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A descriptive study of day care stapled hemorrhoidopexy surgery in grade-4 hemorrhoids under pudendal block

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ABSTRACT

Background: Hemorrhoids are one of the most common afflictions of human beings from times immemorial. It is said that 40% of population have symptoms due to hemorrhoids at some time in their lives. Stapled hemorrhoidopexy under local anesthesia has been emerging as the procedure of choice for symptomatic hemorrhoids. **Aims and Objectives:** The objectives of the study are as follows: (1) To assess the advantage of performing stapled hemorrhoidopexy under local pudendal block. (2) To study the post-operative complications after stapled hemorrhoidopexy. (3) To assess the feasibility of stapled hemorrhoidopexy in grade IV hemorrhoids. (4) To assess the advantages of stapled hemorrhoidopexy in anal skin regression after surgery. **Materials and Methods:** 50 patients of grade 4 hemorrhoids were operated by hemorrhoid stapler under local anesthesia. **Results:** Stapled hemorrhoidopexy under local anesthesia can be safely performed as a day care procedure in grade IV hemorrhoids. Patients following stapled hemorrhoidopexy under local anesthesia have reduced post-operative pain, hospital stay, analgesic requirements, and earlier return to work, early mobility out of bed, less operative time, short learning curve, less operative complications, cost effectiveness, and good patient satisfaction. **Conclusion:** Stapled hemorrhoidopexy under local anesthesia is feasible to be used in those patients who are unwilling and unfit for other modes of anesthesia with better results with lesser complication rate and as a day care procedure.

Key words: Local anesthesia; Grade 4 hemorrhoides; Pudendal block; Stapled hemorrhoidopexy

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INTRODUCTION

Hemorrhoids are one of the most common afflictions of human beings from times immemorial. It is said that 40% of population have symptoms due to hemorrhoids at some time of their lives. Stapled hemorrhoidopexy was received with much enthusiasm, because it could offer patients a significantly improved post-operative comfort level. Day surgery is becoming more common due to its cost effectiveness as well as patient acceptance. The increase in day case procedures and their complexity is related to improvements in surgical and anesthetic techniques. Patients suffering from hemorrhoids, anal fistulas, anal fissures, perianal abscesses, pilonidal sinus or even anal carcinomas can be satisfactorily operated on as day surgery cases.

Aims and objectives

This study is about treatment of hemorrhoidal disease with stapled hemorrhoidopexy under pudendal block. To rule out appropriateness of Stapled hemorrhoidopexy in grade 4 hemorrhoids and firing stapler at 2 cm from dentate line to see regression of external skin on long-term with patient satisfaction.

MATERIALS AND METHODS

A Descriptive Study was conducted in the Department of Surgery, MGM Medical College and associated MYH Hospital Indore between November 2021 and December 2022. Patients of age >15 years presenting with Grade IV

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hemorrhoids in MY Hospital Indore. Pudendal Block was used in all cases. Data collected include patient's age, sex, patient's complaints, associated medical and surgical conditions, proctoscopic findings, duration of surgery, mobilization out of bed, post-operative pain, hospital stay, return to work, post-operative early, and late complications. Follow-up was done after surgery at days 1, 2, and 3 and at 2 weeks and 3 months and 6 months.

Sample size of 50 was taken for convenience.

Inclusion criteria

Moderate anemia Hb >8 g%, Grade IV hemorrhoids, and external component of hemorrhoids were included in the study.

Exclusion criteria

Patients suffering from Grade I, Grade II, and Grade III hemorrhoids, anal fistulas, anal fissures, perianal abscesses, pilonidal sinus, or even anal carcinomas.

Procedure

All the patients of grade 4 hemorrhoides were treated with magnesium sulfate dressing, laxatives, high fiber diet, and local ointment to reduce the local swelling. After doing detailed history, routine investigations for diagnosis and check-up and after obtaining written informed consent all patients were posted for surgery. Patients were allowed clear fluids orally till 2 h before entering the operation theater. In the operating theater, the patient was placed in lithotomy position with a pillow under the hips and the legs held together, the buttocks were taped apart for better exposure and the perianal area cleansed with antiseptic solution before the area draped. The pudendal block was applied before any anal examination.

