

ORIGINAL PAPER

General/Surgery/Internal

Less postoperative pain and more frequent recurrence: Can this dilemma caused by the stapled haemorrhoidopexy procedure be avoided?

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Abstract

Background: Although early studies highlighted the advantages of stapled haemorrhoidopexy (SH) (minimal pain and a rapid return to work), long-term follow-up revealed that residual skin tags, external prolapsed haemorrhoids and recurrence were frequent. The aim of our study was to investigate whether the above-mentioned problems could be prevented by performing additional interventions (AIs) during SH. We compared SH with and without AIs in terms of pain, wound-healing time, patient satisfaction and recurrence.

Methods: A total of 106 patients with Grade III-IV haemorrhoids diagnosed between 2016 and 2018 were included. There were four subgroups: Grade III-IV patients undergoing SH alone or SH + AI.

Results: Subgroup 1 (Grade III; SH alone) showed significant decreases in the visual analogue scale pain scores on days 1 and 15 ($P = .004$), but no significant decreases were found in subgroups 2-4 ($P = .839$, $P = .092$, and $P = .781$, respectively). Satisfaction was highest in subgroup 1 (4.22 ± 1.01), but there was no significant difference in satisfaction among the subgroups ($P = .323$). The overall recurrence rate was 13.2% and the difference among subgroups was significant ($P = .023$).

Conclusions: Depending on the haemorrhoid characteristics, the use of more than one repair method provides the best results. Although AIs increase pain and wound-healing time, patient counselling enhances long-term satisfaction and success.

1 | INTRODUCTION

Although many studies have emphasized the short-term advantages afforded by stapled haemorrhoidopexy (SH), prolapsed skin tags and external haemorrhoids that do not fully heal after SH can cause problems.^{1,2} Such pathologies, which frequently accompany internal haemorrhoids, pose a dilemma for surgeons performing SH. Standard SH is associated with minimal pain and rapid recovery, but postoperative problems include palpable skin tags, external haemorrhoids, hygiene issues, and recurrence. This study aimed to provide guidance for surgeons facing this dilemma. We evaluated postoperative pain, wound-healing time, recurrence and the satisfaction of patients who underwent SH only and SH + additional interventions (AIs).

2 | MATERIALS AND METHODS

We retrospectively analysed consecutive patients who underwent SH between January 2016 and January 2018. All patients underwent careful proctological examinations in the outpatient clinic. We recorded age, gender and disease and recurrence status. The Goligher classification was used to stage haemorrhoids.³ In patients with rectal bleeding over 50 years of age or a family history of colorectal cancer, colonoscopy was performed to rule out possible colorectal malignancy. All patients were informed about the planned surgical procedures and gave written informed consent. The study protocol was approved by our ethics committee. Patients with Grade III-IV haemorrhoids were enrolled. Those with Grade II or recurrent

haemorrhoids, or other anal diseases (fissures and fistulas), were excluded. In total, 106 of the 118 patients who met the inclusion criteria participated. By reference to the clinical records, all patients were divided into Grade III ($n = 59$, [56%]) and Grade IV ($n = 47$, [44%]) haemorrhoids groups. Then, using retrospective surgical data, subgroups were created (subgroup 1, Grade III/SH [$n = 27$]; subgroup 2, Grade III/SH + AIs [$n = 32$]; subgroup 3, Grade IV/SH [$n = 22$]; subgroup 4, Grade IV/SH + As ($n = 25$)).

2.1 | Surgical procedures

For intestinal preparation, Fleet enemas were performed prior to surgery; for prophylaxis, a single intravenous dose of metronidazole was used. Anticoagulants were discontinued 1 week before the operation to reduce postoperative bleeding and retrorectal hematomas. All operations were performed by the same surgeon, with patients under general anaesthesia in the jackknife position.

