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Effectiveness of haemorrhoidal artery ligation by palpatory method

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Abstract
Background: Haemorrhoidal disease is a condition where patients complain of painless bleeding per rectum during defecation possibly accompanied by the prolapsing tissue. Haemorrhoid is a common condition one in three people has this disease.[1]. In 2014/15 more than 30,000 procedures were done in England[2]. Haemorrhoids result from a laxity of supporting tissue with age that causing mucosal prolapse[3, 4], for others; haemorrhoids are due to dysfunction of blood flow in the arterio-venous shunts with dilatation and bleeding eventually resulting in prolapse.[5]
Aim: To determine the effectiveness of the haemorrhoidal artery ligation via palpatory method among patients with grade II and III haemorrhoids.
Methods: This observational prospective study was conducted at KVGMCH, sullia, where patients with hemorrhoids were operated between 1st October 2020 to 1st August 2021. Patients aged between 20-60 years with grade II and III hemorrhoids were included in the study. Patients were selected from out-patient department.
Results: Male respondents accounted for 33 (41.3%) whereas their female counterparts comprised 47 (58.7%). The mean age of the male and female respondents was 43.76 ± 10.08 and 44.52 ± 10.59 years respectively. Out of 80 patients that underwent haemorrhoidal artery ligation, only 25(27.3%) had post-operative complications. Most of the patients had rectal bleeding followed by post-operative defecation pain, anal fissure, fistula in Ano and recurrence. Patients were discharged on postop day 2 and all patients returned to normal daily activity within 5 days.
Conclusion: In conclusion, palpatory method is painless, less invasive, has less complications and is safe alternative to open haemorrhoidectomy where Doppler guided haemorrhoidal ligation equipment is not available.

Keywords: hemorrhoidal artery ligation, grade ii and iii hemorrhoids, palpatory method

Introduction

Haemorrhoidal disease is a condition where patients complain of painless bleeding per rectum during defecation possibly accompanied by the prolapsing tissue. Haemorrhoid is a common condition one in three people has this disease [1]. In 2014/15 more than 30,000 procedures were done in England [2]. Haemorrhoids result from a laxity of supporting tissue with age that causing mucosal prolapse [3, 4], for others; haemorrhoids are due to dysfunction of blood flow in the arterio-venous shunts with dilatation and bleeding eventually resulting in prolapse. [5]
Haemorrhoids are classified depending on their position in relation to the dentate line. External haemorrhoids are located below the dentate line while internal haemorrhoids are located above it. Internal haemorrhoids are further classified as first-degree, second-degree, third-degree or forth degree depending on the severity of the prolapse [6]. Among haemorrhoids patients approximately 40% are asymptomatic hemorrhoids [7]. Most common symptom among patients with internal haemorrhoids is bleeding [7]. Bleeding during defecation which is always painless with bright red blood at the end of defecation [7]. Other symptoms include sensation of tissue prolapse usually accompanied with mucus discharge, sensation of perianal fullness, irritation of perianal skin and mild fecal incontinence. Pain is uncommon in internal haemorrhoids compared to external hemorrhoids [7].
The treatment for hemorrhoid disease depends on the patient's age, comorbidities the patient has and severity of symptoms. Treatment options range from dietary advice to surgical options [8, 9]. Many hemorrhoids treatment methods have been adopted and used across the globe [10]. The choice of treatment depends on the grade of hemorrhoids [10]. Dietary and lifestyle modifications is used for medical treatment of grade I, II, III, and IV hemorrhoids. Dietary changes include increasing fiber intake; lifestyle modifications include reducing fat consumption, exercising, avoiding straining and increasing fluid intake [11, 12].
Non-surgical procedures include rubber band ligation, infrared coagulation and sclerotherapy. Rubber band ligation is used for grade II and III internal hemorrhoids[13]. Sclerotherapy and infrared coagulation are commonly used for patients with grade I and II internal hemorrhoids and patients who are on anticoagulants. Rubber ligation and sclerotherapy do not require anesthesia [14].

Surgical procedures are usually done when symptoms doesnot reduce despite application of conservative approaches (dietary and lifestyle). Surgery is the first treatment of choice for symptomatic grade III and IV hemorrhoids patients. Various Surgical approaches include hemorrhoidectomy, stapled haemorrhoidopexy and doppler guided haemorrhoidal artery ligation [12]. Morinaga *et al* devised a technique based on Doppler identification and suture ligation [15]. The main aim of arterial ligation is to block arterial blood flow causing shrinkage of the corpus cavernosum recti and resulting in a lack of blood flow to the pathological haemorrhoidal tissue [15]. This study will determine the effectiveness of haemorrhoidal artery ligation via palpatory among patients with grade II and III hemorrhoids.

