

ORIGINAL ARTICLE

HAEMORRHOIDAL ARTERY LIGATION OPERATION WITHOUT DOPPLER GUIDANCE

Syeda Rifaat Qamar Naqvi, Syeda Saima Qamar Naqvi*, Muhammad Misbah Rashid, Irfan Ali Sheikh, Muhammad Ali, Abu ul Ala Nafees

Department of Surgery, Combined Military Hospital, Rawalpindi, *Yusra Medical College, Rawalpindi-Pakistan

Background: A range of surgical options from banding to open haemorrhoidectomy are available for the treatment of haemorrhoids. Haemorrhoidal artery ligation operation (HALO) with or without Doppler guidance is a newer option with claims of having better efficacy. We aimed to study the efficacy of HALO without Doppler guidance in terms of presence of postoperative complications including pain, bleeding, prolapse and overall patient satisfaction. **Methods:** This interventional study was conducted in the Department of Surgery Combined Military Hospital Rawalpindi, from 1st September 2013 to 31st July 2015. Consenting patients with second degree haemorrhoids not responding to banding or sclera-therapy and those with third and fourth degree haemorrhoids were included in the study. They were followed up at 1 week, 6 weeks and then at 6 months. All of them were questioned regarding pain, bleeding, prolapse and overall satisfaction with the procedure. **Results:** A total of 97 patients (n=97) were included in the study. At 1 week follow up after HALO, mean pain score was 1.76, at 6 weeks it was 0.4 and at 6 months none of the patients had any pain. Postoperative bleeding was seen in 1 patient at 1 week (1.03%). None of the patients had bleeding at 6 weeks (0%), and 2 patients reported mild occasional bleeding at 6 months' post op (2.06%). Four of our patients had persistent prolapse post-operatively (4.12%) which persisted throughout follow up. Ninety-four (96.91%) patients were overall satisfied with the procedure, whereas 3 patients (3.09%) were not satisfied. **Conclusion:** Haemorrhoidal artery ligation operation without Doppler guidance is an effective method to treat haemorrhoids in terms of post-operative pain, bleeding and patient satisfaction.

Keywords: HALO; Haemorrhoids; Doppler probe.

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INTRODUCTION

Haemorrhoids are one of the very common conditions treated in surgical departments all over the world.¹⁻³ Surgery is usually offered to third and fourth degree haemorrhoids and also to those second degree haemorrhoids which do not respond to less invasive methods like banding or sclerotherapy.¹ Although haemorrhoidectomy deals efficiently with haemorrhoids, having low recurrence rates but is associated with significant post-operative pain and complications like bleeding and stenosis etc.^{2,3}

Haemorrhoidal artery ligation operation (HALO) under Doppler guidance was introduced by Moranaga *et al* in 1995.⁴ This was found to be associated with minimal complications and very little post op pain/ discomfort.^{4,5} Since then a number of clinical trials have been conducted and some studies are still underway to determine its efficacy and to see if the same procedure can be carried out without Doppler guidance.⁶⁻⁸ According to 'National Institute for Health and Care Excellence' (NICE) recommendations, 'Haemorrhoidal artery ligation is an efficacious alternative to conventional haemorrhoidectomy or stapled haemorrhoidopexy in the short and medium term, and that there are no major safety concerns'.⁹

The efficacy of this procedure with the use of doppler probe and without its use is comparable in the clinical trials referred to in NICE guidelines.⁶⁻⁸

The main limiting factor for greater acceptance of this procedure is related to higher cost of the doppler equipment¹⁰. Since most clinical trials showed comparable results with and without use of doppler probe and in fact some showed better results without doppler probe, National Health Services (NHS) in United Kingdom (UK) adopted this procedure without doppler guidance in many of its centres since 2006.⁶⁻⁸ In Pakistan also, the cost of this procedure with doppler probe would be very high for the patients. We therefore studied the efficacy of HALO without doppler guidance.

MATERIAL AND METHODS

This interventional study was carried out at surgical department of Combined Military Hospital (CMH) Rawalpindi after approval from Hospital Ethical Committee, from 1st September 2013 to 31st July 2015, i.e., for twenty-three months. All patients with second degree haemorrhoids not responding to banding or sclerotherapy and those with third and fourth degree haemorrhoids were offered this procedure. The patients

were included through non probability consecutive sampling. In all these patients, investigations required to rule out other diseases were carried out as indicated. Patients who had other pathologies in addition to haemorrhoids like fissure, polyps, proctitis or cancer etc were excluded from the study. All surgeries were performed by a single surgeon.

