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Research Article

HARMONIC SCALPEL HAEMORRHOIDECTOMY OUR EXPERIENCE FROM A TERTIARY HOSPITAL

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ABSTRACT

*Background***:** Haemorrhoids are dilated veins occurring in relation to the anus. There are various treatment modalities for haemorrhoids and among them surgical treatment is considered to be most effective one. Harmonic scalpel haemorrhoidectomy was comparatively found to be painless with less blood loss and early ambulation. *Material and Methods*: The aim of our study was to evaluate the harmonic scalpel in terms of various intraoperative and postoperative factors for the treatment of grade III and IV haemorrhoids. *Results*: In our case study of 50 patients average time taken was 17.68 ± 2.84 minutes, the mean blood loss was 8.96 ± 2.15 ml. Postoperative pains with VAS in case group on the first postoperative day was 5.92 ± 0.72. The dose of analgesia was less. The postoperative wound site soakage was less in this study, early ambulation and return to normal work was faster. *Conclusion*: Harmonic scalpel haemorrhoidectomy is a simple, bloodless, safe and effective procedure in terms of blood loss, postoperative pain early return to routine work because of less lateral thermal injury.

Keywords: *Harmonic Scalpel, Pain, Bleeding, Electrocautery*

INTRODUCTION

Haemorrhoidal disease is an abnormal symptomatic enlargement of normal anal cushions of specialized, highly vascular tissue found within the anal canal, in the sub mucosal space. They contain blood vessels, elastic tissue, connective tissue, and smooth muscle (Thomson, 1975). The anal sub mucosal smooth muscle (Treitz's muscle) originates from the conjoined longitudinal muscle. Some of the vascular structures within the cushion when examined microscopically lack a muscular wall. The lack of a muscular wall characterizes these vascular structures more as sinusoids and not veins. It is the most prevalent anorectal condition with a peak period of onset between 45-65 years of age (Goligher, 1996). At least 50 percent of people over the age of 50 years have evidence of haemorrhoids although asymptomatic (Goligher, 1996). The Harmonic Scalpel cuts and coagulates by using lower temperatures than those used by electro surgery or lasers. Harmonic Scalpel technology controls bleeding by coaptive coagulation at low temperatures ranging from 50ºC to 100ºC: vessels are coapted (tamponaded) and sealed by a protein coagulum. Coagulation occurs by means of protein denaturation when the blade, vibrating at 55,500 Hz, couples with protein denaturing it to form a coagulum that seals small coapted vessels (Feil W (2005). The main concern for the patient remains the postoperative pain and early ambulation which are related to the incision, application of suture and lateral thermal damage with cauterization (Nicholson TJ *et al.*, 2004. In this study our aim was to see the effectiveness of harmonic device for treatment and outcome of patients with grade III and IV disease

MATERIALS AND METHODS

This study was conducted on fifty (50) patients with grade III & IV haemorrhoids attending O.P.D in the post graduate Department of surgery, Acharya Shri Chander College of Medical Sciences and Hospital Sidhra, Jammu over a period of one year. Bleeding per rectum was the chief complaint in all patients.

RESULTS AND DISCUSSION

Results

In our study of 50 patients who underwent Harmonic scalpel haemorrhoidectomy, the mean age of the study group was 46.08 years [Table 1]. In our case study of 50 patients average time taken for surgery was 17.68 ± 2.84 minutes [Table 2, figure 1]. The mean blood loss was 8.96 ± 2.15 ml in our study [Table 3, figure 2]. Postoperative pain with VAS in case group on the first postoperative day was 5.92 ± 0.72 [Table 4]. In our case study group none of the patients had immediate postoperative bleeding or post spinal headache, but 6 patients (12%) went into urinary retention [Table 1]. Total number of dressing pad used in postoperative period was less [Table 5]. Average hospital stay was 2 days. The average time in days for patients in case group to return to their routine work ranged from 6-12 days (average 8.35 ± 2.02 days) [Table 6].

Table 1: Showed age distribution, grade, postoperative complications and hospital stay

Group	**Case**	
	50	
Age	46.08 ± 13.30	
Sex	Males	38(76%)
	Females	12(24%)
Grade	III	49(96%)
	IV	1(4%)
Anesthesia	Spinal	42(84%)
	epidural	8(16%)
Postoperative complications (urinary retention)	6(12%)	
Mean hospital stay	2.00 ± 0.00	

Table 2: Showed duration on surgery in minutes in both the groups

Group	**≤ 20 minutes**	**≤ 30 minutes**	**≤ 40 minutes**	**Average**
Case (n=50)	**44 (88%)**	**6(12%)**	**0 (0%)**	**17.68 ± 2.84**