2.2 | SH

After surgical preparation, the anal canal was dilated with a circular dilator. A purse-string suture anoscope was fixed to the perianal skin by placing 2/0 silk sutures at 3-, 6-, 9-, and 12-o'clock. A Monosyn 2/0 absorbable purse-string suture was placed on the rectal wall 4 cm above the dentate line; this covered the mucosal and submucosal layers. A circular 33-mm stapler (PPH03 Hemorrhoidal Stapler; Ethicon) was used. To ensure haemostasis, the stapler was squeezed for 2 minutes before and after firing. Paracetamol and non-steroidal anti-inflammatory drugs were used for pain control, and topical anaesthesia was applied to the anorectal mucosa.

2.3 | SH+AIs

After SH, skin tags and external haemorrhoids were excised over no more than 1/3 of the anal canal circumference. Prolapsed or thrombosed internal haemorrhoids that did not shrink completely were removed by needle-tipped cautery, electro-cauterization, or submucosal fixation. The pain was well-controlled.

2.4 | Postoperative evolution and data collection

All patients were followed-up weekly for 2 months. We compared the pain levels of the early and late postoperative subgroups using a visual analogue scale (VAS; 0, no pain; 10, extremely severe pain). The early and late pain levels were those before discharge on the morning of postoperative day 1, and those on day 15, respectively. We also compared hospital stays and wound-healing times. Late satisfaction was assessed after 8 weeks using a Likert scale (1: totally unsatisfied, 2: unsatisfied, 3: neutral, 4: satisfied, 5: very satisfied).

What's known

- While Stapled haemorrhoidopexy (SH) provides the patient with minimal pain and rapid recovery, it also brings with it unwanted late-term complaints (palpable skin tags, external haemorrhoids, hygienic problems, recurrence) after surgery.

What's new

- The current study showed that SH is appropriate if patients with Grade III haemorrhoidal disease are free from external piles and skin tags.
- Additional interventions performed during SH significantly increase pain and wound-healing time but reduce the recurrence and the need for revision surgery.
- SH is still effective and safe when used alone or in combination.

We evaluated recurrence by physical examination between January and February 2021. The average follow-up period was 49.6 months (range: 37-60 months).

2.5 | Statistical analysis

The groups were compared using SPSS for Windows software (ver. 20.0; IBM Corp., Armonk, NY, USA). The VAS pain and satisfaction scores, and the wound-healing times, were compared by one-way ANOVA. The Kruskal-Wallis test was used to compare nonparametric data. An independent-samples Student's *t* test was employed to compare day 1 and day 15 VAS pain scores. $P < .05$ was considered to indicate statistical significance.

3 | RESULTS

3.1 | Patient characteristics

In total, 26 (24.5%) patients were female and 80 (75.5%) were male. The mean age was 41.9 ± 9.3 years (range: 22-70 years). The subgroups did not differ in age or gender distribution ($P = .560$ and $P = .280$, respectively).

3.2 | Functional results, patient satisfaction, and recurrence

The day 1 and day 15 VAS pain scores of subgroup 1 differed significantly from those of subgroups 2 and 4, but not from those of subgroup 3 ($P = .004$, $P = .003$ and $P = .888$, respectively, on day 1;

$P = .000$, $P = .000$ and $P = .344$, respectively, on day 15). These results showed that both groups 2 and 4 are similar in pain and had significant pain compared to groups 1 and 3 which could be attributed to the addition of excision.

In subgroup 1, pain decreased significantly from day 1 to 15 ($P = .004$), but not in subgroups 2-4 ($P = .839$, $P = .092$ and $P = .781$, respectively; Figure 1). The hospital stay did not differ among the subgroups ($P = .299$; Table 1). In terms of wound-healing time, subgroup 1 differed significantly from subgroups 2 and 4 but not from subgroup 3 ($P = .000$, $P = .767$ and $P = .000$, respectively; Figure 2); subgroups 2 and 4 did not differ ($P = .994$). Postoperatively, 12 patients (11.3%) developed tenesmus, 4 (3.7%) showed urinary retention, 8 (7.5%) showed minor bleeding that did not require treatment, and 5 (4.7%) were constipated. No major bleeding, infection, abscess, pelvic sepsis, or anal stenosis was recorded. Patient satisfaction was evaluated after 8 weeks, and was highest in subgroup 1 (4.2 ± 1.0). However, no significant group difference was evident ($P = .323$; Table 1). The overall recurrence rate was 13.2%, and differed among the groups ($P = .023$; Table 1). Ten (20.4%) and four (7.0%) Grade III-IV patients had persistent or recurrent haemorrhoids after SH and