The anesthetic mixture was obtained by mixing 15 mL of 0.5% bupivacaine with 15 mL of 2% lignocaine with adrenaline (1: 100,000). The two drugs diluted each other to give the desired concentration. A 50 mm 26 gauze intramuscular needle was fitted onto 20 mL syringe containing the anesthetic mixture. The anesthetic mixture was deposited in the sphincter complex approximately 3 cm from the anal verge through the anococcygeal ligament into the ischiorectal fossae to the level of levator ani muscle. A 5 mL solution was deposited at 3 o'clock position while withdrawing the needle. The needle was then directed 45° anterolaterally and 5 mL was injected on both sides in the perisphincteric space while the needle was withdrawn. This was repeated in same fashion at 9 o'clock and anterior and posterior in perineum. The onset of anesthesia is approximately 5 min with blockage of branches to the anus from the anococcygeal and pudendal nerves, the inferior hemorrhoidal nerve portion and the anterior sphincteric nerve portion, complete anesthesia of the perianal and anal canal ensues with relaxation of the sphincters that renders painless dilatation.

For this, all patients were given a dose of antibiotic injection cefotaxime 1 g IV 1 h before procedure. After lubrication of the anal margin, a two-finger anal dilation was performed gently. Then circular anal dilator with obturator was introduced in anal canal with rotatory movement. After removing the obturator, the prolapsed mucosa fell into the lumen of anal dilator. It is fixed to the perineum with four stitches, taken with silk no. 2–0. Anoscope was introduced through the anal dilator. With 2–0 monofilament suture prolene on 25–30 mm curved round body needle purse-string suture was carried out 2 cm above the dentate line by rotation starting from 3'o clock position. This ensured that suture line circularly included symmetric ring of mucosa and submucosa of rectum and not the vaginal wall in females and muscle layers of rectum. The stapler was opened to its maximum diameter and seen for the red mark on an indicator over staple gun and then its anvil was placed beyond the purse-string suture. The stapler was slightly withdrawn to ensure the purse-string could be visualized and tied. The end of the suture was pulled out of the lateral holes of the stapler and tied externally using a suture threader. During this step the stapler should be gently pushed in, while the thread was pulled by the assistant or surgeon so that the prolapsed mucosa began to be accommodated. The instrument was then tightened to the end, by full rotation of the stapler knob, clockwise till the marking in indicator turns to green.

The stapler was then fired and held closed for 1 min to assist in hemostasis. The stapler's head was then opened through two full rotations till the marking in indicator comes to center. Then the gun was slowly withdrawn and specimen of Doughnut was retrieved from the stapler and inspected to verify complete excision of the tissue and sent for histopathological examination. A digital examination confirmed that the stapler line was circumferential. A 2–0 Vicryl suture was used to oversew if the bleeding is seen. Here in this procedure, external components were not dealt with directly as they get regressed in post-operative period. No attempt was made to remove external tag or any cutaneous component of hemorrhoid, as it would result in post-operative pain and nullify the benefit of stapled hemorrhoidopexy.

Data collection and analysis

Data were managed on an Excel spreadsheet. Descriptive analysis of demographic data, clinical parameters, and post-operative complications were carried out. Quantitative variables were summarized by mean and standard deviation or median and interquartile range, and categorical variables

were summarized by frequency (percentage). Statistical analysis was done using SPSS 16 software.

RESULTS

A total of 50 patients (>15 years of age) included in this study. Out of which 30 males (60.0%) and 20 (40.0%) females and majority were between 31 and 40 years (50.0%). The details are shown in Table 1.

The details of pre-operative associated medical or surgical condition are shown in Table 2.

Chi-square test applied in above table: P=0.726 hence showing there is no significant correlation between age and associated medical or surgical condition.

