



**COMPARATIVE ANALYSIS OF SHORT TERM RESULTS OF HARMONIC SCALPEL
HEMORRHOIDECTOMY AND STAPLER HEMORRHOIDOPEXY FOR
HEMORRHOIDAL DISEASE**

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ABSTRACT

Background

Hemorrhoidal disease is a very common anorectal disorder, occurring in approximately 5% of the general population. Various techniques are used in the surgical treatment of hemorrhoidal disease; with the commonest two being harmonic scalpel hemorrhoidectomy (HSH) and stapler hemorrhoidopexy (SH). However, the short term results of the two in treating hemorrhoidal diseases are seldom explored.

Objective

To compare the short term results of HSH and SH in treatment of hemorrhoidal disease.

Methodology

This prospective analysis was carried out from May 2019 to November 2019 upon a sample of

168 patients (aged 26 to 58 years), presenting to the Dept. of Surgery at Dr. Ruth KM Pfau Civil Hospital, Karachi with hemorrhoidal disease (chosen via non-probability, consecutive sampling). The patients were divided into two equal groups of Data obtained regarding surgical outcome (in terms of postoperative pain, hospital stay, the incidence of early complications) was recorded onto a self-structured questionnaire after taking written informed consent. The data obtained was analyzed using SPSS v. 22.0.

Results

The patient demographic and clinical characteristics were similar in the two groups. The operative time was significantly shorter in the HSH group compared with the SH group. More severe pain was reported by patients in the HSH group. The difference in mean hospital stay was not significant but early complications (especially those pertaining to the wound and bleeding) were more common among the SH group.

Conclusion

After careful consideration, it can be concluded that HSH yields better short term results in treating hemorrhoidal disease than SH.

Keywords: Hemorrhoids, Harmonic Scalpel Hemorrhoidectomy, Stapler Hemorrhoidopexy, Short-Term Results, and Post-Operative Complication

INTRODUCTION

Hemorrhoidal disease is a very common anorectal disorder, occurring in approximately 5% of the general population, and more frequently in individuals who are older than 40 years [1]. Surgical treatment is required in cases having symptomatic Grade III and Grade IV hemorrhoids. Additionally, surgery may be required when medical treatment fails or in the presence of concomitant conditions such as anal fissures or ulcers [2]. There are various techniques used in the surgical treatment of hemorrhoidal disease. Conventional

techniques include Ferguson's closed hemorrhoidectomy and Milligane Morgan's open hemorrhoidectomy, which can be performed with scalpel or electrocautery. Additionally, a variety of devices and methods have been introduced to help facilitate the procedure and minimize patient discomfort in the postoperative period [3].

Harmonic scalpel, which was introduced for the first time in 1992, uses ultrasound energy to cut and coagulate soft tissue, with minimal thermal damage to the surrounding tissue. Harmonic scalpel has been used extensively

in general surgery procedures such as cholecystectomy, hemorrhoidectomy, and thyroidectomy; gynecological procedures such as myomectomy; and to cut internal mammary artery in thorax surgery [4]. Currently, harmonic scalpel hemorrhoidectomy (HSH) is used as a routine technique in many centers. In HSH, postoperative pain is purported to be minimal, as thermal damage to the surrounding tissue is avoided. During the surgery, harmonic scalpel seals bleeding vessels and forms protein coagulum. When used in hemorrhoidectomy, this method minimizes bleeding of large hemorrhoids and decreases operative time [5].

It has been 15 years since Longo introduced the use of stapler hemorrhoidopexy (SH) in prolapsed hemorrhoidal disease in 1998 [6]. The initial results of five randomized trials conducted at the start of this century were encouraging when comparing SH with conventional hemorrhoidectomy [7]. In addition to obliterating submucosal vessels, SH aims to bring prolapsed rectal mucosa back to a natural level and rectify the topographic relation between the anorectal mucosa and the underlying muscle [8]. In this method, a ring of rectal mucosal-submucosal tissue is resected approximately 3-4 cm above the dentate line, disrupting

distal branches of superior rectal artery feeding the hemorrhoids and restoring the prolapsed hemorrhoidal plexus to original anatomical position [9]. Because SH involves the rectum where pain sensation is absent instead of the anoderm, theoretically it promises less postoperative pain and shorter hospitalization compared to conventional methods [10].

The choice of the best surgical technique must always be based not only on the surgeon's personal experience but above all on the scientific evidence supporting the superiority of one surgical technique over another. Short term results of the surgical treatment of hemorrhoids can be assessed on the basis of its effect on various parameters, namely postoperative pain, hospital stay, the incidence of early complications among others. Literature is scanty about the management of hemorrhoidal disease, addressing the best choice of surgical technique. In this prospective study, we compared the short-term results of HSH and SH, two techniques that are routinely used all over the world, in the surgical treatment of Grade III and Grade IV hemorrhoidal disease.