SH + AIs, respectively ($P = .043$; Figure 3). Grade IV haemorrhoids were significantly associated with recurrence after both procedures (SH = 31.8%, SH + AIs = 12%; $P = .029$).

4 | DISCUSSION

About 9% of patients with haemorrhoids require surgery,⁴ but often refuse treatment because of postoperative complications. Over the past two decades, our understanding of haemorrhoids has improved.⁵ The new techniques do not increase the effectiveness of conventional haemorrhoidectomy but do reduce postoperative pain. SH controls symptoms as well as traditional haemorrhoid surgeries but also reduces postoperative pain. SH, initially described as a procedure for prolapsed haemorrhoids (PPH), was introduced by Longo in 1998 to treat internal mucosal prolapse.⁶ PPH became an alternative to traditional excisional haemorrhoidectomy.⁶

SH removes excess mucosa via circumferential rectal mucosectomy, and stretches and hangs the rectal mucosa (mucosal lifting). SH also prevents venous reflux by controlling blood flow in the

	VAS-day1	VAS-day15
Subgroup 1 (Grade-III) SH	2,48	1,48
Subgroup 2 (Grade-III) SH+AIs	3,97	3,88
Subgroup 3 (Grade-IV) SH	2,82	2,14
Subgroup 4 (Grade-IV) SH+AIs	4,08	3,96

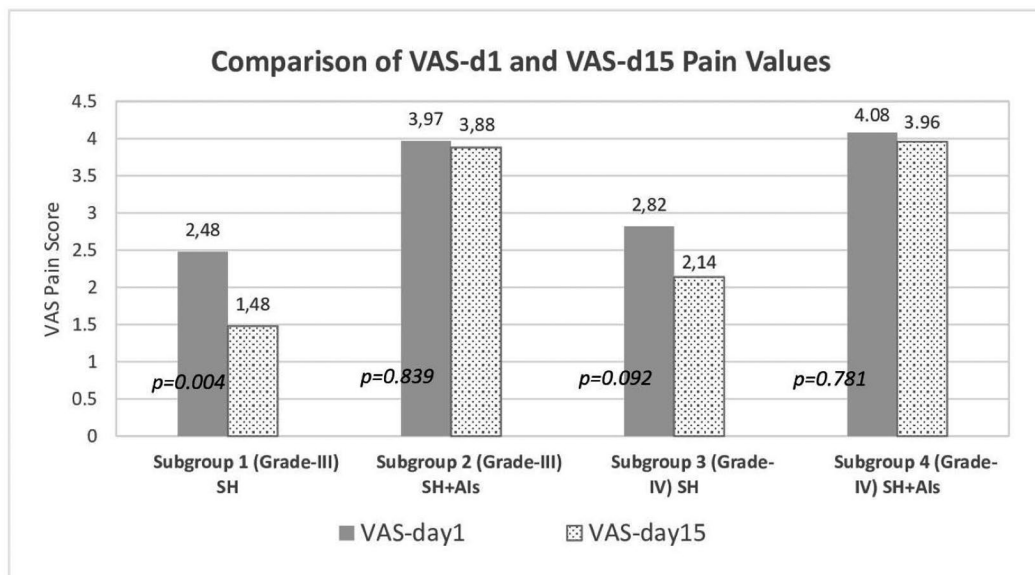


FIGURE 1 Comparison VAS-0 and VAS-control. SH, stapled haemorrhoidectomy; SH + AIs, additional interventions applied to the stapled haemorrhoidectomy; VAS-d1, visual analogue scale postoperative pain scores on postoperative day 1; VAS-d15, visual analogue scale postoperative pain scores on postoperative day 15

