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Research Article

Haemorrhoidectomy - stapler versus conventional (open): our experience

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ABSTRACT

Background: Haemorrhoids is a common disease affecting humans. Surgical treatment of haemorrhoids includes by using stapler and conventional or open method. Both the methods have its own advantages and disadvantages. This study is done to evaluate the efficacy of both the procedures in our settings. Objective of the study was to study the efficacy of two surgical methods of treatment of hemorrhoids, in terms of (1) operation time; (2) post-operative pain; (3) hospital stay; (4) return to normal activity and return to work; (5) complications; (6) recurrence; (7) patient satisfaction.
Methods: A comparative study was done between open and stapling methods for the treatment of symptomatic hemorrhoids in CMCH, Bhopal, India over a period from November 2011 to December 2014.
Results: There was major statistically significant difference was seen among different parameters between these two procedures of haemorrhoidectomy, open versus stapler procedure for prolapsing hemorrhoids (PPH).
Conclusions: In present study there is definite difference noted between two surgical methods as evident from table 1- 10 as evident from p-value. As far as satisfaction of patient is considered in both the groups satisfaction is similar except for the cost of device which added for the most cause of dissatisfaction.

Keywords: Open haemorrhoidectomy, Stapler haemorrhoidectomy, Longo's technique

INTRODUCTION

Haemorrhoids are engorged venous plexuses of the anal canal and can cause prolapse, bleeding, pain, thrombosis and pruritus.[1] Haemorrhoids are also known as piles and were known to human race since time immortal. It is one of the most common diseases affecting humans at least once or twice in his or her life time. The earliest reference of haemorrhoids dates back to Egyptian papyri of 1700 BC and the first surgical treatment described in the Hippocratic Treatises of 460 BC.[2] Symptomatic haemorrhoids are classified as Grade 1: symptomatic non-prolapsed; Grade 2: prolapsed reduce spontaneously; Grade 3: Prolapsed requires manual reduction; Grade 4: permanently prolapsed.[3-6] Conventional haemorrhoidectomy involves submucosal excision of haemorrhoidal plexuses and the residual wound is left open to be healed by secondary intention (Miligan Morgan) or closed primarily (Ferguson).[7-11] Since, surgical haemorrhoidectomy is a painful procedure, the technique is not well accepted by the patients and different approaches have been advocated from time to time.[12] Stapler haemorrhoidectomy was introduced in 1993 and later on refined and practiced by Antonio Longo.[13,14] Despite being positive on less postoperative pain, minimal hospital stay and early return to normal activity, stapler haemorrhoidectomy has negativity on the cost of device, increased incidence of post-operative prolapse and some life threatening, morbid complications.[15-19] In our institute we are practicing both

the procedures. The aim of this study is to report our experience in these two methods of treatment of haemorrhoids at one of the tertiary level hospital of central India.

The aim and objectives of the study was to study the efficacy of two surgical methods of treatment of haemorrhoids, stapler versus open in terms of 1. operation time; 2. post-operative pain; 3. hospital stay; 4. return to normal activity and return to work; 5. complications; 6. recurrence; 7. patient satisfaction.

METHODS

After ethical clearance a comparative study was done between open and stapling methods for the treatment of symptomatic haemorrhoids grade 2, 3 and 4 over a period from November 2011 to December 2014 for age group between 22 to 78 years of age. Both males and females patients were taken into consideration. Patients were operated by the same surgeon depending on the choice of procedure opted by the patient for his ailment after being counselled for both the methods of treatment. In open, Miliganmorgan procedure was used and in closed circular stapling gun was used for haemorrhoidectomy. The patients were operated and followed up postoperatively for said aims and objectives. The data was analysed using SPSS18 and following observations were made.