A total of 97 patients (n=97) consented out of them 71 were females and 26 were males. All these patients were subjected to HALO without doppler guidance under spinal or general anaesthesia. A specially designed proctoscope with a window on one side was used during this procedure. Vicryl 2-0 was used in all cases and a figure of eight suture was applied at the base of each haemorrhoid followed by a running plicating suture to deal with the prolapsing component of the haemorrhoid. All these patients were followed up at 1 week, 6 weeks and then at 6 months. A brief questionnaire was filled for each of these patients. Patients not reporting on follow up appointments were questioned on the telephone. Each patient was questioned about post-operative pain on a 10-point visual analogue scale (VAS). Bleeding and prolapse were recorded as being present or absent. And finally all patients were asked if they were overall satisfied with this surgery or not. Data analysis was performed using SPSS version 16. Mean and standard deviation were calculated for continuous variables. Categorical variables were presented in frequencies and percentages.

RESULTS

A total of 97 patients (n=97) were included in the study. Out of them 71 (73.2%) were females and 26 (26.8%) were males. Twelve of them had second degree (12.37%), 44 had third degree (45.36%) and 41 had fourth degree haemorrhoids (42.27%). Ages ranged from 25 to 64 years (Mean- 43 years, SD±3).

At 1 week follow up mean pain score for all grades of haemorrhoids was 1.76, at 6 weeks it was 0.4 and at 6 months none of the patients had any pain. Mean pain score for second degree haemorrhoids alone was 1.52 at 1 week and there was no pain at 6 weeks and 6 month follow up. For third degree haemorrhoids it was 1.57 at 1 week and again no pain at 6 weeks and 6 month follow up. Whereas for fourth degree haemorrhoids it was 2.19 at 1 week follow up, 1.2 at 6 weeks and nil at 6 months follow up. Postoperative bleeding was seen in one patient with fourth degree haemorrhoids at 1 week. This makes 1.03% of all the patients operated and 2.44% of the fourth degree haemorrhoids operated. None of the patients had any bleeding at 6 weeks (0%). Two patients (2.06%) reported mild occasional bleeding at 6 months' post-operative. One of them was the same patient with fourth degree haemorrhoids who had bleeding at 1 week and second patient also had fourth degree haemorrhoids initially. So the percentage of fourth degree haemorrhoids alone that developed bleeding per rectum at 6 months was 4.88%.

Four of our patients had persistent prolapse post-operatively (4.12%), and all these had fourth degree haemorrhoids initially. This prolapse persisted throughout follow up appointments. Thus 9.75% of the fourth degree haemorrhoids had persistent prolapse after HALO.

Ninety-four (96.91%) patients were overall satisfied with the procedure. Out of the three patients (3.09%) reporting un-satisfaction, one was the patient who had persistent mild bleeding. The other two patients were unsatisfied due to the prolapse. All these three unsatisfied patients had fourth degree haemorrhoids. So the overall satisfaction for both second and third degree haemorrhoids was 100 % whereas it was 92.68% for fourth degree haemorrhoids. This data was analysed on SPSS version 16.

Table-1: Age and gender distribution of various grades of haemorrhoids

Grades of haemorrhoids	Number of cases	Mean age	Female to male ratio
Second degree	12 (12.37%)	37 (SD+8)	2.54:1
Third degree	44 (45.36%)	44 (SD+11)	3.33:1
Fourth degree	41 (42.27%)	48 (SD+9)	2.32:1
Total	97	43 (SD+3)	2.73:1

Table-2: Complications/ Results after HALO

Grades of haemorrhoids	Follow up visit	Mean pain score	Bleeding	Prolapse	Patient satisfaction
Second degree	1 week	1.52 (SD+0.2)	0%	0%	100%
	6 weeks	0	0%	0%	
	6 months	0	0%	0%	
Third degree	1 week	1.57 (SD+0.28)	0%	0%	100%
	6 weeks	0	0%	0%	
	6 months	0	0%	0%	
Fourth degree	1 week	2.19 (SD+0.62)	2.44%	9.75%	92.68%
	6 weeks	1.2 (SD+0.1)	0%	9.75%	
	6 months	0	4.88%	9.75%	
Total	1 week	1.76 (SD+0.32)	1.03%	4.12%	96.91%
	6 weeks	0.4 (SD+0.09)	0%	4.12%	
	6 months	0	2.06%	4.12%	

DISCUSSION

Third and fourth degree haemorrhoids along with some second degree haemorrhoids which do not respond to less invasive methods like sclerotherapy or banding, are conventionally treated by haemorrhoidectomy¹. This operation is associated with significant post-operative pain and complications like bleeding, infection, anal stenosis, incontinence etc.^{2,3} A study conducted in Pakistan by Majeed *et al* indicates high incidence of these complications. In this study bleeding was seen in 4.94% cases, infection in 8.24% and significant stenosis in 0.55% cases.¹¹ Other studies conducted internationally show even higher incidences of these and other complications.¹²

