postoperative complications, and recurrence rates.

RESULTS: Thirty-two patients underwent EH, and 29 underwent MPCA. Baseline characteristics, including age, sex, and hemorrhoidal stage, were comparable between the groups. Operative time and postoperative analgesic requirements were significantly lower in the MPCA group (both $p < 0.001$). The time to return to daily activities was significantly shorter in the MPCA group, while patient satisfaction was significantly higher (both $p < 0.001$). No significant differences were observed between the groups regarding hospital stay or postoperative bleeding and edema ($p = 0.086$, $p = 1.000$ and $p = 0.600$, respectively). No recurrences were detected in the EH group, whereas three recurrences were observed in the MPCA group ($p = 0.102$).

CONCLUSIONS: Monopolar cautery ablation appears to be a suitable minimally invasive option for selected patients with grade II–III hemorrhoidal disease, offering advantages in terms of operative time, postoperative pain, and recovery. However, a higher short-term recurrence rate compared to excisional hemorrhoidectomy was observed. These findings should be interpreted cautiously due to the retrospective design and relatively short follow-up period. Further prospective studies with longer follow-up are required to confirm long-term efficacy and safety.

Keywords: excisional hemorrhoidectomy; monopolar cautery ablation; recurrence; minimally invasive techniques

Introduction

Hemorrhoidal complaints represent a common reason for visits to surgical outpatient clinics worldwide. Hemorrhoidal disease (HD) is a benign condition that leads to significant medical and socioeconomic burden and negatively affects quality of life. Hemorrhoids are normal anatomical structures; those located above the dentate line are internal hemorrhoids, whereas those below the dentate line are external hemorrhoids [1,2,3].

Hemorrhoidal cushions play a crucial role in maintaining continence. These cushions consist of three main vascular pads that contribute to closure of the anal canal [4,5]. Known as anal cushions, they are anatomically located in the right anterior, right posterior, and left lateral positions of the anal canal. This anatomical configuration enables fine regulation of liquid, solid, and gas continence [2,3,4].

Hemorrhoidal tissue located above the dentate line is innervated by visceral nerve fibers; therefore, internal hemorrhoids are typically insensitive to pain, touch, and temperature [5,6]. Internal hemorrhoids are classified into four grades (I–IV) according to the degree of prolapse into the anal canal [2,3,4].

The reported prevalence of HD in the literature ranges from 2.9% to 27.9%, with symptomatic hemorrhoids affecting approximately 4% of the general population. The most common presenting symptoms include rectal bleeding, pain, anal pruritus, and mucosal prolapse [1,2].

Multiple factors contribute to the etiology of hemorrhoidal disease, including advanced age, chronic constipation, diarrhea, pregnancy, prolonged sitting, and excessive straining during defecation.

Initial management of symptomatic hemorrhoids is generally conservative and includes dietary modifications, lifestyle changes, and medical therapy; however, the response to these measures is often temporary. For patients with persistent symptoms, office-based procedures such as

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rubber band ligation are recommended, while surgical intervention is reserved for patients who do not respond to or cannot tolerate office-based treatments [1,2,3,4,5].

Commonly used surgical techniques include open hemorrhoidectomy (Milligan–Morgan), closed hemorrhoidectomy (Ferguson), and semi-open hemorrhoidectomy (Parks). Although these techniques are associated with low recurrence rates, they may result in significant postoperative pain, discomfort, and complications such as anal stenosis. Postoperative pain, in particular, remains a major deterrent to surgical treatment for many patients. Consequently, there has been increasing interest in less painful, minimally invasive treatment modalities [7,8].

Among minimally invasive techniques, hemorrhoidal laser procedures and radiofrequency ablation (RFA) are the most frequently used methods. These approaches have been reported to yield acceptable recurrence rates of approximately 10–15% [9,10,11,12,13,14]. However, the high cost of these technologies often limits their widespread adoption, particularly in developing and underdeveloped countries, where cost-effectiveness is a major concern for healthcare systems [15,16].

Monopolar cautery is a widely available, relatively low-cost electrosurgical device that converts electrical energy into heat, allowing for tissue coagulation and ablation. Owing to these properties, monopolar cautery may represent a viable alternative minimally invasive option for hemorrhoidal surgery, similar in principle to laser and RFA techniques.