RESULTS

Total 202 patients with symptomatic haemorrhoids were operated, out of which 42 didn't turned out for follow up, so in total 160 patients were taken in the study. Stapler haemorrhoidectomy was done in 40 patients, out of which 32 (80%) were males and 8 (20%) were females. In conventional haemorrhoidectomy, out of 120 patients, 105 (87.5%) were males and 15 were females (12.5%). Most common complaint was bleeding PR seen in 90% of cases followed by off and on constipation in 60% cases and prolapse (something coming out or felt at anus) 43%, painful defecation 47%, Sentinel tag 87%, and bloating sensation in 37% of patients. All the cases were operated by the same surgeon as operative time ranged between 48-22 min for stapler haemorrhoidectomy with average mean operative time 35.10 (±12.2) min and for conventional or open haemorrhoidectomy time ranged between 58-25 min with average mean operative time of 41.59 (±14.6) min.

Post-operatively pain was measured using Visual Analogue Scale after 24 hrs and is in the range of mild pain (0-2) in SH patients with average mean of 1.45 (±0.6) score and between 2-4 in open cases with average mean of 3.216 (±1.1) score. Post-operative pain-All patients were given i.v. paracetamol postoperatively in both the groups. In 4 (10%) patients of SH who were having VAS between 2-4 and required injection diclofenac sodium analgesic to be added for pain in the above regime. In open haemorrhoidectomy all the patients were having pain scale between 2-4 and were given inj. diclofenac sodium in addition to paracetamol. The patients who complaints of unbearable pain, opioid analgesic has to be added in such cases but for 2-5 days only on SOS basis and in more sensitive patients buprenorphine patch of 5 mg is given. Mean hospital stay ranges between 23 hrs -78 hrs in SH cases. 35 patients 87.5% were discharged within 24 hrs of surgery, 3 patients 7.5% were discharged within 36-40 hrs and 2 patients 5% required 72-80 hrs of hospitalization with an average mean of 1.120 (+/-0.4) days of hospital stay in SH patients. All the 38 patients, 95.0% patients returned to normal activity within 4-5 days with average mean of 4.45 (±1.2) days. All the patients joined their respective field of work within 7-10 days with average mean of 8.125 (±2.5) days. In open haemorrhoidectomy, mean hospital stay was 3-5 days (72-120 hrs) with average mean of 3.86 (±1.2) days , and returned to normal activity after 15-18 days of surgery, with average mean return to normal activity = 15.68 (±5.6) days and joined their respective field of work after 20- 38 days average mean of 26.5 (±7.9) days. All the patients were followed up on 7^{th} day, 15^{th} day and 1 and half month, 6 months and 1 year.

Complications or (Post-op bleeding)- In Stapler haemorrhoidectomy cases, out of 40, in total 5 patients reported immediate post-operative bleeding out of which 4 patients 10% were of minor bleed and 1 patients 2.5% had major bleeding for which re-enforcing sutures has to be taken, later, on further evaluation the patient turned out to be a case of chronic bleeding duodenal ulcer which got exacerbated due to stress of surgery. In Open haemorrhoidectomy, out of 120 cases, mild bleed was reported by 21patients 17.5% cases for initial 2-3 days, due to semi hard stools which was managed conservatively. Relapse of symptoms as bleeding was seen in both the groups due to non-following of strict dietary advice and to avoid constipation however these patients were relieved after laxatives and no intervention was required. Recurrence – 1 patient 2.5% of SH showed mucosal prolapse with one small 2^{nd} degree haemorrhoid recently after 3 and half years of follow-up due to some personnel and social issues as unable to follow dietary advice, avoidance of constipation and life style changes also the patients was seen to have varicose veins in legs.

Patient satisfaction

In stapler haemorrhoidectomy group 37 patients 92.5% are satisfied, 2 patients 5.0% are partially satisfied and 1 patient 2.5% patients are un-satisfied. The foremost cause of dissatisfaction is more cost of the stapling device, and persistence of external tags in peri-anal area which made them conscious that the disease is not taken care-off completely and over expectation of patients.

In open or conventional haemorrhoidectomy group, 145 patients 90.625% were satisfied with thinking that they have gone for the more radical surgery however

prolonged pain, and mild bleeding postoperatively was the reason of worry and dissatisfaction among most of the patients of this group, also patients need not to bear the cost of device added to their satisfaction.

Table 1: Results of stapler and open haemorrhoidectomy.