METHODOLOGY

This prospective analysis was carried out from May 2019 to November 2019 upon a

sample of 168 patients (aged 26 to 58 years), presenting to the Dept. of Surgery at Dr. Ruth KM Pfau Civil Hospital, Karachi with hemorrhoidal disease (chosen via non-probability, consecutive sampling). The patients were divided into two equal groups of Data obtained regarding surgical outcome (in terms of postoperative pain, hospital stay, the incidence of early complications) was recorded onto a self-structured questionnaire after taking written informed consent. The data obtained was analyzed using SPSS v. 22.0.

RESULTS

The patient demographic and clinical characteristics were similar in the two

groups. The mean age of the sample stood at 43 ± 5 years, and a male predominance (in both groups) was noted. Other sociodemographic and clinical characteristics are tabulated in **Table 1**.

The operative time was significantly shorter in the HSH group compared with the SH group and the difference in mean hospital stay was not significant. More severe pain was reported by patients in the HSH group and early complications (especially those pertaining to the wound and bleeding) were more common among the SH group. The details are tabulated in **Table 2**.

Table 1: Sociodemographic and Clinical Characteristics

Variable		HSH Group	SH Group
Mean Age (Years)		42 ± 3	44 ± 2
Gender	Male	53	48
	Female	31	36
Presenting Complaint	Pain	54	61
	Bleeding	31	44
	Mucous Discharge	07	09
	Pruritus Ani	06	03
	Prolapse	24	19

Table 2: Patients in the HSH Group and Early Complications

Variable		HSH Group	SH Group
Mean Operative Time (Minutes)		17 ± 3	22 ± 2
Mean Hospital Stay (Days)		2.4 ± 0.5	2.6 ± 0.9
Mean Post-Operative Pain (VAS)		7.1 ± 2.3	6.4 ± 1.5
Post-Op Complaint (n)	Wound Problem	16	21
	Bleeding	14	26
	Edema	04	02

DISCUSSION

The treatment for hemorrhoidal disease aims to provide a long-term relief from present symptoms and complaints, especially pain.

Another important aim is to increase the quality of life. These aims can be achieved through a dependable surgical technique and preservation of anorectal functions. As

postoperative pain is thought to be caused by thermal damage, and harmonic scalpel results in less thermal damage compared with laser and electrocautery, HSH was proposed as a less painful operation [11]. However, other studies found no evidence of reduced pain levels with HSH, and showed that, owing to the use of disposable materials, HSH turns out to be 10 times more expensive than hemorrhoidectomy using regular cautery [12].

In a first and foremost study, Chung *et al.*, [3] compared the HSH and SH techniques in 88 patients and reported significantly lower VAS scores of postoperative pain, shorter hospitalization, faster return to daily activities, and higher patient satisfaction in the SH group. In our study, mean scores of overall pain did not reach statistical significance between the two groups. However, severe pain was reported significantly more with HSH than with SH. In only one case of severe pain in the SH group, distance between the stapler line and the dentate line was seen to be an approx. 1 cm [13].

Ramadan *et al* [14] reported postoperative pain in 4.3% of patients undergoing HSH, whereas in a prospective study Armstrong *et al* [15] showed significantly less postoperative pain in HSH compared with

electrocautery hemorrhoidectomy. In a prospective randomized study comparing diathermy and HSH, others have not found a significant difference between the two groups in terms of postoperative pain. In a multicenter randomized clinical trial, Thaha *et al* [16] compared SH and closed hemorrhoidectomy and defined “pain after defecation” as a special complication related to stapler use, although it was not demonstrated in following studies. Despite these results, the number of studies reporting the superiority of SH in postoperative pain control compared with conventional methods is high. In support of these latter reports, we also find the frequency of pain higher in the HSH group than in the SH group [17].

One of the most important short-term complications of hemorrhoidectomy is bleeding. Some authors have proposed severed branches of superior hemorrhoidal artery as the cause of short-term abundant bleeding. Contrary to the results of Chung *et al.*, [3] in our study, postoperative bleeding was less in the HSH group compared with the SH group. In a study by Armstrong *et al.*, [15] conducted on 500 patients undergoing HSH, none of the patients had short-term postoperative bleeding, and only three patients (0.6%) had secondary bleeding in postoperative Days. In the literature,

postoperative bleeding rates for SH vary from 6% to 25% [18 - 20].

CONCLUSION

After careful consideration, it can be concluded that HSH yields better short term results in treating hemorrhoidal disease than SH.

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