



Stapled Haemorrhoidopexy: Comorbidities and Outcome

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Authors' contributions

This work was carried out in collaboration among all authors. Author AK conceptualised the study design and manuscript writing. Authors AK, SM and MN contributed equally in statistical analysis, writing first draft of manuscript, study analysis and literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aim: Stapled haemorrhoidopexy (SH) is one of the commonly performed procedure for grade 3 haemorrhoids. High-risk surgical patients require additional care and are reported to have high morbidity. The present study is aimed to analyze the outcome of SH in high-risk patients.

Study Design: Retrospective analysis of prospectively maintained data.

Place and Duration of Study: Department of Surgical Gastroenterology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, India, between 2005-2019.

Methodology: Data of all the patients who underwent SH between 2005-2019 were retrieved from the hospital database. The outcome of the surgery in high-risk patients was compared with patients without the risk factor.

Results: There were a total of 136 patients (101 males and 35 females) in the age range of 16- 87 years. 67 patients (49.3%) had high-risk factors in the form of single or multiple comorbidities and those more than 65 years of age. Three patients (2.2%) had bleeding in the postoperative period. One of them required reoperation. Two patients had a recurrence of the disease on the long term follow up. There was no mortality.

Conclusion: SH can be safely performed in elderly patients, patients at high risk for bleeding and also in patients with associated comorbidities.

Keywords: Stapled haemorrhoidopexy; comorbidities; high risk; and postoperative outcome.

1. INTRODUCTION

Sushruta, an ancient Indian surgeon of 6th century BC, known today as the 'Father of surgery' described haemorrhoids as growths of polypi or fleshy condylomata in the lower end of the large intestine. He provided treatment options and divided into four categories- medical management, alkali application, cauterisation and surgical excision with major emphasis on wound cleanliness [1]. Hippocrates in 4th century BC described ligation of haemorrhoids as its management. Surgery is primarily indicated for grade 3 and 4 haemorrhoids and the failure of the non-surgical procedures. Over centuries the surgical treatment for haemorrhoids has changed with revisited anatomy and the technology.

Surgical excision is being performed either by conventional haemorrhoidectomy or its modifications using ligasure and harmonic scalpel as the energy devices. However, definitive excision of haemorrhoids has more postoperative pain [2]. The newer surgical procedures – Stapled haemorrhoidopexy (SH) and Doppler Guided Haemorrhoidal Artery Ligation (DGHAL) are now the most commonly preferred choices because of decreased postoperative pain. Studies comparing DGHAL and SH have shown a higher rate of recurrence and low patient satisfaction rate with DGHAL compared with SH [3]. SH is safe and easier to perform with good postoperative patient satisfaction rate. A circular strip of the mucosa is excised 3-4 cm above dentate line using a circular stapler device and then it fixes the two ends together with disruption of the blood supply. However, it is not free from complications. Postoperative complications include bleeding, urinary retention, and fecal incontinence. Serious complications like rectal perforation, rectovaginal fistula, anastomotic dehiscence and pelvic sepsis have been reported, but they are rare [4]. The present study has been carried out at a tertiary care teaching hospital to find out the perioperative and long term outcome of SH, in high-risk patients.

2. PATIENTS AND METHODS

Data of all the patients who underwent SH from January 2005 to December 2019 were retrieved from the hospital database. Detailed information regarding clinical presentation, associated comorbidity, earlier treatment history, the

procedural details and postoperative outcome were retrieved. Patients were divided into those with high risk and those with low risk. The high-risk group comprised of patients with single or multiple comorbidities and patients more than 65 years of age without comorbidity. SPSS package version 20.0 was used for data analysis. p-value <0.05 was taken as significant.

2.1 Preoperative Management of Patients

Patients with coronary artery diseases who were on a combination of aspirin and clopidogrel were taken up for surgery after stopping clopidogrel 5 days before scheduled surgery while continuing aspirin at 75 mg. Patients with valvular heart diseases who were on warfarin were discontinued 5 days before surgery and heparin was started with ACT monitoring.