	Stapler haemorrhoidectomy	Open haemorrhoidectomy
	(n =40)	(n=120)
Operating time	48-22 min.	58-25 min.
Average mean	35.10±12.2 min.	41.59±14.6 min.
(p value=0.009)		
VAS	0-2	2-4
Average VAS	1.45±0.6	3.216±1.1
(p-value=0.001)		
Hospital stay	23hrs - 80 hrs	3-5 days mean
Average mean	1.12±0.4 day	3.86±1.2days
(p value=0.001)		
% of patients discharged	35/40 =87.5% (discharged within 24 hrs)	105/120 =88.75% (patients discharged within 3-5 days)
Normal activity	4-5 days	15-18 days
Average mean	4.45±1.2days	15.68±5.6days
(p value=0.001)		
Return to work	7-10 days	20-38 days
Average mean	8.125±2.5days	26.5±7.9days
(p value=0.001)		
Post-operative bleeding	5/40 (12.5%) 4pt. (10%)-conservative 1pt.(2.5%)-reinforcing sutures	19/120=15.83%-minor bleed-conservative treatment
Recurrence	1 pt. second degree pile- inj. Sclerotherapy	None
Patient satisfaction is	37/40=92.5% satisfied 2/40=5% partially satisfied 1/40=2.5% not satisfied	109/120=90.833% satisfied 11/120= 9.166% partially satisfied
(p value=0.161)		
Second surgery	None	None

Requiring second surgery

None of our patient required second surgery in either group however, 3 patients 7.5% from SH group insisted for excision of external skin tags later on which gave them more satisfaction.

DISCUSSION

Controversies exist for the optimal treatment modality for symptomatic haemorrhoids, and always better ways are evolved over time. Miliganmorgan procedure was considered as gold standard which is challenged by Longo's procedure past few decades. With new horizons of our knowledge, older techniques are replaced by newer ones.

Operating time

The mean operating time was reported in various studies, there was a statistically significant difference between the two procedures but the overall inference is in favour of stapled haemorrhoidopexy.[20-27] In present study, (Table 2 and 3) shows for stapler haemorrhoidectomy mean operative time is 35.10 (±12.2) min (range 48- 22 min) and for open haemorrhoidectomy, mean operative time is 41.59 (±14.6) min (range 58-25 min), p=0.006 which is statistically significant.

Table 2: Procedure for prolapsing haemorrhoids (PPH) operating time.

Time required	No. of cases(n=40)
22 min.	2
28	3
29	2
30	4
33	2
34	2
35	6
36	3
37	2
38	4
40	6
42	2
48	2
Total= 1404	40
Average mean	1404/40= 35.10 (±12.2) min.

Table 3: Open haemorrhoidectomy operating time.

n= no. of cases	Time in min.	Total time in minutes
6	58	348
16	50	800
12	48	576
10	45	450
40	40	1600
25	36	900
6	32	192
5	25	125
Total n= 120		4991
	Average mean	4991/120=41.59 (±14.6) min.

Hospital stay

Length of hospital stay was studied earlier in international studies Table 4 and 5 shows, average mean hospital stay for PPH and open haemorrhoidectomy to be 1.12 (0.4) days and 3.86 (1.2) days , with p=0.001 which is statistically significant.[20-24,26,27]

Table 4: PPH hospital stay.

Stay in hours	Stay in days	N
23 hours	0.9days	26
24 hours	1day	9
36 hours	1.5 days	2
40 hours	1.6 days	1
72 hours	3days	1
80hours	3.3days	1
Total days	44.81	40
	Average mean=	44.81/40 =1.120 (0.4) days

Table 5: Open haemorrhoidectomy hospital stay.

(n= no. of patients)	Hospital stay in days	Total days
38	3 (72 hours)	114
60	4 (96 hours)	240
22	5 (120 hours)	110
Total n=120		464 total days
	Average mean	464/120 =3.86 (±1.2) days

Table 6: Length of hospital stay in various studies for stapler haemorrhoidopexy (PPH) versus conventional (open) haemorrhoidectomy.

