Research Paper

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Surgical Management of Hemorrhoids: Harmonic Scalpel Compared with Fergusons Conventional Closed Technique

Medical Science

KEYWORDS : Hemorrhoids, Harmonic scalpel

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ABSTRACT

Surgical treatment is considered to be the best therapeutic modality for third and fourth degree hemorrhoidal disease. Many different methods of hemorrhoidectomy aim to decrease pain and complications. Harmonic scalpel is a device that simultaneously cuts and coagulates soft tissues through ultrasonic vibrations. The aim of this study was to compare the results of Harmonic scalpel hemorrhoidectomy with conventional Fergusons hemorrhoidectomy for the treatment of grade III and IV hemorrhoids. Patients with grade III and IV hemorrhoids operated between January 2014 to December 2014 using the harmonic scalpel (n=30) or conventional closed technique (n=30) were included in the study. Exclusion criteria were thrombosed or strangulated hemorrhoids, concomitant perianal disease, history of recurrent perianal surgeries and known tendencies for bleeding. Patients characteristics, duration of operation, complications, post-operative pain measured on visual analogue scale, hospital stay and return to regular activity were compared. Patient characteristics (female:male ratio, mean age, hemorrhoid grade, and symptom duration were similar between the two groups). Harmonic scalpel and conventional hemorrhoidectomy patients did not differ significantly in terms of complications, hospital stay, and return to regular activity. However duration of operation and post-operative pain was significantly shorter with harmonic scalpel.

INTRODUCTION

Hemorrhoid disease can be defined as the symptomatic enlargement and protrusion of normal anal cushions[1]. It is a very common condition, occurring in 4.4% of adults with a peak prevalence between 45 and 65 years of age, according to epidemiological study conducted in the USA[2]. Hemorrhoidectomy is the best treatment option for symptomatic grade III and IV hemorrhoid disease. The most significant complication of hemorrhoid surgery is postoperative pain [3]. The major reasons for postoperative pain are related to the incision performed during the surgery, sutures applied to approximate the anal mucosa, cauterization, and possible surgical site infection.[4] In conventional hemorrhoidectomy, hemorrhoid pedicles are removed using scalpel and electrocautery, and the defect is either left open (Milligan-Morgan's open hemorrhoidectomy) or sutured (Ferguson's closed hemorrhoidectomy).

Harmonic scalpel uses ultrasonic vibrations at 55.5 KHz to cut and coagulate small vessels of up to 2mm.[5] Advantages of harmonic scalpel in surgery include reduced operative bleeding and effective hemostasis resulting in shorter operation time and less tissue damage than high energy cautery devices such as diathermy or laser. Thus hemorrhoidectomy performed with harmonic scalpel is proposed as a faster and less painful alternative to conventional techniques.

SURGERY

Surgical preparations were same in both groups. No prophylactic antibiotic treatment was given. All patients received sodium biphosphate enema before surgery. Anesthesia was either general or spinal according to surgeon, anesthesiologist and patient preferences. Patients were placed in lithotomy position for surgery. In conventional closed technique, hemorrhoid pedicles originating above the dentate line until above the hemorrhoidal plexus were removed using scalpel. 2/0 vicryl suture was used to close the wound. In harmonic scalpel hemorrhoidectomy, hemorrhoid pedicles were removed using the harmonic scalpel (Ethicon Endo-Surgery) and the wounds were left open. Opioids (tramadol 1 ml TID) were given as postoperative analgesia. Patients were prescribed with oral analgesics at the time of discharge.

MATERIALS AND METHODS

A total of 60 patients of symptomatic grade III and IV hemorrhoids underwent hemorrhoidectomy between January 2014 and December 2014 were evaluated. Harmonic scalpel hemorrhoidectomy and Ferguson were compared with regards to operating time, postoperative pain, duration of disease, length of hospital stay, time to return to normal activity and early postoperative complications. All patients have same kind of analgesia during the postoperative course. Pain was assessed using visual analogue scale from 0 to 10. Statistical analysis was conducted using SPSS statistics for windows, version 17.0. Patient characteristics were summarized using descriptive statistics. Continuous variables were expressed as mean and standard deviation. Categorical variables were expressed as number and percentage. Level of statistical significance was set at $p<0.05$.

RESULTS

Conventional closed hemorrhoidectomy was used in 9 males and 21 females(mean age, 44+/-3.6years) while harmonic scalpel hemorrhoidectomy was used in 12 males and 18 females(mean age,41+/-3.2years). There was no significant difference between patient subjected to conventional or harmonic scalpel hemorrhoidectomy in terms of age, gender, symptom duration or hemorrhoid grade. Duration of operation was significantly shorter with harmonic scalpel compared with conventional hemorrhoidectomy (14.5 min vs 32 min, $p<0.05$). Hospital stay and time to return to daily activities did not differ significantly between conventional and harmonic scalpel hemorrhoidectomy groups. According to VAS score pain in the harmonic scalpel hemorrhoidectomy group was significantly less than that in Ferguson's conventional technique group.

