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HEMORRHOIDAL ARTERY LIGATION WITH RECTO-ANAL REPAIR VERSUS TRADITIONAL HEMORRHOID-ECTOMY, A COMPARATIVE STUDY

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Abstract

Hemorrhoids, are vascular structures present in the anal canal as cushions that facilitate stool control. When swollen or inflamed they are regarded as hemorrhoidal disease; sometimes they are asymptomatic specially in the internal type which are presented with painless rectal bleeding while external type may present with painful swelling.

Although the traditional open hemorrhoidectomy (Milligan Morgan) is standard and effective technique, it is associated with many complications; the most important is post-operative pain and delayed return to normal activities. Nowadays Doppler-guided hemorrhoidal artery ligation (DG-HAL) with recto-anal repair (RAR) is a minimally-invasive technique for hemorrhoids, it is developed recently to overcome these complications.

The purpose of this prospective study is to compare between the classical open hemorrhoidectomy and HAL-RAR procedure, by assessment of post-operative pain, postoperative complications and outcome of the procedures.

This prospective, study was done between September 2014 and September 2016. Ninety six patients complaining of hemorrhoids were studied at Al-Sadr Teaching Hospital, Basrah, Iraq. They were divided equally into two groups; group A and B, group A underwent surgery by DG HAL and RAR, and group B were subjected to traditional procedure. Patients were followed for one year by evaluation at 1 week, 1 month, 6 months, and 1 year.

In conclusion, DG-HAL with RAR is an effective technique compared with traditional hemorrhoidectomy regarding complications, postoperative pain, in hospital stay, and time of return to normal activities.

Introduction

Hemorrhoids are vascular tissues in the submucosa of the anal canal, they support the fecal continence[1]. When swollen and inflamed, they protruded out of its normal position and so presenting with bleeding with or without pain[2]. Milligan Morgan (MM) hemorrhoid-ectomy is regarded as an effective surgical procedure for hemorrhoids[3], but, this procedure unfortunately is associated with many postoperative complications; the most important are anal pain, anal stenosis, bleeding, and incontinence in addition to delay to return to normal life activities[4].

Many techniques in the last years were developed to control postoperative pain and other complications including stapled hemorrhoidopexy and Doppler-guided hemorrhoidal artery ligation (DG-HAL). Both procedures have good results regarding postoperative pain, and decrease hospital stay, with good patient satisfaction[5,6], but many centers discuss many complications associated with stapled hemorrhoidopexy, some of them are serious like bleeding, large bowel obstruction, retroperitoneal sepsis, recto-vaginal fistula, and rectal perforation[7,8]. DG-HAL is a recent procedure which is first discussed by Morinaga et al[9]. It is shown to be very effective in the treatment of hemorrhoids, it is an easy technique with short time of training and

associated with minimum or no post-operative pain[10].

Recently modification of selective ligation of hemorrhoidal artery which is the recto-anal repair (RAR) by plication of the prolapsed rectal mucosa using the special proctoscope in addition to DG-HAL. The concept of this technique is to decrease the swollen hemorrhoids by ligation of the hemorrhoidal arteries and to repair the prolapsed mucosa instead of excision of the hemorrhoids which is effective in decreasing pain, hospital stay, less complications and early return to normal life activities[11].

Patients and methods

This prospective study was done from September 2014 to September 2016 at Al-Sadr Teaching Hospital, Basrah, Iraq, on 96 patients complaining of hemorrhoid disease grade 3-4 who were admitted to the surgical unit. They were 50 males and 46 females. The median age was 42 (range: 21-70) years.

Patients were divided randomly into two groups; group A (48 cases) underwent surgery by DG HAL and RAR, and group B (48 cases) who were subjected to traditional procedure.

The exclusion criteria included; pregnant patients, inflammatory bowel disease, thrombosed piles and any associated anal disease like fistula or fissure.

The presenting symptoms were; 58 patient presented with protruded piles, (13) patients with bleeding per rectum while soiling seen in 5 cases, constipation was seen in 11 cases, and itching in 9 cases. In 37 of patients anal prolapsed lesions and bleeding were observed together.

Follow up of the patients were conducted at four times: 7 days, one month, six months and one year after discharge, the patients were followed apart from routine examination for the following parameters: post-operative pain, return to normal life activity, any complications or any recurrence in symptoms and patient satisfaction.

Surgical technique: All patients were prepared after thorough examination, complete blood investigations, chest x-ray, ECG, colonoscopy for old and suspicious cases. Bowel preparation was done one day prior to surgery.