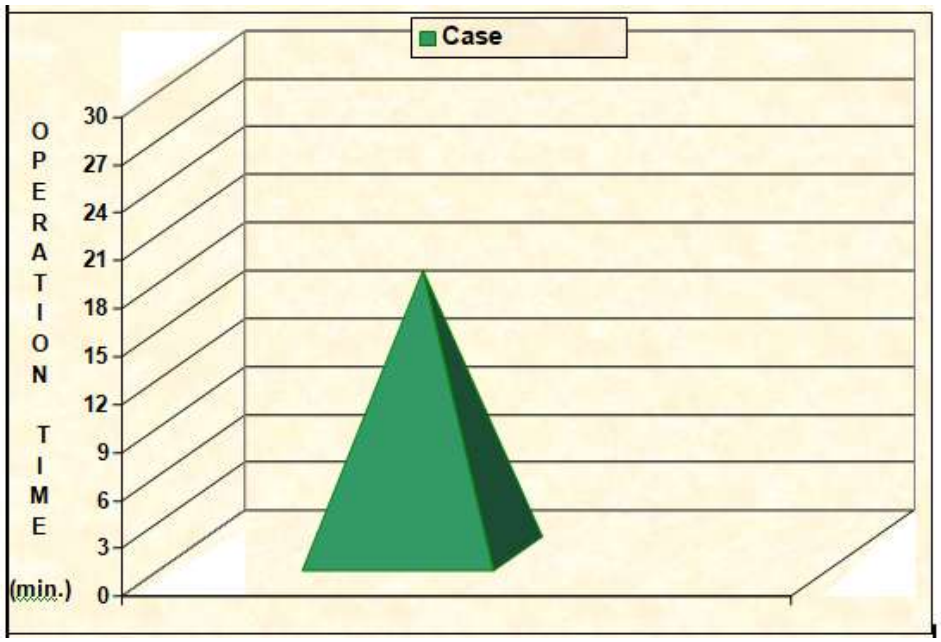

Figure 1

Table 3: showed average blood loss in both groups

Group	**≤ 20 ml**	**≤ 30 ml**	**≤ 40 ml**	**Average**
Case (n=50)	50 (100%)	0 (0%)	0 (0)%	8.96 ± 2.15

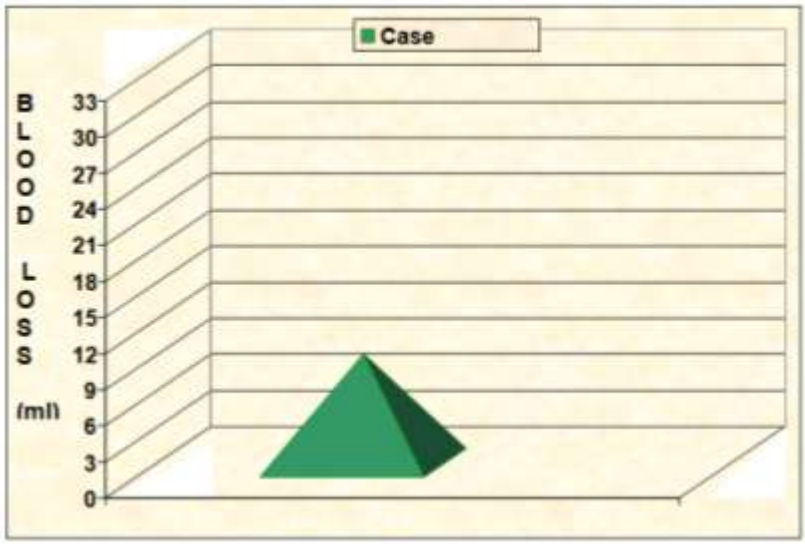

Figure 2

Table 4: Showed visual analogue score

Visual analogue score (VAS)	**Case (n=50)**
Day 1	5.92 ± 0.70
Day 2	3.76 ± 0.59
Day 7	1.16 ± 0.37

Table 5: Showed number of pads used in the postoperative peroid

Group	**No. of pads used in 1st 24 hrs (%)**			
	0	1	2	3
Case (n=50)	6(12%)	40(80%)	4 (8%)	0 (0%)

Table 6: Showed return to normal work in (days)

Group	**≤ 1 Week**	**≤ 2 weeks**	**≤ 3 weeks**	**≤ 4 weeks**	**Average (in days)**
Case (n=50)	24(48%)	26(52%)	0	0	8.35 ± 2.02