1. More cases in males 60% than females 40%
2. More cases in Age 31–40 years, 50%
3. To study the etiology and pathogenesis, a much longer group matched with control is needed. The only significant feature found was that more than ½ of the patients were constipated
4. Time taken for surgery in stapled hemorrhoidopexy group under local anesthesia is mean 21.43±3.57 min, which is equivocal to Stapled Hemorrhoidopexy in spinal or general anesthesia (GA)
5. Stapled hemorrhoidopexy leads to early mobilization out of bed, about 91.67% patients mobilized in <6 h. This leads to shorter hospital stay and early return to work make the procedure day care
6. Stapled hemorrhoidopexy under local anesthesia had shorter hospital stay, mean 10.93±7.12 h., that is <24 h which make the procedure day care
7. Stapled hemorrhoidopexy under local anesthesia leads to early return to work. Mean 2.03±0.69 days, which reduces extra financial burden and increase level of satisfaction for patient
8. Stapled hemorrhoidopexy under local anesthesia was associated with lesser pain VAS score. Only 1 patient had pain on post-operative day 1
9. Stapled hemorrhoidopexy under LA was having less bleeding rates. Only two patients had bleeding on 1st post-operative day and only one patient had bleeding on 2nd post-operative day
10. None of the patients got urinary retention in our study, which is a common complication of spinal anesthesia (15–18%)
11. On long-term follow-up, one patients out of 50 got fecal urgency resolved later, none got anal incontinence, two patients got intermittent bleeding not requiring major intervention.

Table 1: Characteristics of patients

Characteristics	Number	Percentages
Male	30	60
Female	20	40
Total	50	100
Age group		
20–25	05	10
26–30	10	20
31–40	25	50
>40	10	20
Total	50	100

Table 2: Pre-operative associated medical or surgical condition

S. No.	Associated medical or surgical condition	Number of cases	Percentages
1	Bleeding P/R with constipation	32	64
2	Bleeding P/R with bladder outlet obstruction	04	08
3	Bleeding P/R with bladder outlet obstruction and constipation	04	08
4	Bleeding P/R	10	20
	Total	50	100

DISCUSSION

A hospital-based descriptive study was conducted in the Department of Surgery, MGM Medical College and associated MYH Hospital a tertiary care hospital, Indore in Central India between November 2021 and December 2022 with objective of finding feasibility of stapled hemorrhoidopexy under pudendal block in Grade IV hemorrhoids, operative time, hospital stay, mobility out of bed, analgesic requirements and return to work, learning curve, early and late operative complications, cost effectiveness, and patient's satisfaction and significance of stapler line above dentate line in anal skin regressibility. A total of 50 cases of Grade IV hemorrhoids fulfilled the selection criteria and gave voluntary consent to be a part of the study were enrolled in this study. Following observations were made during the study as shown in Table 1-

1. Out of the 50 patients, 30 were male (60%) and 20 were female (40%). This signifies the male predominance of the disease as shown in Table 1
2. Age ranges from 20+ to 40+ age group 50% cases were found in 30–40 years' age group and 20% cases found in 40+ years' age group. This shows that maximum incidence of hemorrhoidal disease was in 4th and 5th decade. Alatise et al.,[1] also reported the mean age of 44.73 years as shown in Table 2
3. Associated medical and surgical condition
   - Bleeding P/R with constipation was in 64% cases
   - Bleeding P/R with bladder outlet obstruction was in 08% cases

- Bleeding P/R with constipation and bladder outlet obstruction was in 08% cases
- Only bleeding P/R was in 20% cases.

This shows that more than 50% of the patients suffered from constipation, which may be the root cause of hemorrhoids. In other patients, another pathology may be either bladder outlet obstruction or bladder outlet obstruction associated with constipation.