Objectives of the study

- To determine the effectiveness of the haemorrhoidal artery ligation by palpatory method among patients with grade II and III hemorrhoids.

Materials and methods

Source of data: Patients were selected fromout-patient department.
Study design: Observational prospective study
Study place: Dept. of General Surgery, KVG Medical College and hospital, Sullia.
Study period: For 10 months, between 1st October2020 to 1st August 2021
Sample size: 80
Study population: This observational prospective study was conducted at KVGMCH, sullia, where patients with hemorrhoids were operated between 1st October 2020 to 1st August 2021 . Patients included in the study were aged between 20-60 years with grade II and III hemorrhoids. we classified hemorrhoids in IV grades. Patients were selected from out-patient department. Patients were explained about the purpose of the study and those who gave consent to take part in the study were enrolled through a written consent form. A Pilot study was done to assess the Effectiveness of Haemorrhoidal Artery ligation by Palpatory method. It was found that 5 % of the patient presented with postoperative defecation pain which was the most common complication.
Sample size was calculated with the formula$4pq/L^2$
With 'p' being 5 and 'q' = (100-5) =95
And L (Allowable error) =5
Therefore, $4 \times 5 \times 95 \backslash 5^2 = 76$, approximated to 80

Sampling method

Systematic random sampling

Methodology

This observational prospective study was conducted at KVGMCH, sullia, where patients with hemorrhoids were operated between 1st October 2020 to 1st August 2021. Patients aged between 20-60 years with grade II and III hemorrhoids were included in the study. Patients were selected from outpatient department. Patient was placed in lithotomy position and under spinal anesthesia; digital rectal examination followed by proctoscopy was done hemorrhoids identified. Special proctoscope with slit was passed and hemorrhoids were identified and isolated one by one. Haemorrhoidal artery was palpated and identified; with vicryl 3/0 suture material suturing at the site of arterial pulsation about 1-2cm proximal to the dentate line was done. Interlocking continuous sutures were applied along the length of artery. Suturing was done for all the other hemorrhoids identified, surgical gauze covered with lignocaine gel was inserted into anal canal. Preoperatively all the patients were given single dose of antibiotic inj ciplox 200mg and inj metrogyl 100ml. Post operatively all the patients were given same stool softener, analgesic (paracetamol) and daflon 500mg/day for 10 days. Follow up was carried out for 3 weeks and at 8 Weeks for postoperative defecational pain, any fistula formation, rectal bleeding, anal stenosis, anal fissure, any recurrence, hospital stay and return to normal daily activity.

Inclusion criteria

1. Patient aged between 20-60 years with grade II and III hemorrhoids were included in the study.

Exclusion criteria

1. Patients above 60 years and below 20 years of age;
2. Patients with malignant perianal disorders;
3. Acute perianal disease such as abscesses, thrombosed haemorrhoids, acute/ chronic fissure in ano, perianal sinus, fistula in ano
4. History of a previous Anorectal surgery; and presence of a clinically significant cardiovascular, respiratory, renal, hepatic or metabolic disorder.

Statistical analysis

The data so collected was entered into datasheet of MS-EXCEL and then analyzed using SPSS version 17.0 © SPSS Inc. Continuous variables are presented as mean ± SD, and categorical variables are presented as absolute numbers and percentage. For all statistical tests, a p value less than 0.05 was taken as significance.

Fig 1

Results

A Total of 80 patients took part in this study where male respondents accounted for 33(41.3%) (n=50) and their female counterparts 47(58.7%) (Table-II). The mean age of the male respondents was 43.76 ± 10.08 years whereas the mean age of female was 44.52 ± 10.59 years. Out of 80 patients that underwent haemorrhoidal artery ligation, 25 (31.4%) had post-operative complications. Most of the patients had post-operative defecation pain 14 (17.3%), per rectal bleeding 7 (9.1%); 2 (3.3%) had anal fissure,1 (0.83%) developed fistula-in-ano and 1 (0.83%) had recurrence as shown in table-I. patients were discharged on postop day 2 and all patients returned to normal daily activity within 5 days.

