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Research Article

Surgical Treatment of Hemorrhoids: Harmonic Scalpel Compared with Ferguson's Hemorrhoidectomy

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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. The aim of this study was to compare the results of Harmonic Scalpel (HS) hemorrhoidectomy with conventional Ferguson's hemorrhoidectomy for the treatment of grade III and IV hemorrhoids. During a period of 26 months, 192 patients of grade III and IV hemorrhoids who underwent HS hemorrhoidectomy and Ferguson's hemorrhoidectomy were evaluated retrospectively. All patients had ano-rectal examination prior to operation to exclude other colorectal pathologies. All patients had the same kind of analgesia during the postoperative course. Pain was assessed using a visual analog scale from 0 to 10. 54 female and 30 male patients were treated with HS hemorrhoidectomy, and 63 female, 45 male patients treated with Ferguson's hemorrhoidectomy. The mean age of patients were 42.68 (range, 22-67). The intra and postoperative complication rates were similar in each groups. The average operating time in the HS and Ferguson's hemorrhoidectomy groups was 14.5±3 min and 32±3.2 min respectively (p<0.001). The mean intraoperative blood loss was 10.2±2.5 ml with HS and 22±4.5 ml with Ferguson's hemorrhoidectomy (p<0.001). The VAS pain scores on day 0, 1 and 7 in HS group were 3.1±1.1, 2.8±0.8 and 1.1±0.3 and in the Ferguson's group were 6.3±1.4, 4.8±1.6 and 1.5±0.8 respectively (p<0.001). Harmonic scalpel hemorrhoidectomy is a safe, effective and bloodless operative technique with minimal tissue damage. It is associated with significant less postoperative pain and similar complications compared to conventional hemorrhoidectomy.
Keywords: Hemorrhoid, Harmonic scalpel, Electrocautery.

INTRODUCTION

Symptomatic hemorrhoids are one of the commonest surgical afflictions of the Turkish population [1]. The prevalence of symptomatic hemorrhoidal disease in the population over 40 years old is approximately 55%. In early period, hemorrhoidal disease can be treated by dietary modifications, topical medications and soaking in warm water, which temporarily reduce symptoms of pain. Several painless non-surgical methods of treatment are available for grade I or II hemorrhoids but late stage disease usually needs surgical treatment. Milligan and Morgan hemorrhoidectomy or Ferguson's with electrocautery hemorrhoidectomy (FH) is still the gold standard for the surgical treament of symptomatic hemorrhoids [2]. However, FH can cause complications including pain, postoperative bleeding, urinary retention, anal stenosis, and anal incontinence [3]. The modified electrosurgical harmonic scalpel (HS) instrument is an alternative technique for hemorrhoidectomy that has been developed recently [4]. We used the HS device for hemorrhoidectomy in grade III and IV hemorrhoids and compared our results with conventional closed hemorrhoidectomy of the Ferguson.

MATERIALS AND METHODS

A total of 192 patients of symptomatic grade III and IV hemorrhoids who underwent hemorrhoidectomy between April 2012 and June 2014 were evaluated retrospectively. HS hemorrhoidectomy and FH were compared with regards to operating time, postoperative pain, duration of disease, length of hospital stay, time to return to normal activity, and postoperative early complications. All patients had the same kind of analgesia during the postoperative course. Pain was assessed using a visual analog scale from 0 to 10.

RESULTS

The mean age of patients undergoing HS hemorrhoidectomy was 41 years (range 21–64 years) and for the Ferguson's hemorrhoidectomy group was 44 years (range 23–67 years). The male: female ratio was 9:5 in HS and 7:5 in Ferguson's hemorrhoidectomy groups. The average operating time in the HS and

Ferguson's hemorrhoidectomy groups was 14.5±3 min and 32±3.2 min respectively (p<0.001). The mean intraoperative blood loss as estimated by the number of gauze pieces soaked (5 ml/gauze piece) was 10.2±2.5 ml with HS and 22±4.5 ml with Ferguson's hemorrhoidectomy (p<0.001). The VAS pain scores on day 0, 1 and 7 in HS group were 3.1±1.1, 2.8±0.8 and 1.1±0.3 respectively and in the Ferguson's group were 6.3±1.4, 4.8±1.6 and 1.5±0.8 respectively (p<0.001). In the early post operative period in the HS group 2 patients (2.3%) had hemorrhage, 4 (4.6%) developed urinary retention and 2 (2.3%) had break down of the tissue seal with raw area, which healed secondarily. In the Ferguson's group 2 patients (1.8%) had hemorrhage, 6 (5.5%) developed urinary retention and 4 (3.6%) had wound breakdown with secondary healing.