The aim of this study was to compare the perioperative and postoperative outcomes of monopolar cautery ablation and excisional hemorrhoidectomy in the treatment of symptomatic grade II–III hemorrhoidal disease.

Methods

Study Design

This study was designed as a single-center retrospective observational analysis. Patients were retrospectively grouped according to their previous surgical procedure (excisional hemorrhoidectomy or monopolar cautery ablation). Cases that underwent excisional hemorrhoidectomy meeting the study criteria were assigned to the excisional hemorrhoidectomy (EH) group, and cases that underwent monopolar cautery ablation were assigned to the monopolar cautery ablation (MPCA) group.

Patient Selection

The medical records of 104 patients who underwent EH or MPCA for symptomatic grade II–III hemorrhoidal disease at the Department of General Surgery, Faculty of Medicine, Tekirdağ Namık Kemal University, between January 2022 and December 2023 were retrospectively reviewed.

Inclusion criteria were symptomatic grade II–III internal hemorrhoidal disease, age $\geq$18 years, and a minimum follow-up period of 12 months.

Exclusion criteria included grade I or IV hemorrhoids, pregnancy, inflammatory bowel disease, hepatic impairment, cardiovascular or respiratory failure, and the presence of other benign anorectal diseases.

Forty-three patients were excluded due to inaccessible medical records or unsuccessful follow-up contact during telephone interviews or outpatient visits. Consequently, a total of 61 patients met the study criteria and were included in the final analysis: 32 patients in the EH group and 29 patients in the MPCA group (Fig. 1).

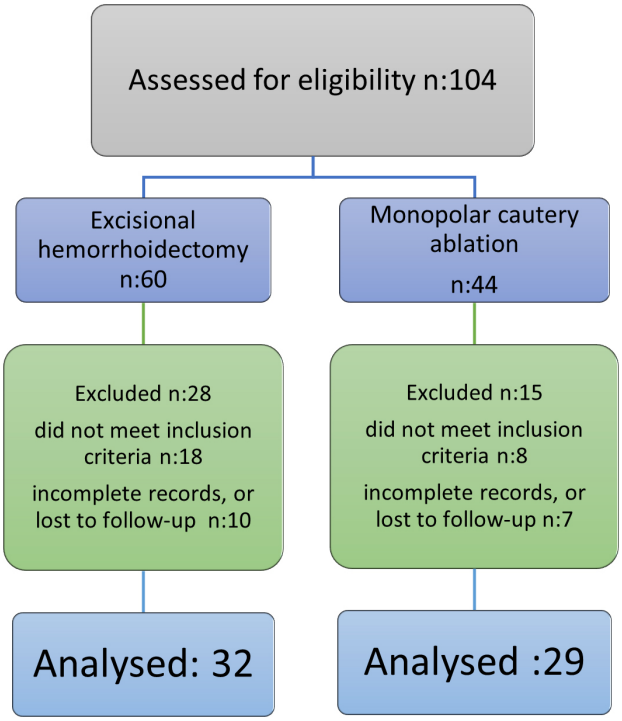

Fig. 1. Flow diagram of patient selection and study inclusion.

Demographic and clinical data, including age, sex, body mass index (BMI), smoking status, presenting symptoms, hemorrhoidal grade, operative time, postoperative pain scores, length of hospital stay, postoperative complications, and recurrence, were recorded. Comparative analyses were performed between the two groups based on these parameters.

Surgical Techniques

All procedures were performed under spinal anesthesia with the patient placed in the lithotomy position. Prophylactic antibiotic therapy consisting of 1 g of cefazolin was administered intravenously prior to surgery. All surgical procedures were performed by a single surgeon experienced in colorectal surgery.

Excisional Hemorrhoidectomy

Excisional hemorrhoidectomy was performed using the closed Ferguson technique. The anal canal was gently ex-

posed using an anal retractor. The hemorrhoidal cushions were identified in the typical positions (left lateral, right anterior, and right posterior).

Each hemorrhoidal cushion was grasped with a forceps and gently retracted outward to expose its base. An elliptical incision was made over the hemorrhoidal tissue, beginning just distal to the dentate line and extending proximally along the hemorrhoidal pedicle. The hemorrhoidal plexus was carefully dissected from the underlying internal sphincter using electrocautery while maintaining the dissection in the submucosal plane. Particular care was taken to avoid injury to the internal sphincter.

