

ORIGINAL ARTICLE

COMPARISON OF OUTCOME BETWEEN OPEN HAEMORRHOIDECTOMY VERSUS TRANS-ANAL DOPPLER GUIDED HEMORRHOIDAL ARTERY LIGATION WITH RECTO-ANAL REPAIR IN 3RD AND 4TH DEGREE HAEMORRHOIDS

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Background: Haemorrhoids are very common but their exact prevalence is not known as most of the people suffering from them do not seek medical or surgical advice. The literature states their prevalence to be about 39% and commonly affect people aged between 45–65 years of age. Objective of the study was to compare the outcomes of open haemorrhoidectomy Vs Trans anal Doppler ultrasound guided hemorrhoidal artery ligation with recto-anal repair in 3rd and 4th degree haemorrhoids. It was a Randomized control trial, conducted at the Department of Surgery, King Edward Medical University, Lahore; from October 2019 to March 2021. **Methods:** This was a randomized control trial study where the results of 70 patients of haemorrhoids including 3rd and 4th degree disease fulfilling the selection criteria, who underwent open haemorrhoidectomy (OH) and Doppler guided hemorrhoidal artery ligation with rectoanal repair (HAL RAR) procedure on elective and emergency operating lists, were analyzed with regards to post-operative pain, bleeding and hospital stay. **Results:** From our seventy patients the minimum age was 23 and maximum age limit was 55 years (mean: 35.09±7.47). There were 49 (70%) males and 21 (30%) females. Mean post-op pain on day 7 for OH was 1.12±0.72 and for HAL RAR it was 1.06±0.52. Post-op bleeding (POB) occurred in 4 (10%) patients in OH group and 2(6.66%) patients in HAL RAR group. Mean hospital stay for OH group was 2±0.45 and for HAL RAR it was 1.20±0.40, for POB, it was 1.9±0.30 in OH group and 1.86±0.34 in HAL-RAR group. **Conclusion:** There was no significant difference in mean post-op pain on day seven, and post-op bleeding, but there was significant difference in terms of mean hospital stay between the two groups.

Keywords: HAL RAR; Post-operative bleeding; Post-operative pain; Mean hospital stay

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INTRODUCTION

Haemorrhoids are very common but their exact prevalence is not known as most of the people suffering from them do not seek medical or surgical advice. The literature states their prevalence to be about 39% and commonly affect people aged between 45–65 years of age.¹ Haemorrhoids are vascular cushions in the anal canal. Anatomically, they are located in the right anterior, right posterior and left lateral segments of the anus. They can be divided into internal and external Haemorrhoids based on their location with reference to the dentate line.² Internal Haemorrhoids usually present with painless bleeding whereas the external Haemorrhoids may present with external protrusion, pain and ulceration.¹ The management of Haemorrhoids is as old as the disease and typically it was started by Hippocrates with a technique similar to today's band ligation. This journey of hemorrhoidal treatment has come all the way to 19th century treatment modality described by

Fredrick Salmon. His technique involves excision and ligation of the Haemorrhoids. Modification of this technique was performed in 20th century by Ferguson and Milligan-Morgan known as closed and open haemorrhoidectomy respectively. Other advances of late 20th century are diathermy haemorrhoidectomy, Rubber band ligation and stapled haemorrhoidectomy and hemorrhoidal artery ligation with recto-anal repair. Yet another advancement after hemorrhoidal artery ligation is its performance under Doppler guidance. The main aim of surgical treatment of Haemorrhoids is to prevent bleeding, minimize the recurrence, pain and post-operative complications. The relatively older open and closed haemorrhoidectomy procedures which are also accepted as gold-standards, try to achieve same outcomes. Though surgical haemorrhoidectomy is gold standard but it is notoriously a painful procedure. All the research which has been carried out over the last two to three decades for