TABLE 1 Data Regarding outcomes of the subgroups

	Subgroup 1 (Grade-III) SH	Subgroup 2 (Grade-III) SH+AIs	Subgroup 3 (Grade-IV) SH	Subgroup 4 (Grade-IV) SH+AIs	P value
Hospital stay (d)	1.1 ± 0.3	1.3 ± 0.4	1.1 ± 0.3	1.2 ± 0.4	.299
Wound healing time (wk)	1 ± 0.00	3.13 ± 0.7	1.18 ± 0.4	3.2 ± 0.7	.00
Likert satisfaction score (1-5)	4.2 ± 1.0	3.8 ± 1.1	3.8 ± 1.1	3.7 ± 1.1	.323
Recurrence (n, %)	3 (11.1%)	1 (3.1%)	7 (31.8%)	3 (12%)	.023

Abbreviations: SH, stapled haemorrhoidectomy; SH + AIs, additional interventions applied to the stapled haemorrhoidectomy.

	Subgroup 1 (Grade-III) SH	Subgroup 2 (Grade-III) SH+AIs	Subgroup 3 (Grade-IV) SH	Subgroup 4 (Grade-IV) SH+AIs
Wound Healing Time	1,00	3,13	1,18	3,20

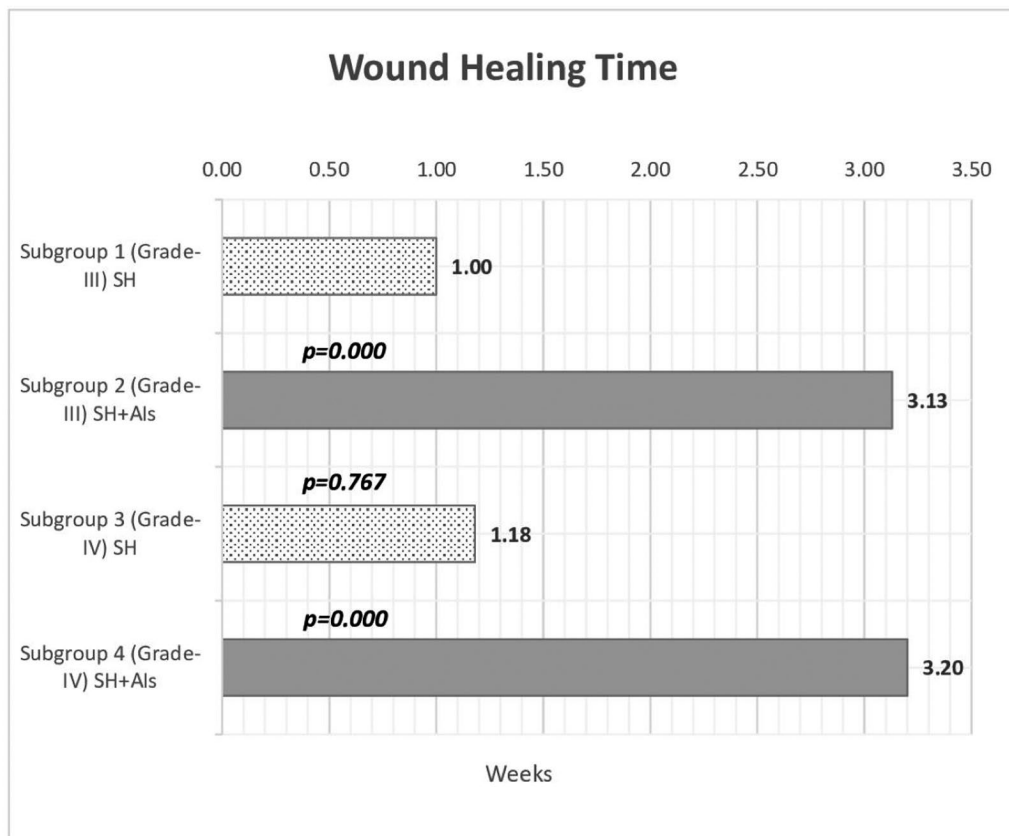


FIGURE 2 Wound healing time. SH, stapled haemorrhoidectomy; SH + AIs, additional interventions applied to the stapled haemorrhoidectomy