The vascular pedicle was ligated using an absorbable suture, and the hemorrhoidal tissue was excised distal to the ligation. Mucocutaneous bridges between the hemorrhoidal columns were preserved to reduce the risk of postoperative anal stenosis. After achieving meticulous hemostasis, the mucosal defect was closed with a running absorbable suture, consistent with the closed hemorrhoidectomy technique.

At the end of the procedure, an anal tampon consisting of sterile gauze impregnated with antibiotic ointment was placed in the anal canal to support hemostasis and reduce the risk of early postoperative bleeding. The tampon was removed approximately 12 hours after surgery.

Monopolar Cautery Ablation

Prior to the procedure, the monopolar cautery pen (Batch number: 10884521707306 (GS1) VLFX8GEN Valleylab™ FX8, Medtronic Medical Technology Trading Ltd. Co., Istanbul, Türkiye) was prepared by covering a thin feeding probe, leaving a 2-mm gap at the metallic tip. Grade III hemorrhoidal cushions are shown in Fig. 2A. This modification allows concentration of electrical energy at the cautery tip; failure to perform this step may result in inadequate cauterization and potential sphincter injury due to excessive energy dispersion (Fig. 2B). An approximately 2-mm incision was then made at the base of the hemorrhoidal cushion using the prepared cautery pen. The probe was advanced through the submucosal plane toward the apex of the hemorrhoidal cushion (Fig. 2C). The electrocautery unit was set to 30 W, and the hemorrhoidal tissue and surrounding submucosal area were ablated using 1-second pulses (Fig. 2D). The procedure was terminated when adequate tissue shrinkage and a characteristic whitish discoloration of the mucosa were observed. Gentle digital compression was applied for approximately 60 seconds and then released. The same technique was applied sequentially to the remaining hemorrhoidal cushions. All incisions were left open. At the end of the procedure, an ice finger tampon wrapped in sterile gauze was placed in the anal canal. The monopolar cautery ablation technique is demonstrated in **Supplementary Video 1**.

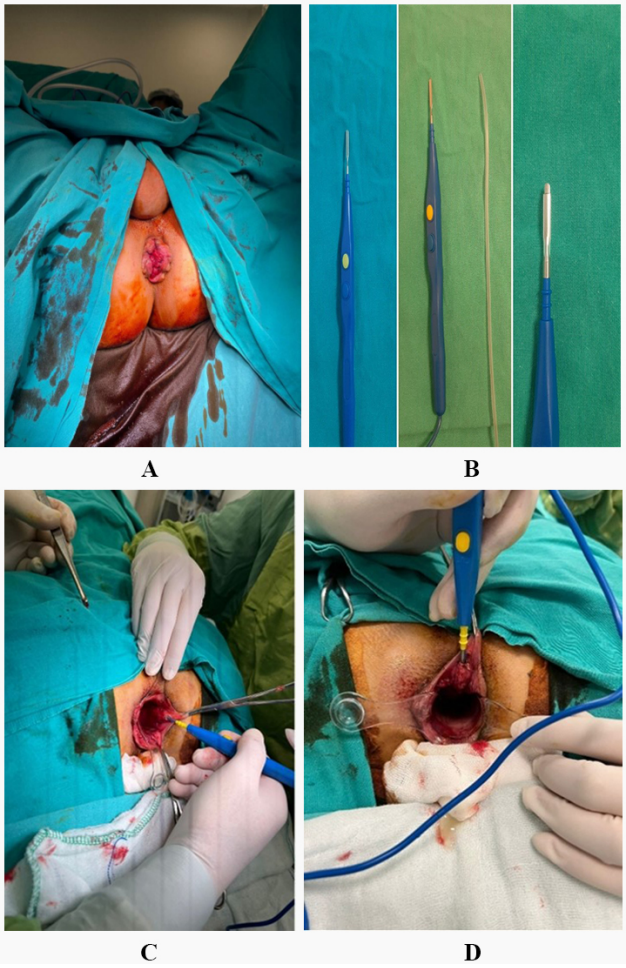

Fig. 2. Step-by-step demonstration of the monopolar cautery ablation technique. (A) Visualization of the hemorrhoidal cushion. (B) Preparation of the modified monopolar cautery tip with a 2-mm exposed metallic end. (C) Submucosal insertion of the cautery probe into the hemorrhoidal tissue. (D) Controlled ablation of the hemorrhoidal cushion resulting in tissue shrinkage.