management of Haemorrhoids has a focus to reduce the post-surgery pain and complications. In order to achieve this goal, different surgical treatment modalities have evolved over time like stapled haemorrhoidectomy and a relatively newer method HAL-RAR for grade III or IV Haemorrhoids. When the older techniques are compared with the new techniques, the newer ones like stapled haemorrhoidectomy and HAL-RAR prove to be promising as far as pain and post-operative complications are considered.^{4,5} These newly evolved methods of treatment lead to earlier return to normal activity than earlier methods including excisional haemorrhoidectomy.⁶ The stapled haemorrhoidectomy has a spectrum of complications including leakage of recto-anal anastomosis, pelvic sepsis, perforation and rectovaginal fistula. Since it involves resection of rectal mucosa so it cannot be taken as minimally invasive.⁷ Despite the literature saying it safe and effective way of treatment of Haemorrhoids, there are several randomized trials which do not support the selection of stapled haemorrhoidectomy as a safe procedure owing to its serious and life threatening complications.⁸ The only proclaimed advantage of stapled haemorrhoidectomy that is less post-operative pain cannot be supported any more as hemorrhoidal artery ligation (HAL) offers even more decrease in post-surgery pain.⁸ This procedure can be performed under Doppler guidance where Doppler probe locates the arteries and helps in their ligation. This is called Doppler guided hemorrhoidal artery ligation (DG-HAL).⁹ This procedure is combined with a pexy procedure which is performed to elevate the prolapsed hemorrhoidal tissue called recto-anal repair. These two procedures DG-HAL with RAR have shown encouraging results in reducing the post-operative complication like pain and bleeding. Owing to these features of this technique we decided to compare its efficacy in treating the third- and fourth-degree Haemorrhoids with the gold standard open haemorrhoidectomy.

MATERIAL AND METHODS

In this study the results of 70 patients of either gender with diagnosis of 3rd and 4th degree Haemorrhoids who underwent open haemorrhoidectomy and HAL RAR procedure in elective and emergency operating rooms from October 2019 to March 2021 were analyzed using SPSS 20. Patients who fulfil the inclusion criteria were included and informed consent taken. Institutional review board certificate for this study was obtained. Patients were randomly assigned into two groups (Random numbers table) as Group A and Group B. Patients who underwent OH were assigned group A & patients who underwent HAL RAR were assigned group B. Both procedures were

assessed regarding variables (mean post-operative pain through Visual analogue scale (VAS), post-operative bleeding, and mean hospital stay). Both OH & HAL RAR were done under spinal anesthesia in the lithotomy position. In HAL RAR procedure the hemorrhoidal arteries were located with the help of Doppler ultrasound and then ligated. The prolapsed Haemorrhoids were lifted by recto-anopexy. Surgical team including the primary surgeon, who was the consultant, performed both types of procedures. Confounding bias was excluded from the study by exclusion criteria (patients with diabetes mellitus, Hepatitis B/C, any perineal surgery and inflammatory bowel disease were excluded). The variables like age, height, weight, BMI, hospital stay, post-operative pain, were recorded as mean and standard deviation while gender, bleeding and degree of Haemorrhoids were presented as frequency and percentage. The effect modifiers like age, gender, BMI, degree of Haemorrhoids, were addressed by stratification of the patients in both groups. Data was stratified for these variables. Post-stratification independent sample t-test was applied to check the significance with p-value ≤0.05 as significant.

RESULTS

The minimum age was 23 and maximum age limit was 55 years (mean: 35.09±7.47), see table 1 for distribution and table-2 for comparison of outcome between open haemorrhoidectomy Vs HAL RAR in 3rd and 4th degree Haemorrhoids.

Table-1: Distribution of gender and grades of Haemorrhoids

Variable	OH	HAL RAR	Total
Male	27	22	49 (70%)
Female	13	8	21 (30%)
3 rd Degree	31	22	53 (75.7%)
4 th Degree	9	8	17 (24.2%)

Table-2: Comparison of outcome between OH Vs HAL RAR in 3rd and 4th degree Haemorrhoids

Variable	OH	HAL RAR	p-value
Mean Post-op pain	1.12±0.72	1.06±0.52	p=0.71
Post-op bleeding	4 (10%) Mean (1.9±0.30)	2 (6.66%) Mean (1.86±0.34)	p=0.67
Mean hospital stay	2±0.45	1.20±0.40	p=0.00

OH: Open haemorrhoidectomy. HAL RAR: Hemorrhoidal artery ligation with recto anal repair