Discussion

Surgical haemorrhoidectomy is generally done for grade III and grade IV haemorrhoids. There are many procedures done for haemorrhoids. The new surgical techniques decreases the post operative complication especially pain and bleeding. The Harmonic scalpel has unique advantage of causing less postoperative pain because of very little lateral thermal injury (Waleed Omar *et al.,* (2011). The active blade of the instrument vibrates longitudinally against an inactive blade over an excrusion of 50 to 100 microns. One edge of the instrument is relatively sharp for cutting purpose and the blunt one is for coagulation. There is localized coagulation with lateral tissue injury (0-1.5 mm) deep, while the depth of thermal injury is up to 15 mm by using monopolar diathermy (Waleed Omar *et al.,* (2011). In our study of 50patients who underwent Harmonic scalpel haemorrhoidectomy, the mean age of the study group was 46.08 years; this was in accordance with the study conducted by Armstrong DN *et al.,* the mean age of 49.2 years (Armstrong *et al.,* 2002). In a study conducted by Waleed Omar *et al.,* a total of 36 patients were operated with Harmonic scalpel, the mean age was 35 years (Waleed Omar *et al.,* (2011). In our study of 50 patients who underwent Harmonic scalpel haemorrhoidectomy, there were 38 males and 12 females. In our study of 50 patients grading was done on the basis of digital rectal examination and proctoscopy as both were done in all patients while none of our patient required sigmoidoscopy or colonoscopy. In our study group 48 had grade III haemorrhoids and 2 had grade IV haemorrhoids. In our case study of 50 patients average time taken was 17.68 ± 2.84 minutes. The study conducted by Waleed Omar *et al.,* (2011) ($p < 0.001$) in their study of 36 patients the mean operative time was 11 ±3 minutes, while the study conducted by Mustfa T *et al.,* (2008) ($p < 0.001$) reported the operation time of 10-25 minutes. In a study conducted by Ramadan E *et al.,* the average operation time was13.2 minutes (Ramadan E *et al.,* (2002). Blood loss during surgery in our case study of 50 patients varied from 7 to 15 ml with mean of 8.96 ± 2.15 ml, the loss of blood was estimated by counting the total number of gauze pieces used which were weighted before and after surgery by taking one gram of weight equivalent to one ml. The study conducted by Waleed Omar *et al.,* (2011) in 36 patients reported blood loss in the range of

0-20 ml with mean of 13 ± 3 ml. In our study the blood loss was significantly lower in case study ($p < 0.001$) which was consistent with the study done by Waleed Omar *et al.*, (2011) ($p < 0.001$).

For the management of postoperative pain, parenteral diclofenac sodium and tramadol were used for the first postoperative day. From second postoperative day all patients were shifted to oral drugs with diclofenac sodium and serratopeptidase. Postoperative pain evaluation was done using visual analogue scale (VAS) ranging from 1 to 10. In our Harmonic study group the score on the first postoperative day was 5.92 ± 0.72, on the second postoperative day it was 3.76 ± 0.59 and 1.16 ± 0.37 on the seventh postoperative day. The study conducted by Mustfa *et al.*, (2008) reported the VAS score of 2, 2, 0 on first, second and seventh postoperative days respectively, while the study conducted by Waleed Omar *et al.*, (2011) reported the VAS score of in the range of 4.7 ± 0.6, 4.5 ± 0.4, 2.5 ± 0.4 on the first, second and seventh postoperative days respectively. The study conducted by Armstrong *et al.*, (2002) reported in their study reported VAS score of 4.5, 4.8 and 3.8 on the first, second and seventh postoperative days respectively,or the management of postoperative pain, parenteral diclofenac and tramadol were used on the first postoperative day when the patients were on intravenous fluids. From the second postoperative day all patients were shifted to oral analgesic drugs. In our Harmonic study group analgesic was given on demand in the form of diclofenac sodium 1.5mg /kg. On the first postoperative day the mean analgesic given was 138.40 ± 10.17 mg followed by 115.20 ± 10.29 mg, 74.00 ±13.62 mg on the second and seventh postoperative days. The study conducted by Waleed Omar *et al.*, (2011) also reported less usage of analgesic as 120-160 mg, 100-150 mg and 50-100 mg on the first, second and seventh postoperative days, while Mustfa T *et al.*, (2008) in their study reported 170-380 mg on the first postoperative day followed by 170-350 mg on the second postoperative day with no use of analgesics on the seventh postoperative day. In the study conducted by Armstrong DN *et al.*, (2002), the postoperative analgesic used was hydrocodone 10 mg by mouth every four hourly. The patients were asked to keep a careful record of the number of narcotic analgesics required during each 24-hour postoperatively. The number of narcotic analgesics required per 24-hour period was significantly lower in the harmonic scalpel group. In our study group for the first twenty four hours we had to use one surgical pad in 20 (80%), two pads in 2 (8%) and no use of pad in 3 (12%) of patients.