Preoperative antibiotic prophylaxis with cefuroxime and metronidazole was administered and a proctoclysis enema was given in the morning of the day of surgery. Preoperative urinary bladder catheterisation was considered selectively in elderly male patients, patients with comorbidities and skeletal abnormalities. Surgery was performed either under general anaesthesia or regional Anaesthesia.

SH was performed either with DST series stapling device (Medtronic, Minneapolis, USA) or PROXIMATE PPH 33 mm stapling device (Ethicon, Johnson and Johnson, USA) or MIRUS haemorrhoid stapler (Merilife sciences). Details of postoperative complications in the form of pain requiring analgesics, bleeding, urinary retention, anastomotic dehiscence, perineal hematoma were noted.

2.2 Operative Details

After the patient was placed in the lithotomy position, part was painted and draped. Proctoscopy was done and findings were noted. Circular anal dilator (CAD) was placed into the anal canal with the help of an obturator and fixed to the perianal skin. Anoscope was passed inside the CAD. Purse string suture was taken with prolene 2-0, about 3-4 cm above the dentate line and tied after insertion of anvil. Stapler was engaged and fired. Hemostasis was secured. Hemostatic anal spongion was placed in the anal canal at the end of the procedure in all patients. The doughnut was checked whether it

was complete or not. Patients requiring additional procedures were performed at the end of SH.

SH was performed as a secondary procedure with hernioplasty, laparoscopic cholecystectomy in patients when it coexisted and was symptomatic.

Patients were started oral liquids 6 hours after surgery. Intravenous paracetamol was given as analgesic for the first 24 hours. Patients at the time of discharge were advised high fibre diet with plenty of oral liquids intake, sitz bath, stool softeners and diclofenac as analgesia for pain if persisted.

3. RESULTS

There were a total of 136 patients with 101 males (74.3%) and 35 females (25.8%), with a mean age of 49.2 years (range 16-87 years). Seventy six (55.9%) patients were between 41-60 years age group. Four (2.9%) patients were less than 20 year in age (Fig. 1).

Total of 67 patients (49.3%) were in the high-risk group, 64 patients (47%) had one or more comorbidities. There were 3 patients with age more than 65 years but without comorbidity.

Fourteen (10.3%) patients had multiple comorbidities. The comorbidities were diabetes in 10 (7.4%), hypertension in 33 (24.3%) and cardiac diseases in 12 (9%) patients. Other associated diseases were neurological problems in 3, hypothyroidism in 5, bronchial asthma in 3,

chronic kidney disease (CKD) in 3, Chronic liver disease in 2 and 5 patients had skeletal diseases. Details of the comorbidities have been listed in Table 1.

Fifteen patients were on anticoagulation therapy either on clopidogrel or warfarin. Majority of the patients [95 (69.9%)] had grade 3 haemorrhoids, followed by grade 2 in 30 (22.1%). Eleven (8.1%) patients had grade 4 haemorrhoids. Fifteen (11.0%) patients had associated external component.

Twenty-nine (21.3%) patients had anaemia at presentation; 8 (5.8%) of them required transfusion. Eleven of them (37.9%) had a prior history of procedures for haemorrhoids elsewhere.

Out of 136 patients, 39 (28.7%) patients were referred to us who had recurrence. Among them 16 (41.0%) patients had rubber band ligation, 10 (25.6%) open haemorrhoidectomy and 6 (15.4%) injection sclerotherapy. One (2.5%) patient had undergone DGHAL. Six (15.4%) patients had multiple procedures before admission (Fig. 2).

Eleven (8%) patients had associated fissure in ano, 20 (15%) patients had rectal mucosal prolapse, 4 (3%) anal polyps and 2 (1.4%) had fistula in ano. One patient had a solitary rectal ulcer. Additionally, 4 (3%) patients had an inguinal hernia, 1 patient had an umbilical hernia and 1 patient had gall stones disease with CKD who was a prospective renal transplant patient.