haemorrhoidal plexus.^{1,7,8} Thus, SH is ideal for treating Grade III-IV internal haemorrhoids, which show extensive circumferential prolapse.¹ Early studies reported that SH was superior to traditional haemorrhoidectomy in terms of postoperative pain, operation time, and the time to return to normal activities.^{9,10} SH was subsequently recommended by international guidelines,¹¹⁻¹³ and widely favoured by surgeons and patients.¹⁴ However, complications not seen after

conventional haemorrhoidectomy, such as persistent postoperative pain, pararectal hematomas and rectovaginal fistulae, have been reported.^{15,16} We did not encounter these complications.

Urinary retention is apparent after conventional haemorrhoidectomy (5%)¹⁷; the rate in our study was 3.7%, consistent with the literature.⁷ Giordano et al reported that tenesmus was common (13.8%) after SH,⁸ similar to our study (11.3% overall). After surgery, pain

	SH+AIs subgroups (2-4)	SH subgroups (1-3)
Grade-III Hemorrhoids	1	3
Grade-IV Hemorrhoids	3	7

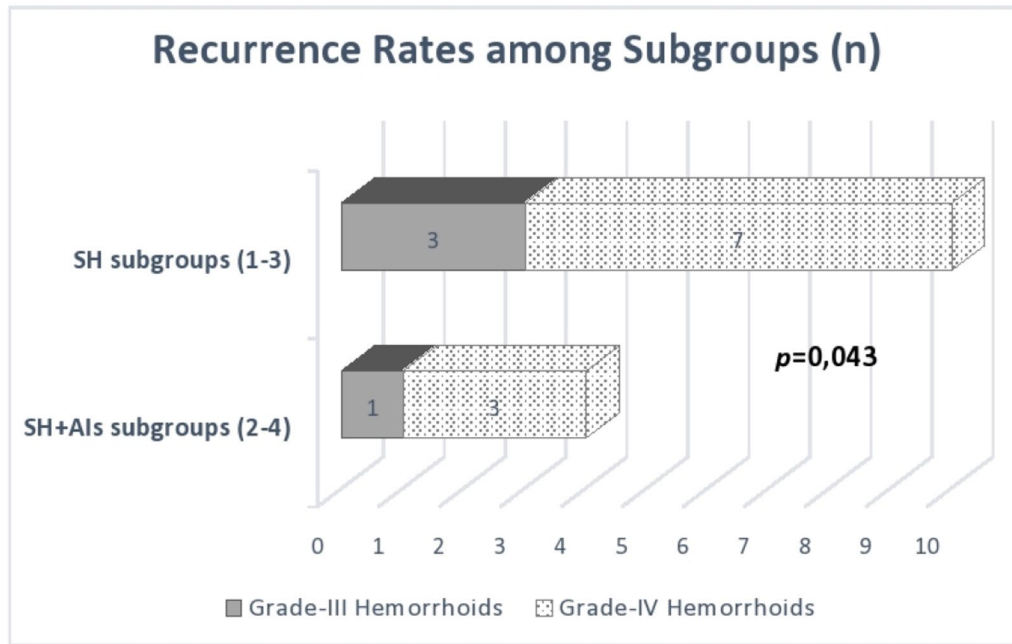


FIGURE 3 Recurrence rates. SH, stapled haemorrhoidectomy; SH + AIs, additional interventions applied to the stapled haemorrhoidectomy

severity usually increases from 3 to 5 days postoperatively, which is partly explained by bacterial colonization. Systemic or topical metronidazole significantly reduces pain^{18,19}; we used parenteral metronidazole.