Postoperative Care

Due to the residual effects of spinal anesthesia, patients did not experience significant pain during the first six postoperative hours, and routine analgesics were not administered during this period. Thereafter, analgesic treatment was provided according to the patient's pain levels.

In all patients, the anal tampon was removed 12 hours after surgery. No major early postoperative complications requiring additional intervention were observed during the hospital stay in either group.

Patients who tolerated oral intake and achieved adequate pain control with oral analgesics were discharged on the first postoperative day and scheduled for routine outpatient follow-up.

Postoperative management protocols, including analgesic administration, timing of anal tampon removal, and discharge criteria, were standardized for both groups.

Table 1. Patients' characteristics.

Variable	Total (n = 61)	EH group (n = 32)	MPCA group (n = 29)	*p*-value
Gender				0.548
Male	34 (55.7%)	19 (59.4%)	15 (51.7%)	
Female	27 (44.3%)	13 (40.6%)	14 (48.3%)	
Age (years)	48.0 ± 11.5	45.0 ± 12.5	49.0 ± 8.5	0.288
BMI (kg/m^2)	27.0 ± 5.0	26.0 ± 2.8	28.0 ± 5.0	0.066
Smoking				0.404
Yes	24 (39.3%)	11 (34.4%)	13 (44.8%)	
No	37 (60.7%)	21 (65.6%)	16 (55.2%)	
Hemorrhoid grade				0.517
Grade II	30 (49.2%)	17 (53.1%)	13 (44.8%)	
Grade III	31 (50.8%)	15 (46.9%)	16 (55.2%)	
Symptoms				
Bleeding	45 (73.8%)	23 (71.9%)	22 (75.9%)	0.724
Pain	39 (63.9%)	20 (62.5%)	19 (65.5%)	0.806

Footnote: Data are presented as mean ± standard deviation or number (percentage). BMI, body mass index; EH, excisional hemorrhoidectomy; MPCA, monopolar cautery ablation.

Follow-up

The primary outcome of the study was the recurrence rate at 12 months after surgery. Recurrence was defined as the reappearance of hemorrhoidal symptoms, including bleeding and/or prolapse, confirmed by clinical examination and anoscopy, and requiring additional medical or surgical intervention. Recurrence was continuously monitored and recorded throughout the entire postoperative follow-up period, with a minimum follow-up threshold of 12 months required for patient inclusion.

Secondary outcomes included operative time, postoperative pain assessed using the Visual Analog Scale (VAS) at 12 hours and on postoperative days 1, 7, and 14, duration of analgesic use, time to return to daily activities, postoperative complications classified according to the Clavien–Dindo classification system. At the final follow-up, patient satisfaction was assessed using a self-administered 5-point Likert scale questionnaire. Patients were asked to indicate their level of agreement with the statement "I am satisfied with the overall treatment outcome." Response options included: very satisfied, satisfied, neutral, dissatisfied, and very dissatisfied. Responses were analyzed as an ordinal categorical variable and are presented as frequencies and percentages. [17,18].

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows (version 27.0, IBM Corp., Armonk, NY, USA). Continuous variables that follow a normal distribution are presented as mean ± standard deviation (SD), whereas those that did not follow a normal distribution are presented as median (interquartile range). Categorical variables are expressed as frequency (n) and percentage (%). The distribution of continuous variables was assessed using the Shapiro–Wilk test, supplemented by visual inspection of histograms and Q–Q plots. Homogeneity of variances between groups was evaluated using Levene's test. Comparisons of continuous variables between the two independent groups were performed using the independent-samples *t*-test when the assumption of equal variances was met. When Levene's test indicated unequal variances, Welch's *t*-test (equal variances not assumed) was applied. If it does not normal distribution, Mann Whitney-U test was used. Categorical variables were compared using the Pearson chi-square test or Fisher's exact test, as appropriate according to the expected cell frequencies. Depending on the data distribution, repeated-measures analysis of variance or the Friedman test was used to evaluate changes in postoperative VAS scores over time. When the sphericity assumption was violated, the Greenhouse–Geisser correction was applied. Pairwise comparisons were adjusted using the Bonferroni correction. All statistical tests were two-tailed, and a p-value < 0.05 was considered statistically significant.