Table 1: Post-Operative Complications

	Frequency of Post-operative complications on 3rd weeks of follow up	**Frequency of Postoperative complications on 8th week follow up**
Post-operative defecation pain	18%	3%
Fistula	0%	1%
Per rectal bleed	9%	2%

Anal fissure	3%	1%
recurrence	0%	1%
Total	30%	8%

Table 2: Gender of Respondent

		Frequency	Percentage
	male	33	41.3
Valid	female	47	58.7
	total	80	100

Discussion

- The study was done taking into consideration the age, comorbidities and the severity of the hemorrhoids. The choice of the treatment strategies depends on the demographic characteristics of the patients specifically age, related comorbidities that the patient has and the severity of symptoms [8].
- Patients with comorbidities such as malignant perianal disorders; acute perianal disease such as abscesses, complicated haemorrhoids (e.g., thrombosis) and acute/chronic fissure in ano, perianal sinus or fistula in ano ; history of a previous ano-rectal surgery; and presence of a clinically significant cardiovascular, respiratory, renal, hepatic or metabolic disorder were not included in the study.
- The procedure collaborates with study conducted by Liu *et al*, who excluded all patients with comorbidities from taking part in the study i.e. Doppler guided hemorrhoidal artery ligation surgical procedure to cure haemorrhoids [9]. This study involved haemorrhoidal artery ligation via palpatory among patients with grade II and III hemorrhoids to treat hemorrhoids among 80 patients.
- This study goes hand in hand with the Arrezo *et al* [10] who highlighted several treatment methods for hemorrhoids. Among these methods include rubber band ligation, procedurefor prolapse and hemorrhoids. The treatment approach selected for hemorrhoids depends on the Grade of hemorrhoids [10].
- In addition, surgical procedures are usually done when there is continued symptoms despite of conservative approaches like dietary and lifestyle approaches. and non-surgical procedures. These procedures are conducted to treat grade II, III, and IV internal hemorrhoids [14]. These surgical approaches include open or hemorrhoidectomy, stapled hemorrhoidopexy and DGHAL [12].
- Morinaga *et al*, also came up with the technique that played major role in treating patients with hemorrhoids based on the Doppler identification and suture ligation [15]. The main aim of the arterial ligation is to stop the arterial blood flow with the purpose of inducing the shrinkage of the corpus cavernosum recti as a result of the lack of blood flow to the hemorrhoidal tissue [15]. Post-operative complications include defecation pain, rectal bleed, proctitis, fistula in ano.
- The finding is similar to the study conducted by authors who found out that the effectiveness of HAL on prolapse complaints seem to be less severe and favourable as compared to other approaches [15, 16]. This study reported that more than 68.6% of the participants didn't have any complains during the follow up period. The finding is similar to a study conducted by Schuurman who reported that 70% of the patients did not need any additional treatment after the arterial ligation procedure done on them [17]. The finding collaborates with the other studies conducted by several authors who reported complications such as recurrence including re-bleeding after a one year follow up period among the [14] patients [18].
- The recurrence rates were also low in studies conducted by authors in different settings where the recurrence rates of 15%, 9% and 38% among the patients with grade II, III and IV hemorrhoids [19, 20]. Were reported. Prolapse recurrence was only considered among 10% of the patients and there was no significant difference between other studies and this study finding [19]. Another study conducted by Faucheron *et al* reported 9% recurrence rate among the patients after 34 months of the follow-up since it included more than 100 patients with grade IV hemorrhoids [21]. The studies reported post-operative pain among 10-55% of the patients who underwent the procedure [22, 23]. Bleeding was also reported among 1-12% of the patients in different studies conducted, [22, 23-25] whereas hemorrhoidal thrombosis was reported among 5% of the subjects [22, 24].
- The finding of the study is similar to the finding of the study which reported RBL as postoperative complications among 16% of the patients, minor bleeding among 4%, and 12% patients reported severe pain. One more study also reported severe pain that resulted in use of systemic analgesics which is associated to ischemia induced by the procedure. Other studies also reported postoperative pain among patients between 1 to 51%.

  Another study conducted by Forlini *et al*, also reported bleeding among 2.4% of the patients who underwent the procedure after a period of one week. In another study Nakeeb *et al*., reported postoperative complications such as pain (4%), rectal bleeding (4%) and vasovagal symptoms among 1.3% patients. The study mainly focused on patients with grade II and III hemorrhoids who underwent the hemorrhoidal arterial ligation procedure.

  The finding is similar to the study conducted by Wilkerson *et al* who also focused on the patients who had grade II and III hemorrhoidal disease where they were treated with arterial ligation procedure [16]. Patients were satisfied after the follow-up period of 30 months.

Conclusion

Haemorrhoidal artery ligation by palpatory method is efficient, safe, with shorter hospital stay, easy to perform procedure and can be used where Doppler guided haemorrhoidal ligation facility is not available, indicating that this method is a good and effective alternative treatment option for grade-II and III haemorrhoids.

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