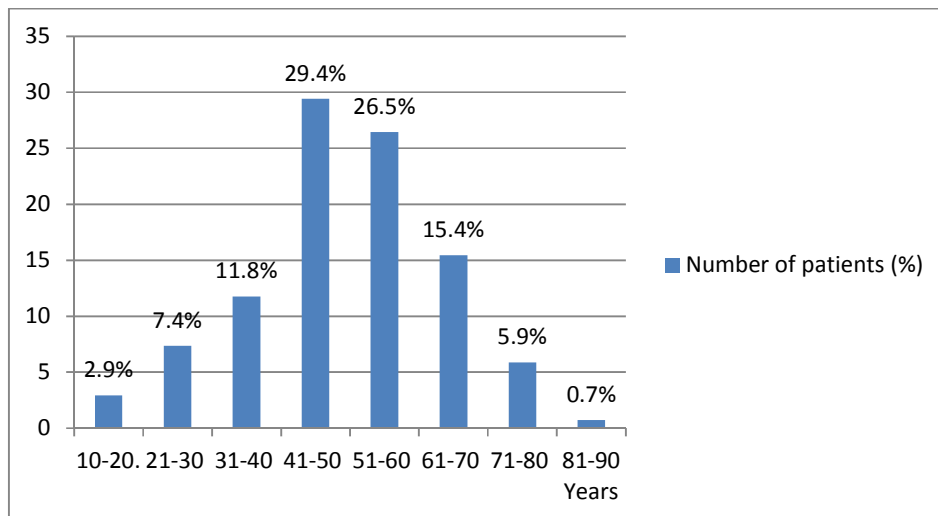


Fig. 1. Age-wise distribution of patients

Table 1. Associated comorbidities in high risk patients (n=64)

	Number of patients
Multiple comorbidities 14 (10.3%)	
HTN, Parkinson	2
DM, DCM	1
HTN, CKD	2
HTN, DM	2
HTN, DM, CKD	1
HTN, CAD	3
HTN , HYPOTHYROIDISM	2
HTN, DCM	1
Single Comorbidity 50 (36.7%)	
Neurological 2 (1.5%)	
Seizure disorder	1
Depression	1
Respiratory 4 (2.9%)	
Bronchial Asthma	3
COPD	1
Hematological 2 (1.5%)	
Aplastic anemia	1
Thalassemia minor	1
Skeletal 5 (3.7%)	
Ankylosing spondylitis	1
Sacroilitis	1
Kyphoscoliosis	1
Rheumatoid arthritis	1
Disc prolapse	1
Cardiac 28 (20.6%)	
CAD	4
RHD	3
HTN	21
Endocrine 11 (8.1%)	
Hypothyroidism	5
DM	6

3.1 Additional Procedures

Twenty-nine patients (21%) underwent additional procedures for associated anorectal diseases. Closed LIS was performed in 11 (8%) patients and polypectomy in 4 (3%) patients. Two patients with low fistula in ano underwent fistulotomy. Fifteen (11%) patients who had symptomatic external haemorrhoids underwent cautery excision in the same setting at the end of SH.

Four (3%) patients with inguinal hernia and 1 patient with umbilical hernia underwent mesh repair. One patient with gall stones and bleeding haemorrhoids underwent laparoscopic cholecystectomy.

3.2 Postoperative Outcome

Mean operating time was 30 minutes. There was no difference in operative timing between high-

risk group patients and low risk group. No adverse intraoperative events in the form of excessive bleeding or rectal perforation were noted. Mean duration of postoperative stay was 1.6 days (range 1- 5 days).

3.3 Postoperative Management of Patients on Anticoagulants

Clopidogrel was restarted on POD 1 and heparin was restarted 12 hours post surgery after ensuring that there was no bleeding.