Results

Patient Characteristics

Of the 61 patients included in the study, 27 (44.3%) were female and 34 (55.7%) were male. Thirty-seven patients (60.7%) were non-smokers. The mean age of the cohort was 48.0 ± 11.5 years, and the mean body mass index (BMI) was 27.0 ± 5.0 kg/m^2. Thirty patients (49.2%) were diagnosed with grade II hemorrhoidal disease, while 31 patients (50.8%) had grade III disease. The most common presenting symptoms were rectal bleeding (73.8%).

No statistically significant differences were observed between the EH and MPCA groups with respect to age, sex, smoking status, BMI or hemorrhoidal grade (p = 0.288, p = 0.548, p = 0.404, p = 0.066 and p = 0.517, respectively) (Table 1). Likewise, there were no significant differences in presenting symptoms, with rectal bleeding and pain be-

Table 2. Intraoperative and postoperative outcomes.

Variable	Total (n = 61)	EH group (n = 32)	MPCA group (n = 29)	*p*-value
Operative time (min)	16.74 ± 4.42	20.22 ± 2.45	12.90 ± 2.11	<0.001
Bleeding, n (%)	9 (14.8)	5 (15.6)	4 (13.8)	1.000
Postoperative edema, n (%)	3 (4.9)	1 (3.1)	2 (6.9)	0.600
Analgesic use (days)	7.49 ± 2.30	9.00 ± 1.61	5.83 ± 1.39	<0.001
Postoperative pain (VAS score)				
12 h	5 (5–6)	6 (5–7)	5 (5–6)	0.602
POD 1	3 (3–4)	3 (3–4)	3 (2–3)	<0.001
POD 7	2 (1–2)	2 (2–3)	1 (1–2)	<0.001
POD 14	1 (1–2)	2 (1–2)	1 (0–1)	<0.001
Postoperative stay (hours)	14.87 ± 0.87	14.69 ± 0.86	15.07 ± 0.84	0.086
Return to normal activities (days)	4.16 ± 2.20	5.97 ± 1.06	2.17 ± 0.80	<0.001
Patient satisfaction (Likert score)	8 (8–9)	8 (7–9)	9 (9–10)	<0.001
Recurrence, n (%)	3 (4.9)	0 (0)	3 (10.3)	0.102

Footnote: Continuous variables are presented as mean ± standard deviation or median (interquartile range), as appropriate. POD, postoperative days; VAS, Visual Analog Scale; IQR, interquartile range.

ing the most common complaints in both groups ($p = 0.724$ and $p = 0.806$, respectively).

Intraoperative and Postoperative Outcomes

The MPCA group demonstrated significantly shorter mean operative times (12.90 ± 2.11 vs. 20.22 ± 2.45 minutes; $p < 0.001$) and a shorter mean duration of postoperative analgesic use (5.83 ± 1.39 vs. 9.00 ± 1.61 days; $p < 0.001$) compared with the EH group (Table 2).

Normality testing indicated that VAS scores were not normally distributed; therefore, the Friedman test was used. Intergroup analysis showed significantly lower VAS scores in the MPCA group at POD 1, 7, and 14 (all $p < 0.001$), but not at 12 hours (Table 2). Repeated-measures VAS analysis: The main effect of group was also significant ($F(1, 59) = 61.223$, $p < 0.001$, partial $\eta^2 = 0.509$), indicating that overall postoperative VAS scores were significantly lower in the MPCA group than in the EH group across all postoperative time points. The main effect of time was significant ($F = 698.259$, $p < 0.001$), indicating a significant reduction in VAS scores over time. The group × time interaction was also significant ($F = 16.201$, $p < 0.001$), indicating that the postoperative pain trajectory differed significantly between the two groups. Within-group analysis showed a significant decrease in VAS scores over time in EH Group ($F = 252.222$, $p < 0.001$) and MPCA Group ($F = 479.831$, $p < 0.001$).

Patients in the MPCA group returned to normal daily activities significantly earlier than those in the EH group ($p < 0.001$).

According to the Clavien–Dindo classification, all postoperative complications in both groups were classified as grade I, indicating no deviation from the normal postoperative course and no requirement for additional pharmacological or surgical interventions. No major complications, including anal stenosis, fecal incontinence, or surgical site infection, were observed during the follow-up period.