Table 1: Patient demographics and complications

	HS n=84	**Ferguson n=108**	**p value**
Age (years)	41 (21-64)	44 (23-67)	NS
K/E	9/5	7/5	NS
Operative time (min)	14.5±3	32±3.2	0.008
Blood loss (ml)	10.2±2.5	22±4.5	0.014
Complications			
Hemorrhage	2 (2.3%)	2 (1.8%)	NS
Urinary retention	4 (4.6%)	6 (5.5%)	NS
Breakdown	2 (2.3%)	4 (3.6%)	NS

Table 2: VAS scores of the patients

Postoperative day	**HS**	**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	0.044

DISCUSSION

Hemorrhoidectomy is the most effective and definitive treatment for symptomatic hemorrhoids. As this procedure is often painful various treatment options have been developed, such as rubber band ligation, sclerotherapy, photocoagulation, and cryotherapy. However, surgical excision remains the most effective and definitive treatment of third and fourth degree hemorrhoids [5]. The harmonic scalpel is an ultrasonically activated instrument with sound waves as its source of power, which vibrates at a rate of 55 000 per second. It is known for its ability to coagulate small and medium-sized vessels thus, potentially it may minimize postoperative swelling and edema to the surrounding tissue [6]. The Harmonic Scalpel possesses the unique advantage of causing very little lateral thermal injury in the tissues. A decreased lateral thermal injury (<1.5 mm) at the surgical site is translated into decreased postoperative pain [7]. The main disadvantage of surgical hemorrhoidectomy is the postoperative pain resulting from the surgical raw area in the sensitive peri-anal skin. Much of this discomfort arises from the thermal injury induced by the electrocautery. In different procedures it was found that harmonic scalpel offers many benefits, including smaller incision, shorter hospital stay, less damage to tissues, quicker recovery and reduced scarring [7]. Conventional electrocautery hemorrhoidectomy is associated with significant pain-related complications such as urinary retention and constipation. We found that duration of surgery was significantly shorter in the HS group. Postoperative hospitalization was also significantly shorter in this group. Many authors found that pain in the harmonic scalpel hemorrhoidectomy group was significantly less than that in patients treated by the electrocautery, and this difference was also recognizable in analgesics usage [7]. Many different surgical modality have been reported to reduce postoperative pain. Stapled hemorrhoidectomy was reported to be a less painful procedure than bipolar diathermy hemorrhoidectomy, but it was a more radical operation [8], with serious complications including pelvic sepsis, anastomotic stenosis, fecal incontinence, and rectovaginal fistula [9, 10].

The early and delayed complication rates of either surgery were comparable to conventional hemorrhoidectomy, and no serious complications were noted. As stated in previous studies, postoperative pain is felt at the highest level in the first 1 day and decreases later. In our study, postoperative pain scores was highest in day 1 in both groups. In comparison with Ferguson's method HS hemorrhoidectomy had a shorter operating time (32 vs 14.5 minutes) and had less blood loss (22 vs 10.2 ml). The VAS pain scores at day 0, 1 and 7 were lesser in HS than electrocautery hemorrhoidectomy. Postoperative complications such as hemorrhage, urinary retention and wound break down were similiar in both groups. In electrocautery group, the operative field generally has become quite bloody, and this situation was prolonged the operative time.

CONCLUSION

Harmonic scalpel hemorrhoidectomy is a sutureless, closed hemorrhoidectomy technique. It is safe, effective and time saving method, has less blood loss, postoperative pain and complications compared to conventional hemorrhoidectomy. The present study has some limitations. The number of patients was not large and our follow-up period was short. The long-term results and recurrence rate should be evaluated in larger prospective studies.

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