CHARACTERISTICS OF HEMORRHOIDECTOMY PATIENTS OPERATED USING HARMONIC SCALPEL vs. CONVENTIONAL CLOSED TECHNIQUE

TABLE – 1

	HARMONIC SCALPEL (30)	FERGUSON
FEMALE/MALE, n (%),	18/12	21/9
AGE (years)	41(21-64)	44(23-67)
Duration		

<6 months	6	7
6-12 months	9	9
>12 months	15	14
Hemorrhoids		
Grade III	26	22
Grade IV	4	8
Anesthesia		
spinal	25	24
general	5	6

TABLE- 2

	HARMONIC SCALPEL	FERGUSONS	p-value
OPERATIVE TIME(min)	14.5+/-3	32+/-3.2	0.008
BLOOD LOSS	10.2+/-2.5	22+/-4.5	0.014
COMPLICATIONS			
BLEEDING	1(3.3%)	1(3.3%)	
URINARY RETENTION	1(3.3%)	1(3.3%)	
HOSPITAL STAY	1.8+/-0.4	1.6+/-0.3	
RETURN TO WORK (days)	9.2(2-24)	7.9(1-19)	

VAS SCORE OF PATIENTS
TABLE- 3

POST-OPERATIVE DAY	HARMONIC SCALPEL	FERGUSON	P-VALUE
DAY 1	3.1+/-1.1	6.3+/-1.4	0.007
DAY 2	2.8+/-0.8	4.8+/-1.6	0.009
DAY 3	1.1+/-0.3	1.5+/-0.8	0.004

DISCUSSION

Hemorrhoidectomy is the most effective and definitive treatment for symptomatic hemorrhoids. Since the most important post-operative complication is pain, various treatment modalities have been developed such as rubber band ligation, sclerotherapy, photocoagulation and cryotherapy. However, surgical treatment remains the most effective and definitive treatment of III and IV degree hemorrhoids.[6] Multiple factors have been proposed to be the etiologies of hemorrhoidal development including constipation and prolonged strain. The abnormal dilatation and the distortion of vascular channel, together with destructive changes in the supporting connective tissue within the anal cushion is an important finding of hemorrhoidal disease[7].

The harmonic scalpel possesses the unique advantage of causing very little lateral thermal injury in the tissues. A decreased lateral thermal injury of <1.5mm at the surgical site is translated into decreased post-operative pain. Many authors found that the pain in the harmonic scalpel hemorrhoidectomy group was significantly less than that in patients treated by electrocautery,and this difference was also recognizable in analgesic usage[8]. Stapled hemorrhoidectomy was reported to be a less painful procedure than bipolar diathermy hemorrhoidectomy but it was a more radicle operation with more serious complications including anastomotic stenosis, fecal incontinence and rectovaginal fistula.

In our study post-operative pain scores was highest in day 1 in both groups. In comparison with Fergusons method harmonic scalpel hemorrhoidectomy had shorter operating time (32 vs. 14.5) and less blood loss (22 vs. 10.2). The VAS pain scores at day 1,2 and 3 were lesser in harmonic scalpel compared to Fergusons. Post-operative complications such as hemorrhage, urinary retention were similar in both the groups.

CONCLUSION

Harmonic scalpel hemorrhoidectomy has been found advantageous method when assessing the amount of bleeding, operation time, post-operative pain. Consequently harmonic scalpel usage is an alternative in the treatment of hemorrhoidal disease which provides a faster, more efficient operation time, minimal blood loss and decrease in post-operative pain.

REFERENCE

[1] Lohsiriwat V . Hemorrhoids :from basic pathophysiology to clinical management. World J Gastroenterol 2012;18:2009-17. [2] Johanson JF, Sonnenberg A. The prevalence of hemorrhoids and chronic constipation. An epidemiological study. Gastroenterology 1990;98:380-6. [3]Kwok SY, ChungCC, Tsui KK, Li MK. A double- blind randomized trial comparing ligasure and harmonic scalpel hemorrhoidectomy. Dis Colon Rectum 2005;48:344-348. [4]Nicholson TJ, Armstrong D.Topical metronidazole (10 percent) decreases posthemorrhoidectomy pain and improves healing. Dis Colon Rectum 2004;47:711-716. [5] Feil W. Principles of ultrasonic energy for cutting and coagulation. In: Degueldre M, Lohlein D,Dallemagne B, Kauko M, Walther B, editors. Ultrasonic energy for cutting, coagulating and dissecting. NEW YORK, NY: Thieme; 2005. p. 14-25. [6] Milito G, Cadeddu F; Tips and Tricks: hemorrhoidectomy with LigaSure. Tech Coloproctol. ,2009;13(4):317-320. [7] Loder PB, Kamm MA, Nicholls RJ, Philips RK. Haemorrhoids: pathology, pathophysiology and aetiology. Br J Surg 1994;81:946-954 [8] Armstrong DN, Ambroze WL, Schertzer ME, Orangio GR: Harmonic scalpel vs electrocautery hemorrhoidectomy: a prospective evaluation. Dis Colon Rectum, 2001:44(4):558-564.