Table 3. Distribution of patient satisfaction according to the Likert scale.

Response	MPCA group (n = 29)	EH group (n = 32)
Very satisfied	21 (72.4%)	14 (43.8%)
Satisfied	5 (17.2%)	4 (12.5%)
Neutral	1 (3.4%)	2 (6.3%)
Dissatisfied	1 (3.4%)	5 (15.6%)
Very dissatisfied	1 (3.4%)	7 (21.9%)

Patient satisfaction was assessed at the final 12-month postoperative follow-up visit using a 10-point numerical Likert scale. The overall satisfaction scores were analyzed quantitatively as median and interquartile range (IQR) (Table 2). Additionally, to provide a detailed qualitative distribution of patient experiences, the responses were categorized into a standard 5-point Likert scale (ranging from 'Very satisfied' to 'Very dissatisfied') and reported as frequencies and percentages (Table 3).

Recurrence

The mean follow-up duration was 16 months (range: 12–20 months) in the EH group and 14 months (range: 12–16 months) in the MPCA group. No recurrences were observed in the EH group during the follow-up period. In contrast, recurrence occurred in three patients (10.3%) in the MPCA group. But the difference in recurrence rates between the two groups was no statistically significant ($p = 0.102$) (Table 2).

Discussion

In the present study, monopolar cautery ablation for the treatment of symptomatic grade II–III hemorrhoidal dis-

ease was associated with significantly shorter operative time, reduced postoperative pain scores, shorter duration of analgesic use, and faster return to daily activities compared with excisional hemorrhoidectomy. Hospital stay and postoperative morbidity were comparable between the two groups. However, excisional hemorrhoidectomy demonstrated a lower recurrence rate during the follow-up period. These findings suggest that while monopolar cautery ablation offers clear advantages in terms of postoperative comfort and recovery, it may be associated with a higher short-term recurrence rate and should therefore be considered a complementary minimally invasive option rather than a replacement for conventional excisional surgery.

Hemorrhoidal disease is anatomically and clinically classified as internal, external, or combined. Internal hemorrhoids originate above the dentate line and consist of vascular and connective tissue components, whereas external hemorrhoids are vascular plexuses located below the dentate line and are richly innervated. Rectal bleeding is the most common presenting symptom of internal hemorrhoids, followed by prolapse-related discomfort during or after defecation. Additional symptoms such as anal pruritus and thrombosis are also frequently observed [1,2,3]. Postoperative pain and discomfort remain among the most feared aspects of surgical treatment and represent major deterrents for patients considering hemorrhoidal surgery. Furthermore, concerns regarding complications such as fecal incontinence or anal stenosis contribute to patient hesitation. These limitations of traditional excisional hemorrhoidectomy techniques, including the Milligan–Morgan, Ferguson, and Parks procedures, have driven the development of minimally invasive alternatives [4,5,6,7].

Currently, office-based procedures such as rubber band ligation, sclerotherapy, and infrared coagulation are commonly used for selected patients with grade I–II hemorrhoids [2,3,4,8]. More recently, minimally invasive surgical techniques such as transanal hemorrhoidal dearterialization (THD), hemorrhoidal artery ligation (HAL), laser hemorrhoidoplasty (LHP) or Hemorrhoidal Laser Procedure (HeLP), and radiofrequency ablation (Rafaelo®) have gained popularity. The primary mechanism of these techniques involves reducing arterial inflow to the hemorrhoidal cushions, leading to tissue shrinkage and symptom relief. Multiple studies have reported comparable outcomes for these approaches, particularly in terms of reduced postoperative pain and faster recovery, albeit with higher recurrence rates compared to excisional hemorrhoidectomy [9,10,11,12,13,14].

Two systematic reviews and meta-analyses, involving 661 and 1937 patients respectively, demonstrated that laser hemorrhoidoplasty resulted in lower postoperative pain scores, shorter hospital stays, and reduced bleeding compared to excisional hemorrhoidectomy [9,10,11]. Similar results have been reported for the Rafaelo (RFA) procedure as well [12,13].

Despite their clinical advantages, the widespread adoption of laser and radiofrequency-based techniques is limited by their high cost. Disposable fibers and generator systems contribute substantially to procedural expenses, with reported additional costs ranging from $350 to $700 per case. Although reduced operative time, shorter hospitalization, and fewer complications have been proposed as potential cost-saving factors, robust cost-effectiveness analyses are lacking [14,15,16]. Although monopolar cautery ablation may represent a practical and accessible alternative due to the absence of disposable equipment, the present study did not include a formal economic evaluation; therefore, conclusions regarding cost-effectiveness cannot be established.