Bleeding was seen in three (2%) patients in the immediate postoperative period. One of them had DM and dilated cardiomyopathy and other two patients had hypertension who were on antihypertensive. Two (1.5%) patients were managed with packing alone, while 1 patient required reoperation and suture ligation of bleeding point. None of the patients required

blood transfusion and no patient presented with delayed postoperative bleeding.

Two patients (1.5%) required an additional dose of intravenous diclofenac for pain control in the postoperative period in addition to paracetamol injection. Seven (5.1%) patients had acute urinary retention, two of them were females. Two patients had BPH. Foleys catheter was removed on postoperative day (POD) 1 and all the patients voided normally. There was no significant difference in the postoperative complications in the high-risk group as compared to those with no risk (Table 2). There was no perioperative mortality.

Follow-up was available in 102 patients (75%). With a mean follow up of 81 months (range 5-170 months), two (2%) patients developed recurrence of symptoms at a duration of 7 and 9 months after surgery, one in the high-risk group and other in the low-risk group. Both of them required surgery- open haemorrhoidectomy and other SH. No patient had rectal stenosis or faecal incontinence in the follow-up.

4. DISCUSSION

Haemorrhoids form an important part of the workload of a coloproctologist. Sushrutha, the ancient Indian surgeon advocated the use of rectal speculum for excision of haemorrhoids followed by application of alkali for haemostasis. Many new surgical methods of treatment have been developed over time to reduce postoperative pain, wound-related problems and also to decrease the recurrence rate. Pain after haemorrhoidectomy is a major worry and seen

mostly after conventional haemorrhoidectomy, and studies have found no major difference in pain after open and closed haemorrhoidectomy [5]. SH has gained widespread acceptance due to its advantage of having less postoperative pain and early return to normal activities. Not much literature is available about the outcomes of SH in high-risk patients. In our study overall, 2 (1.47%) patients (one each in high-risk and low-risk group) required additional dose analgesia. Mlakar et al. [6] and Umile Michele Cosenza [7] have also reported postoperative pain and the need for additional analgesia in 6% and 2.2% respectively after SH. The various reasons for immediate postoperative pain could be due to low level of staple line incorporating anoderm, haematoma at staple line and the anal spasm. Stapled haemorrhoidectomy can be performed under general anesthesia or regional anesthesia or even under local anaesthesia [8]. However, which is best in cases of high risk patients is not clear. In our series, the patients were operated both in general and regional anaesthesia based on anesthetist preference and also on patient choice.

Immediate postoperative haemorrhage after SH has been also reported in the range of 4 - 25%, which is mainly from the staple line. Three patients in our study (2.2%) had bleeding in the postoperative period. One of them (0.8%) required examination under anaesthesia and suturing. Remaining two patients were managed by anal packing. All three patients were in the high-risk group. This can be decreased by careful monitoring of patients on anticoagulant therapy and inspection of suture line, intraoperatively [9].

Table 2. Demographics, clinical profile and postoperative outcome low risk group vs high risk group

Demography and clinical parameters	Low risk group (n= 69)	High risk group (n=67)	p- value
Males	55	46	0.06
Females	14	21	0.06
Preoperative anemia	13	16	0.59
History of Prior treatment	23	16	<0.001
H Grade 3	46	49	0.11
H Grade 4	4	7	0.26
Postoperative complications			
Postop bleeding	0	3	0.55
Urinary retention	3	4	1
Need for an additional dose of analgesia	1	1	0.29
Cardiac event	0	0	0