4. Operative time in stapled hemorrhoidopexy under local anesthesia was mean 21.43+3.57 min comparable to study done by Ho et al.,[2] (2000) with mean duration of surgery was 16±4 min. and Younes et al.,[3] with mean 23.5±7.1 min. The operation time of Stapled hemorrhoidopexy under local anesthesia was even shorter than the Stapled hemorrhoidopexy or open hemorrhoidectomy under spinal or GA comparable to study done by Hiremath and Gupta[4] Shorter duration of surgery has many advantages, in terms that it reduces anesthesia related complication and also this makes the procedure feasible to be done in patients having added comorbid condition that having anesthesia related risk.
5. In our study mobilization out of bed was addition shorter for stapled hemorrhoidopexy group under local anesthesia, mean 4.03+1.82 h. Out of 50 patients, 45 patients (91.67%) mobilized in <6 h. and only five patients (8.33%) mobilized after 6 h. This signifying the patient's comfort with the procedure and also helping in early and smooth rehabilitation, because of less pain and less tissue handling and trauma comparable to study done by Gabrielli et al.,[5] in which out of the 70 patients 62 patients mobilized as well as discharged 3 h after the operation in good general condition and without pain (88.57%) and 8 patients (11.42%) were discharged the day after. Post-operative hospital stay was found to be mean 10.93+7.12 h compared to study done by Dakubo et al.,[6] (2005). The patients in the local anesthesia group were discharged from the hospital at a mean time of 12 h., while that for spinal anesthesia was 6 days. In another study, mean time of hospital stay in spinal hemorrhoidopexy group is 1.24 days in the study done by Bikhchandani et al.,[7] and 2.03±0.81 days in study done by Khan et al.,[8] This shows that mean time of hospital stay is very much shorter in local anesthesia than spinal anesthesia, which makes the procedure day care.
6. Resumption of daily routine and office work is very important for any patient following any surgery in term of patient rehabilitation and also reduce the additional financial burden. In our study, mean time of resumption of daily routine or social work is mean 2.03+0.69 days, which is comparable to study done by Esser et al., 2004.[9] All subjects were back to work or social activities within 3 to 4 days, most within 48 h. This can be attributed to less post-operative pain and early discharge of patient from hospital. As compared to stapled hemorrhoidopexy under spinal anesthesia, mean time of return of daily routine and social work is a mean of 8 days in stapled group under spinal anesthesia as study done by Sachin and Muruganathan 2017,[10] which is very much longer than local anesthesia under our study ($P<0.05$).
7. In our study, pain is measured according to visual analog score as shown in Table 4. Only 1 patient experienced pain on 1st post-operative day as compared to study done by Baghel et al. 2016.[11] Among LA group patients, mean VAS scores were lower at all-time intervals of observation post-surgery as compared to that in SA group patient with statistically significant at 90 min and 6 h duration post-surgery. These results were similar to those found in the study by Bansal et al.,[12] where they found statistically significant lower pain scores at 6 h. In the study done by Ommer et al., 2011,[13] he evaluated patients in stapled hemorrhoidopexy in spinal anesthesia. In 179 prospectively evaluated patients, the mean pain intensity score on the visual analog scale was 4.7±2.4 on the day of the operation, 3.0±1.0 on the 1st post-operative day and 2.3±1.5 on the 2nd post-operative day, which was higher than the VAS score in our patients. This conclude that in reference to pain stapled hemorrhoidopexy done under local anesthesia had lesser pain score that leads to early recovery and discharge of the patient from hospital that makes procedure day care and early recovery and resuming early daily routine work.
8. Bleeding was assessed at intraoperative, just after surgery on day 1, day 2, and day 3 as shown in Table 2. Out of 50 patients, bleeding was found in two patients on day 1 and one patient on day 2 and none on day 3. None of the patients required surgical intervention and bleeding could be managed conservatively.
9. In spinal anesthesia, study done by Palimento et al.,[14] showed 21.6% patients had bleeding complication but in our study shows, bleeding complication were less. This can be attributed to the effect of adrenaline added to xylocaine that leads to vasoconstriction and less bleeding. None of the patients in our study got urinary retention and passed urine under 6 h as compared to spinal anesthesia in study done by Chik et al.,[15] Out of the 90 patients in spinal group, seven patients got urinary retention. The incidence of urinary retention following hemorrhoidectomy was 15.2. GA and stapled hemorrhoidopexy were independent significant factors associated with a lower incidence of urinary retention.