In surgery for patients with benign conditions, the primary concern is patient satisfaction, i.e. minimal pain, rapid recovery, long-term effectiveness, few complications and no recurrence. Although SH is associated with higher short- and medium-term recurrence rates than conventional haemorrhoidectomy, patient satisfaction is good,²⁰ in line with the early positive results. One multicentre randomized clinical trial reported no difference in pain between patients undergoing SH and conventional haemorrhoidectomy 6 weeks after surgery.⁷ We found significant differences in early and late postoperative pain between the SH and SH + AI subgroups, but no significant difference among subgroups in satisfaction after 2 months ($P = .323$). Sturiale et al found that long-term satisfaction was good among SH patients, although the relapse rate was 9.3%; it was suggested that removing more mucosa might prevent recurrence and thus the need for further surgery.²⁰ Zanella et al compared postoperative pain at early and late stages after SH and stapled transanal rectal resection (STARR), and suggested that STARR reduced recurrence by removing more mucosa.²¹

Residual skin tags are common after SH, affecting 45% of patients.^{1,22} SH does not remove piles or tags. Although patients naturally wish to avoid pain after surgery, aesthetic and hygiene issues can create long-term problems. In the metaanalysis of Giordano et al,⁸ skin tags were seen in 9.8% of patients after classical haemorrhoidectomy, and in 12.7% after SH; the respective rates of recurrent prolapse were 8.7% and 1.7%. Watson et al found that SH was associated with recurrent haemorrhoidal prolapse and residual skin tags.⁷ However, in a multicentre study, Ganio et al found that SH and Milligan–Morgan haemorrhoidectomy was equally efficacious after an average follow-up of 87 months; both techniques had their own advantages and disadvantages.²² Michalik et al²³ reported recurrence (of any haemorrhoidal condition) in 36.3% of patients after SH. For patients with Grade III–IV haemorrhoidal prolapse, the relapse rate was 18.7%. Ceci et al²⁴ reported an overall recurrence rate of 18.2% after SH, including patients with Grade III–IV haemorrhoidal prolapse. The recurrence rate was lower in Grade III than Grade IV patients (14.9% vs. 22.6%). The overall recurrence rate of 13.21% in our study is consistent with the literature. The recurrence rate was significantly lower after SH + AIs than SH alone ($P = .043$).

Despite the recommendations of national and international guidelines, haemorrhoid management varies greatly depending on

disease extent and severity, surgeon experience and preference, and the availability of new devices. Many studies reported different outcomes, so it is difficult to compare their results and the optimal surgery remains unclear. The ideal outcome is a complete removal of all internal and external haemorrhoids, but this increases postoperative pain.

The limitation of our study is the small sample size. In addition, our study did not compare the early postoperative pain level and late recurrence rates, which may provide superiority to SH + Als over other classical haemorrhoidectomy methods. Further studies are needed on the subject.

5 | CONCLUSIONS

Als performed during SH in Grade III and IV haemorrhoids significantly increase pain and the wound-healing time but do not affect patient satisfaction after 2 months. In Grade IV haemorrhoids, SH + Als seem to reduce recurrence and the need for revision surgery. Patients should be well informed that additional interventions such as the excision of skin tags should be avoided as they may exaggerate pain, but their decisions should be respected. If patients with Grade III haemorrhoidal disease are free from external piles and skin tags, SH is appropriate. Surgery should reflect the disease characteristics, and surgical methods should be combined when necessary. SH is effective and safe when used alone or in combination with other methods.

DISCLOSURES

The authors declare that they have no conflict of interest.

ETHICAL APPROVAL

The study protocol was reviewed and approved by the local ethical committee of the Istanbul Gelisim University, and meet all necessary governmental criteria.

INFORMED CONSENT

Informed consent was obtained from all individual participants included in the study.

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