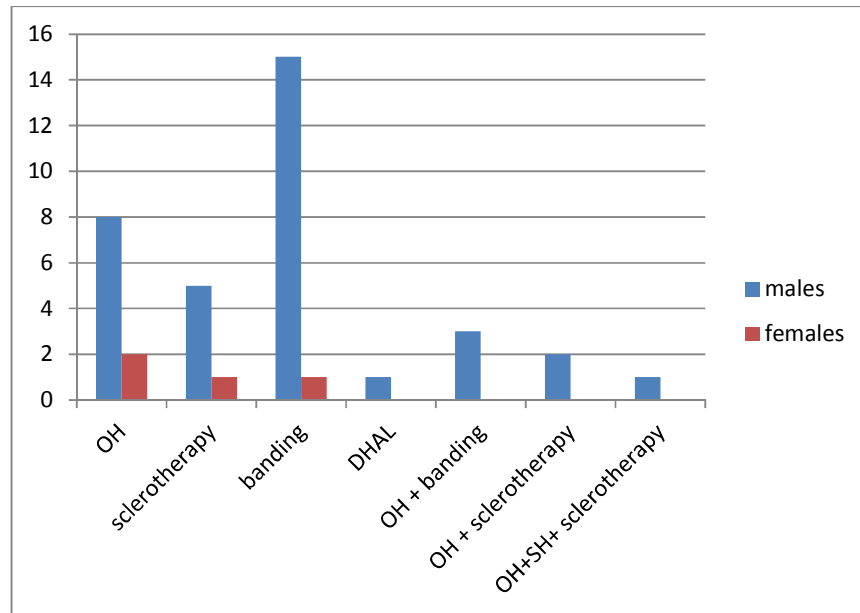


Fig. 2. Patients and the procedures performed elsewhere before referral

Acute urinary retention is another common complication after haemorrhoidectomy and the incidence ranges from 0-22% after SH [10]. The belief that postoperative pain as a causative factor for urinary retention has not been proven in studies [11]. The incidence of acute urinary retention in our series was in 7 patients (5.1%). Two of these patients had benign prostatic hypertrophy.

Overzealous resection of rectal mucosa in SH can lead to rectal stenosis. One of the proposed reasons is anastomotic dehiscence, submucosal abscess and inflammation. In literature, the incidence of anal stenosis has been reported to be 0-6% [12]. None of our patient had anastomotic dehiscence or developed submucosal abscess and in follow up also there was no case of rectal stenosis.

Combining SH with excision of external haemorrhoids has been shown to decrease the incidence of recurrent mucosal prolapse as reported by ARAUJO et al. [13]. In our study excision of external haemorrhoids were done in 15 (11%) patients.

Among the 102 (75%) patients available for follow up (median of 81 months and range of 5-170 months), two (2%) patients had a recurrence of the symptoms. The recurrence rate of haemorrhoids has been reported to be between 0 and 50% [14]. The reason for low recurrence

and lower complication rate in our series could be a reflection of low perioperative complication and surgery in a specialty unit. Recurrence of the symptoms can be very well treated by repeat SH with satisfactory outcomes [15].

SH is less time consuming than conventional haemorrhoidectomy. In our study the mean operative time was 30 minutes which is not different from published series of 25 min [16,17]. With addition of extra procedures in some of our patients, it took little longer time to complete the surgery. Mean duration of hospital stay was 1.6 days which is comparable to that in a meta analysis by 'Laughlan K et al.' where mean duration was 2.7 days [18].

None of the patients had postoperative bleeding complications who were on anticoagulants or high risk of bleeding complications (n=15). There are very few publications on the feasibility of SH in patients with cirrhosis and no studies in patients receiving warfarin. Similar to our study 'Pirolla et al'. and 'Huang et al'. have also reported that SH can be performed in high-risk patients without increasing postoperative morbidity [19,20].

5. CONCLUSION

In the present series, approximately half of the patients had associated comorbidities and significant numbers of patients were on

anticoagulants therapy. There was no difference in the overall complications in the high-risk group as compared with low risk patients, except that bleeding complication was little higher in the high-risk group. SH can safely be performed in high-risk patients with good surgical outcome if the underlying risk factors are optimized before surgery.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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