Haemorrhoidal Artery Ligation Operation also called HALO is a fast emerging method to deal with haemorrhoids world over.¹³⁻¹⁵ National Institute of Health and Care Excellence (NICE) in UK also included this procedure in its guidelines in 2010.¹⁶ The guidelines indicate that this procedure is an efficient alternative to conventional and stapled haemorrhoidectomy without any major safety concerns.⁹ The clinical trials referred to in NICE guidelines include this procedure with as well as without Doppler probe with comparable results.⁶⁻⁸

Our study involves HALO without Doppler guidance. We had a total of 97 (n=97) patients with a mean age of 43 years and a female preponderance of (2.73:1). Out of the total patients operated, 12.37% had second degree 45.36% had third degree and 42.27% had fourth degree haemorrhoids. This is comparable to patient populations with haemorrhoids in other similar studies.^{5,6,17}

At 1 week follow up in our study, mean pain score for all grades of haemorrhoids was 1.76, at 6 weeks it was 0.4 and at 6 months none of the patients had any pain. Mean pain score for second degree haemorrhoids alone was 1.52 at 1 week and there was no pain at 6 weeks and 6 month follow up. For third degree haemorrhoids it was 1.57 at 1 week and again no pain at 6 weeks and 6 month follow up. Whereas for fourth degree haemorrhoids it was 2.19 at 1 week follow up, 1.2 at 6 weeks and nil at 6 months follow up. This is slightly better than results of other similar studies for example mean pain score at 1-week post op after HALO without doppler studied by Shahbaz M *et al* was found to be 4.8¹⁷. Gupta *et al* found pain score to be significantly higher in doppler guide versus non doppler guided HALO (4.4 versus 2.2).⁷ Also the pain score in our study is significantly better than that seen after conventional haemorrhoidectomy.¹²

Bleeding after HALO in our study was seen in one patient with fourth degree haemorrhoids at 1

week (1.03%) and in 2 patients, both with fourth degree haemorrhoids at 6 month follow up (2.06%). In other studies, Pucher *et al* found 5 %¹⁶, whereas Yamoul *et al* found 3%¹⁸ incidence of bleeding on defecation after HALO, which is slightly more than our results. Other studies have also found the same relationship of post-operative bleeding to the grade of haemorrhoids^{16,18}.

Four of our patients had post-operative prolapse (4.12%), and all had fourth degree haemorrhoids initially. Thus 9.75% of fourth degree haemorrhoids had persistent prolapse after HALO. This is lower than another study conducted by Walefa P *et al*. They found 25% patients with postoperative prolapse after HALO.¹⁹

Overall patient satisfaction in our study was 96.91%. Although all patients with second and third degree haemorrhoids were satisfied but patients who had fourth degree haemorrhoids had a satisfaction of 92.68%. A study in which HALO was performed without doppler compared patient satisfaction in different haemorrhoid grades and found 81.1% patient satisfaction with no significant difference between haemorrhoidal grades.⁶ Another study conducted by Nash *et al*, which compared doppler guided HALO with non-doppler guided HALO, found patient satisfaction to be the same in both groups.⁸

Our results show much less complication rates and much better patient satisfaction as compared to conventional haemorrhoidectomy.²⁻⁴ We therefore recommend that in the surgical treatment of haemorrhoids, HALO should replace haemorrhoidectomy.

Our study which was conducted without Doppler probe shows comparable and in some instances better results than those studies in which HALO was performed with Doppler guidance. These results are comparable to other studies in which HALO was performed without Doppler probe.⁶⁻⁸ Schuurman *et al* compared doppler guided HALO with non-doppler guided HALO and found that improvement of symptoms was not significantly different in the 2 groups except for prolapse which improved more in HALO without doppler probe. They also found more complications in doppler guided HALO compared to non-doppler guided group.^{6,19} We therefore recommend HALO without Doppler guidance for the treatment of second, third and fourth degree haemorrhoids.

CONCLUSION

Haemorrhoidal artery ligation operation (HALO) without doppler guidance is an effective method to treat haemorrhoids in terms of post-operative pain, bleeding and overall patient satisfaction.

AUTHORS' CONTRIBUTION

SRQN, SSQN: Data collection. MMR: Data interpretation. IAS: Conceptualization of study design. MA: literature search. AAN: Statistical analysis.

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Address for Correspondence:

Dr. Syeda Rifaat Qamar Naqvi, Department of Surgery, Combined Military Hospital, Rawalpindi-Pakistan

Cell: +92 321 521 4263

Email: rifaatqamar@yahoo.com