In our study patients were observed for postoperative complications like immediate bleeding, urinary retention or post spinal headache. In our case study group none of the patients had immediate postoperative bleeding or post spinal headache, but 6 patients (12%) went into urinary retention which was relieved by small feeding tube. In a study conducted by Waleed Omar *et al.*, (2011) , 3 out of 36 patients had urinary retention, while the study conducted by Mustfa *et al.*, (2008) on 22 patients reported retention in 2 patients. Average hospital stay was calculated from the first postoperative day till the patients were discharged. In our case study of 50 patients hospital stay was 2 days. In a study conducted by Waleed Omar *et al.*, (2001) reported in their study hospital stay of 1to 2 days in 36 patients who were operated for haemorrhoids with harmonic scalpel, while Ramadan E *et al.*, (2002) in their study reported average hospital stay of 21.0 hours. In our study group of 50 patients who were operated as Harmonic scalpel haemorrhoidectomy the average time in days for patients to return to their routine work ranged from 6-12 days (average 8.35 ± 2.02 days). The study conducted by Waleed Omar *et al.*, (2011), (n= 36), reported 18 (50%) who returned to their normal work after one week, 10 (27.8) after three weeks, 4 (11.1%) after three weeks and 4 (11.1%) after four weeks. In a study conducted by Armstrong DN, *et al.*, (2002), (n=25), 10 (55%) patients who returned to their normal in <1 week, 5 (28%) in 1-2 weeks, 3 (17%) after 3 weeks.

In our study all the patients were advised to come for follow the in OPD after first, second, fourth and sixth weeks. On each follow up each patient was asked about any history of pain, bleeding, difficulty in passing stool. In our case study of 25 patients 2 developed anal spam, one at fourth week and another at sixth weeks after surgery. These two patients had broad based haemorrhoids at 3, 7, 1nd 11^{o}clock which were excised in the single setting with harmonic scalpel. The study conducted by Waleed Omar *et al.*, (2011), (n= 36), reported secondary haemorrhage, infection in 1and 1 patient respectively. Overall

harmonic scalpel haemorrhoidectomy is safe as compared to other procedures for the haemorrhoids (Ivanov *et al.,* (2007); Szyca *et al.,* (2009); Tsunoda *et al.,* (2011).

Conclusion

There was significantly less blood loss in Harmonic scalpel haemorrhoidectomy. The operative time was less, early ambulation with less postoperative complications in harmonic scalpel group. From the above observations we conclude that the Harmonic scalpel haemorrhoidectomy is virtually a bloodless operation with minimal tissue damage. Besides it is safe, fast, and easy to perform. The decreased intra operative blood loss, postoperative pain, early ambulation and early return to routine work overcome the additional cost and maintenance of the instrument used in the surgery and provides a promising avenue for future research.

REFERENCES

Armstrong DN, Frankum C, Schertzer ME (2002). Harmonic scalpel Hemorrhoidectomy, Five Hundred Consecutive Cases. *Diseases of the Colon & Rectum* **45** 354-9.

Feil W (2005). Principles of ultrasonic energy for cutting and coagulation. In: Degueldre M, Löhlein D, Dallemagne B, Kauko M, Walther B, editors. Ultrasonic energy for cutting, coagulating and dissecting. New York, NY: Thieme 14-25.

Goligher JC (1996). Fourth edition Baillere Tindale London. *Surgery of the Anus, Rectum and Colon* 98-149.

Ivanov D, Babovic S, Selesi D, Ivanov M, Cvijanovic R (2007). Harmonic scalpel hemorrhoidectomy: a painless procedure. *Medicinski Pregled* **60**(9-10) 421-6.

Mustfa T. Ozer, Taner Yigit, Ali I. Uzar (2008). A comparison of different haemorrhoidectomy procedure. *Saudi Medical Journal* **29**(9)1264-9.

Nicholson TJ, Armstrong D (2004). Topical metronidazole (10 percent) decreases posthaemorrhoidectomy pain and improves healing. *Diseases of the Colon & Rectum* **47** 711-716.

Ramadan E, Vishne T, Dreznik Z (2002). Harmonic scalpel hemorrhoidectomy: Preliminary results of a new alternative method. *Techniques in Coloproctology* **6**(2) 89-92.

Szyca R, Jasiński A, Tomaszewski S, Jaworowska-Detyna I, Leksowski K. Pol Merkur Lekarski (2009). Early results of surgical treatment of haemorrhoids at use of harmonic scalpel. *Polski Merkuriusz lekarski* **26** (155) 462-4.

Thomson WH (1975). The nature of haemorrhoids. *British Journal of Surgery* **62**(7) 542-52.

Tsunoda A, Sada H, Sugimoto T, Kano N, Kawana M, Sasaki T (2011). Randomized controlled trial of bipolar diathermy vs. ultrasonic scalpel for closed hemorrhoidectomy. *World Journal of Gastrointestinal Surgery* **3**(10) 147.

Waleed Omar, Sabry Mahmoud, Mohamed Farid (2011). Harmonic scalpel versus conventional diathermy haemorrhoidectomy; Gain or Pain. *EJS* **30(**3) 111.