Table 3: Correlation between age group and medical or surgical condition among study participants

S. No.	Age group	Bleeding P/R with constipation	Bleeding P/R with bladder outlet obstruction	Bleeding P/R with bladder outlet obstruction and constipation	Bleeding P/R	P-value
1	20–25	2	1	1	1	0.726
2	26–30	8	1	1	2	
3	31–40	17	1	1	3	
4	>40	5	1	1	4	
	Total	32	4	4	10	

Table 4: Early post-operative complications

S. No.	Early post-operative complications	Day 1st	Day 2nd	Day 3rd
1	Bleeding	2	1	0
2	Pain (By VAS score)	1	0	0
3	Urinary retention	0	0	0
4	Wound infection	0	0	0

Table 5: Late post-operative complications

S. No.	Late post-operative complications	2 weeks	3 months	6 months
1	Faecal urgency	1	0	0
2	Intermittent bleeding	2	1	0
3	Anal stenosis	0	0	0
4	Abscess, anal fissure, fistula, recurrence	0	0	0

This conclude chances of urinary retention is less after local anesthesia than the spinal and GA.

10. Out of the 50 patients, none of them got wound infection. On long-term follow-up, anal incontinence was not found in any patients. A study by Khalil et al.,[16] also showed no incidence of anal incontinence in the stapled hemorrhoidopexy group as shown in Table 5. Two patients out of 80 got fecal urgency at 2 weeks, which resolved later. Three patients at 2 weeks and one patient at 3 months complaints of intermittent bleeding was managed conservatively. Anal stenosis is reported in one patient at 3 months, which may be due to firing of stapler wrongly 3.5 cm or 4 cm above the dentate line which causes stenosis requiring surgical intervention. No case of abscess, fissure, fistula or recurrence noted. Only some of the patients complained of minor itching and tingling at anal verge, which is managed conservatively.
11. In our study, we fired stapler at 2 cm from dentate line and results were observed on redundant mucosa at 2 weeks. In 80% cases of prolapsed redundant mucosa was no more visualized, which increased the patient's satisfaction towards surgery. In 15% cases found at anal verge and in 5% cases not regressed, which regressed on follow-up examination. It concludes that firing stapler at 2 cm from dentate line does not cause increase in pain score, but firing below 2 cm may cause procedure painful. So judicious firing especially in Grade IV hemorrhoids where mucosa protrudes outside anal verge, which causes patient discomfort can be avoided if firing done at 2–3 cm distance from dentate line. Staple line distance above the dentate line meaningfully impacts comfort-based outcomes.[17]
12. As shown in table 3 no significant correlation between age group and medical or surgical condition amongst patients.

Limitations of the study

Due to short duration of the study, convenience sampling technique was followed. Thus, sampling size was also calculated by convenience. The results of the study cannot be generalized due to the potential bias resulting from the sampling technique and sample size estimation.

CONCLUSION

Stapled hemorrhoidopexy under local anesthesia can be safely performed as a day care procedure in Grade IV hemorrhoids. Patients following stapled hemorrhoidopexy under local anesthesia have reduced post- operative pain, hospital stay, analgesic requirements and earlier return to work, early mobility out of bed, less operative time, short learning curve, less operative complications, cost effectiveness, and good patient satisfaction. This can be used in those patients who are unwilling or unfit for other forms of anesthesia. Staple line distance above the dentate line meaningfully impacts over redundant mucosa outside the anal verge.

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Authors' Contributions:
AKS- Concept and design of the study, interpreted the results, reviewed the literature and manuscript preparation; **AG**- Concept of the study, statistical analysis, coordination; **SS**- Prepared first draft of manuscript, statistical analysis and interpretation, reviewed the literature, manuscript Revision; **VD**- Reviewed the literature, manuscript preparation; **MK**- Reviewed the literature, manuscript preparation, manuscript revision; **SS**- Manuscript preparation, statistical analysis and interpretation.

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