Most operations were done under general anesthesia, few under spinal anesthesia. The operations were done in the lithotomy position. A special probe with a Doppler transducer in its tip (A.M.I. Ltd, Austria) was used to detect branches of the superior rectal artery. A clock wise movement of the probe inside anal canal was done to identify the branches by giving special sound. Once this sound is heard, so it is the site of the branch that must be ligated, each branch was ligated with 2-0 vicryl circle 3\8 special for this device 3–4 cm above the dentate line. The probe is rotated in the same technique 1–1.5 cm below the first line of sutures to ligate all the branches, after that RAR procedure was done.

Recto-anal repair was conducted in a way that hemorrhoidal mass was sutured in continuous running method from the artery ligation site to 2-3 cm above the dentate line by using the same suture for artery ligation and was fixed in place on the rectal mucosa.

Suturing was discontinued above dentate line to avoid postoperative pain. No excision for any tissue in this procedure.

All patients who were subjected to HAL & RAR procedure were discharged within 24 hours if the patient was stable with no significant pain or other complications.

Traditional hemorrhoidectomy also was done under GA or spinal anesthesia in lithotomy position. The hemorrhoids were dissected till internal sphinecter, transfixation was done by using vicryl (0) ligatures, with excision of the pedicle distal to the ligatures. The wounds was not closed leaving skin bridges in between. Gelfom sponge was introduced in the anal canal and the patient was discharged next day or after 48 hour according to his condition.

The two procedures were compared for the following issues: the presenting symptoms, duration of the surgery, postoperative pain, use of analgesics, inpatient period, return to work, and postoperative complications. All the patients were followed for 1 year; first visit after 1 week, then 1 month, 6 months, and 1 year respectively. Pain was analyzed by using a visual analog scale (VAS) in which the patient free of pain is scored zero while maximum pain is scored 10. The pain was kept less than score 3 at all post-operative periods. Analgesia was given to the patient at post-operative period from the start according to need. The analgesic drugs used include; systemic non-steroidal anti-inflammatory drugs, pethidine or tramadol according to the severity of pain.

According to VAS if scale was under 3, a WHO class I analgesic (paracetamol) was given, if pain scale was between 3 and 5 so a WHO class II analgesic (paracetamol, NSAID) was administered; while VAS above 5, a WHO class III analgesic (paracetamol & pethidine) was given.

The patients were discharged when the pain can be controlled by oral analgesics, no bleeding, pass urine normally. The patients were discharged on analgesia, laxative with topical cream.

Data was analyzed statistically using SPSS program and a P value of less than 0.05 was considered as significant.

Results

Total number of patients was 96 who were divided in to 2 equal groups (A & B) ; group A (48 patients) underwent surgery by DG HAL and RAR, and group B (48 patients) by traditional hemorrhoidectomy as shown in Table I.

Table I: Age & gender distribution

	Group A (48 cases)	Group B (48 cases)
Age (mean) Years	52.4	44.7
Male	28(29.1%)	22(22%)
Female	20(20.8%)	26(27.0%)

The presenting symptoms for patients in both groups prior to surgery included; prolapsed piles in 58 patients and anal bleeding in 13 patients, others were presented with constipation, itching and soiling as demonstrated in Table II.

Table II: Presenting symptoms

Symptoms	Group A No. %	Group B No. %	Total No. %
Protrusion	30 (31.25%)	28 (29.1%)	58 (60.4%)
Bleeding	6 (6.25%)	7 (7.2%)	13 (13.5%)
Constipation	5 (5.2%)	6 (6.25%)	11 (11.4%)
Itching	4 (4.1%)	5 (5.2%)	9 (9.3%)
Discharge and soiling	3 (3.1%)	2 (2.0%)	5 (5.2%)

The noticed facts from these results (table III) are; the time of surgery was more in group A (HAL & RAR) than in traditional group B (35±4.2 vs 20±6.2 min.) ($P<0.05$). The first defecation time started in group A before group B (1.4±1.0 versus 2.7±1.5 days) ($P<0.05$). Regarding in patient's stay; it is shorter in group A than in group B ($P<0.05$). By comparing the return to work and normal life activity, it is earlier in group A than in group B ($P<0.05$).

Table III: Patient's parameters

Result of the patient	Group A	Group B
Operating time (minutes)	35 ± 4.2	20 ±6.2*
First defecation (days)	1.4 ± 1.0	2.7 ± 1.5*
Hospital stay (days)	1.1 ±0.7	3.5 ±1.5*
Return to work (days)	7 ±4	20 ±5*

*: Significant P value less than 0.05

By comparing the two groups regarding pain depending on clinical assessment and comparing the use of analgesics, it is clear that pain is much less or free of pain in some cases in group A and so less use of analgesics during hospital stay, in comparison with group B. Pain score was (2.66±2.19 in group A vs. 5.20±2.24 in group B; (P<0.05) as demonstrated in Table IV.