DISCUSSION

Surgical haemorrhoidectomy is still the gold standard treatment for Haemorrhoids even with all of its post-operative complications.¹⁰ Owing to the associated complications, ideal treatment for this centuries old ailment of mankind is yet to be decided. During the recent past, a minimally invasive technique HAL-

RAR was introduced in order to reduce the post-operative complications especially the pain.¹¹ This modality works on the goal of making very less or minimal tissue destruction and thus reduced post-op complications. The hemorrhoidal artery ligation in HAL-RAR reduces the vascular factors which are responsible for haemorrhoid formation, and the mucopexy re-aligns the prolapsed haemorrhoid tissue.¹² The convincing evidence from recent literature has made us to compare the early outcomes of this minimally invasive hemorrhoidal treatment in terms of post-operative pain, post-operative bleeding and mean hospital stay between the two operative techniques for 3rd and 4th degree Haemorrhoids. In our study mean post-op pain score on day seven was 1.12 ± 0.72 and 1.06 ± 0.52 , for OH (Group A) & HAL RAR (Group B) respectively. Post-op bleeding was 10% in group A and 6.66% in group B. Mean hospital stay for group A was 2 ± 0.45 days and for group B it was 1.20 ± 0.40 days.

According to a study conducted by Darshan on 96 patients, 48 patients had OH and other 48 patients underwent Doppler guided haemorrhoidal artery ligation, the duration of post-operative hospital stay was 3.08 ± 0.17 SD in OH group and 2.09 ± 0.16 SD in Doppler guided haemorrhoidal artery ligation group, only 2 patients (4.1%) in OH and one patient (2%) in Doppler guided haemorrhoidal artery ligation group had post-operative bleeding.¹³ So, these studies showed that mean hospital stay and the post-operative bleeding score between the two operative techniques were less in terms of HAL RAR procedure.

According to De Nardi, fifty patients were equally divided for both the procedures, the visual analogue scale (VAS) score for pain in haemorrhoidectomy and HAL RAR on day seven was 3 vs 2.5 respectively ($p > 0.05$)¹⁴ and if we look at the post-operative pain in our study there was not much difference in the post-operative pain felt by the two groups of patients as the p -value turned out to be 0.71, but the post-operative pain in minimal invasive surgery group (HAL RAR) mentioned in this study, is less than the gold standard operative treatment. According to Carlos Hoyuela, who did HAL RAR procedure on thirty consecutive patients and followed them up for two years, the average hospital stay after surgery in his patients was 11 (3–25) hours. Mean postoperative pain (VAS) score was 1.7 on the seventh day. If we compare our study with Carlos study, we can say, though the hospital stay was more in our patients but post-operative pain score was noticeably less in our patient population.

In our study the independent t-test for post-op pain has p -value of 0.71. For post-op bleeding, p value was 0.67. The independent t-test for mean

hospital stay has p -value of 0.00. Our results showed that patients who had HAL-RAR procedure did not have a characteristic difference regarding post-operative bleeding and post-operative pain on day seven, as compared to open haemorrhoidectomy procedure. But the hospital stay in the HAL-RAR technique was significantly low than the latter group, i.e., 1.20 ± 0.40 vs 2 ± 0.45 , and these results were comparable to the study conducted by Darshan¹³ for the OH and HAL RAR.

CONCLUSION

The present study showed that the mean hospital stay between the two groups was less in the Doppler guided haemorrhoidal artery ligation with rectoanal repair group, but there was not a convincing difference in the post-operative pain and post-operative bleeding between the two groups when compared to other studies. So, we need to find out the reason for this difference from the international literature, either by doing the study again or doing it in a larger population of patients. Moreover HAL-RAR has shown to be a safe and effective procedure for patients suffering from grade III-IV hemorrhoidal disease. Patients undergoing this procedure have greater short-term benefits, with lower risk of severe complications. Additionally, they are hospitalized for a shorter length of time and may return to work earlier.

Conflict of Interest: There is nothing to disclose regarding conflict of interest.

AUTHORS' CONTRIBUTION

IS: Literature search, study design, data analysis. AS: Study design, data collection. SF: Literature search, study design, write-up. BU, LG: Data interpretation, write-up. SH: Data analysis, data interpretation. HUWZ: Write-up, proof reading. MSZ: Literature search, study design.

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