From a technical perspective, electrosurgical devices convert standard electrical frequencies into high-frequency currents capable of producing tissue effects such as coagulation, fulguration, and vaporization. In monopolar electrosurgery, electrical current passes through the tissue via a single active electrode, generating heat as a result of tissue resistance. The extent of tissue effect depends on factors such as electrode size and shape, power settings, and duration of contact [19,20,21,22]. In monopolar cautery ablation, controlled thermal energy induces coagulation and shrinkage of the vascular structures within the hemorrhoidal cushion, a mechanism similar to that of laser and radiofrequency techniques, differing primarily in the type of energy delivered. Low-amplitude direct current settings can be used in outpatient settings, but often require repeated procedures, while higher amplitudes require anesthesia [23,24].

In the present study, monopolar cautery ablation demonstrated favorable short-term outcomes, including reduced postoperative pain, shorter analgesic requirement, and faster return to daily activities, which are comparable to other minimally invasive techniques reported in the literature. However, recurrence was observed only in the MPCA group, suggesting a potentially higher recurrence risk compared to excisional hemorrhoidectomy. Patients undergoing monopolar cautery ablation experienced significantly less postoperative pain, required fewer analgesics, and returned to daily activities earlier than those treated with excisional hemorrhoidectomy.

Limitations

This study has several limitations, including its retrospective, single-center design, lack of power analysis, relatively short follow-up period, and potential selection bias. Additionally, all procedures were performed by a single experienced surgeon, which may limit external validity. Subjective outcome measures such as pain and patient satisfaction may also be affected by reporting bias. Another important limitation of this study is the relatively small sample size. Although no statistically significant differences were observed between the groups for certain outcomes, such as postoperative bleeding and edema, the limited number of patients may reduce the statistical power to detect dif-

ferences in relatively infrequent complications. Therefore, the possibility of a type II error cannot be excluded, and these findings should be interpreted with caution. Larger prospective studies with greater statistical power are required to more reliably assess differences in postoperative complications between surgical techniques. In addition, recurrence was evaluated as a binary outcome rather than using time-to-event analysis methods such as Kaplan–Meier, which may limit the accuracy of comparisons given variable follow-up durations.

Despite these limitations, the findings of this study suggest that monopolar cautery ablation may represent a practical minimally invasive option for selected patients with grade II–III hemorrhoidal disease. Because the technique utilizes a standard electrosurgical device that is widely available in most operating rooms, it may offer a feasible alternative in settings where more advanced energy-based technologies are not readily accessible. The relatively short follow-up duration limits the ability to assess long-term recurrence and late complications. Therefore, our findings primarily reflect short- to mid-term outcomes.

Conclusions

Monopolar cautery ablation may represent a promising minimally invasive alternative for selected patients with grade II–III hemorrhoidal disease, particularly in terms of postoperative pain and recovery. However, given the higher observed recurrence rate and the limitations of this retrospective study, these findings should be interpreted with caution. Further large-scale, prospective, multicenter studies with longer follow-up are needed to establish its long-term efficacy and safety.

Availability of Data and Materials

The data used and analyzed during the current study are available from the corresponding author on reasonable request.

Author Contributions

Conceptualization: SB, KC, FRP; Data curation: SB; Investigation: SB, KC, FRP; Methodology: SB, KC, FRP; Article writing: SB, KC. All authors contributed to the critical revision of the manuscript for important intellectual content. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work. All authors acknowledge co-authorship and contributions to this article.

Ethics Approval and Consent to Participate

Ethical approval was obtained from the Tekirdağ Namık Kemal University Ethics Committee (Protocol No.: 2024.242.07.17). Due to the retrospective nature of the study, the requirement for individual informed consent for participation was waived. However, written informed consent was obtained for the use of clinical images. We confirm that this study was prepared in accordance with the ethical principles outlined in the Declaration of Helsinki.

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Conflict of Interest

The authors declare no conflict of interest.

Supplementary Material

Supplementary material associated with this article can be found, in the online version, at https://doi.org/10.62713/aic.4511.

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