Table IV: The use of analgesics in both groups

Frequency of analgesic need	Group A No. %	Group B No. %
Class A	5(5.2%)	8(8.3%)*
Class B	3(3.1%)	12(12.5%)*
Class C	2(2.0%)	6(6.25%)*

*: Significant P value less than 0.05

Post-operative complication

By comparing the post-operative complications in the 2 groups for one year follow-up, no significant difference was found between the two groups. Nine patients complained from urine retention in first 24 hour postoperative period: 2 from group A and 3 from group B; the problem solved by conservative measures, one of them need catheter from group A, Two patients seen from group B presented with bleeding after discharge and were admitted again and managed conservatively. Other complications; one fecal impaction, which was solved by manual evacuation under anesthesia, two patients from group B came with anal stenosis discovered during follow-up in the outpatient clinic, they did well by regular anal dilatation. After 1 year, recurrent prolapse was seen in 3 patients (3%) of group A, 1 recurrent prolapse was detected in group B as shown in Table V.

Table V: Post-operative complications

Complications	Group A No. %	Group B No. %
Urine retention	2(2.0%)	3(3.12%)
Fecal impaction	0(0)	1(1.0%)
Fresh anal bleeding	0(0)	2(2.0%)
Recurrent prolapse	3(3%)	2(2.08%)
Anal Stenosis	0(0)	2(2.0%)

Table VI compared the two groups regarding the late complications. It is found that temporary disturbance of the ano-rectal functions was noticed in 15 patients in group A in the form of urgency in seven patients, flatus incontinence in 4 patients, tenesmus in 4 patients, and in 19 patients in group B in the form of urgency in 9 patients, flatus incontinence in 6 patients, and tenesmus in 4 patients.

All complications were not significant statistically and they disappeared completely within five weeks after surgery.

Table VI: Patient's follow up

Late complications	Group A No. %	Group B No. %
Urgency	7(7.2%)	9(9.3%)
Flatus incontinence	4(4.1%)	6(6.2%)
Tenesmus	4(4.1%)	4(4.1%)

Discussion

Hemorrhoidectomy is regarded to be a definitive procedure for treatment of hemorrhoids and still considered as the standard procedure but, there is high incidence of complications following hemorrhoidectomy[12]. The HAL-RAR technique is different issue in which hemorrhoids were treated without destruction of any tissue by a selective ligation of the terminal branches of the superior hemorrhoidal artery (HAL) under Doppler guide but actually the blood supply is reduced (but not totally interrupted) leading to atrophy of the piles. The mucopexy or recto-anal repair (RAR) is used to fix the hemorrhoids into the anal canal. Their atrophy and posterior fibrosis will fix them and prevent recurrence giving best results; the technique of HAL&RAR is easy to be performed by surgeons after a short training[13].

Long term outcome of both groups were nearly the same in improving their quality of life after one month of the procedure while in early post-operative period there is a wide difference in post-operative pain, use of analgesia, time of passing stool, complications, inpatient period, and early return to work[14].

This study revealed that inpatient stay and early return to work in addition to less post-operative pain are better in HAL-RAR group.

The results of this study did not differ from De Nardi et al. who conducted a similar study on 50 patients with grade III hemorrhoids and 2 years of follow-up[15]. and Denoya et al. who conducted another similar study on 40 patients with grade III and IV hemorrhoids and 3 years of follow-up[16].

During follow-up for each patient, there were no important differences between the two groups regarding history, risk factors, and the preoperative symptoms. Which is similar to other studies except the time of surgery which is longer in DG-HAL and RAR group of this study, but in the above studies[15,16] the time is shorter in DG-HAL and RAR compared with traditional group. This could be due to our early experience with this procedure. Patients in the DG-HAL with RAR group in this study have less postoperative pain and less use of class II and III analgesics in the postoperative period, and also had earlier passage of stool than patients in the traditional hemorrhoidectomy.

The mean inpatient period is short for patients in the DG-HAL with RAR with shorter return to normal activity than patients in the group B. This is same with the results obtained by the above studies.

This study revealed no difference between the two groups with respect to postoperative complications and recurrent prolapse after 1 year; The same results were obtained by different studies such as Ratto C et al[17].

Also this study revealed disturbance of the ano-rectal function in the form of urgency, tenesmus, flatus incontinence, more in the hemorrhoidectomy group B but it was not statistically significant, and these symptoms were disappeared after one month from surgery, this result is same as study done by Elshazly WG[18].

Conclusion

Although open hemorrhoidectomy is still regarded as effective procedure in treatment of hemorrhoid but it carry high incidence of post-operative pain and other complications.

Recently HAL & RAR technique is considered nearly painless technique with much less complications compared to open hemorrhoidectomy, with less hospital stay, less analgesia use, early return to work and normal activities, so it is regarded as an effective treatment for hemorrhoids grades III & IV.

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