		PPH	CNV	
International studies	N	Hospital stay (days)	N	Hospital stay (days)
Boccasanta et al[20]	40	2 (0.50)	40	3.00(0.40)
Pavlidis et al[21]	40	1.70(0.50)	40	3.20(0.30)
Shalaby and Desoky [22]	100	1.10(0.20)	100	2.20(0.50)
Rowsell et al.[23]	11	1.09(0.99)	11	2.82(1.82)
Rocalbuto et al.[24]	50	2.12(0.26)	50	2.34(2.44)
Ho et al.[26]	57	2.10(0.75)	62	2.00(0.79)
Bikhchandani et al.[27]	42	1.24(0.62)	42	2.76(1.01)
Gravie et al.[28]	63	2.20(1.20)	63	3.10(1.70)
Our study	40	1.12(0.4)	120	3.86(1.2)

Return to normal activity

Return to normal activities after stapled haemorrhoidopexy (PPH) versus Conventional haemorrhoidectomy (CNV). *values are mean (s.d.) was studied in the past.[20,22-30] Table 6 and 7 shows average return to normal activity for PPH and open haemorrhoidectomy was 4.45 (±1.2) days and 15.68 (±5.6) days respectively, p=0.001 which is statistically significant.

Table 7: PPH return to normal activity.

No. of patients (n)	Return to normal activity	Total days
22	4days	88
18	5days	90
(n=40)	Total days	178
	Average mean	178/40 =4.45 (±1.2) days

Table 8: Open haemorrhoidectomy return to normal activity.

(n= no. of patients)	Return to normal activity	Total days
74	15 days	1110
20	16 days	320
16	17days	272
10	18 days	180
Total n=120		Total days=1882
	Average mean	1882/120 =15.68 (5.6) days

In present study, time of discharge (postoperatively pt. Can go home medically), return to normal activity (time at which pt. Felt free to do his daily routine activities) and return to work (time at which pt. has resumed his job) is clearly defined and data calculated. % of patients discharged are 35/40 =87.5% (discharged within 24 hours) and 105/120=88.75% (patients discharged within 3-5 days). Normal activity is 4-5 days after PPH, and 15-18 days after CNV. Return to work 7-10 days after PPH and 20-38 days after CNV.

Time of joining duty was also studied, table 8 and 9 shows average time for joining duty in PPH and open haemorrhoidectomy is 8.125 (±2.5)days and 26.5 (±7.9) days respectively, with p value=0.001 (statistically significant).

VAS (visual analogue scale)/pain score

Pain score was noted and studied in the post op period after 24 hours in both PPH and conventional (open) haemorrhoidectomy cases and compared with the other studies, the results are comparable.[21,22,27,29,31] A significant difference in pain scores was observed among the two groups in present study p value=0.001.

Table 13 and 14 shows pain score in PPH and open haemorrhoidectomy is 1.45 (0.6) and 3.216 (1.1) respectively, with p=0.001.

Table 9: Data of international studies for return to normal activities after stapled haemorrhoidopexy (PPH) versus conventional haemorrhoidectomy (CNV).

	PPH		CNV	
International studies	N	(days)*	N	(days)*
Boccasanta et al.[20]	40	8.00(5.69)	40	15.00(8.85)
Shalaby and Desoky[22]	100	8.20(01.90)	100	53.90(5.80)
Rowsell et al.[23]	11	8.10(5.07)	11	16.90(7.73)
Rocalbuto et al.[24]	50	8.04(1.37)	50	16.90(2.50)
Chung et al.[25]	43	6.70(4.30)	45	15.60(6.00)
Ho et al.[26]	57	17.10 (14.34)	62	22.90(14.17)
Bikhchandani et al.[27]	42	8.12(2.48)	42	17.62(5.59)
Gravie et al.[28]	63	14.00 (10.00)	63	24.00(13.00)
Correa-Rovelo et al.[29]	42	6.10(3.50)	42	15.20(4.80)
Basdanis et al.[30]	50	6.30(1.50)	45	9.80(1.90)
Present study	40	4.45(1.2)	120	15.68(5.6)

*Values are mean (S.D.)

Table 10: PPH joined duty.

No. of pts.(n)	Duty joined after days	Total days
12	7days	84 days
16	8 days	128 days
7	9 days	63 days
5	10 days	50 days
N=40	Total	325 days
	Average mean	325/40 =8.125 (2.5) days

Table 11: Open haemorrhoidectomy joined duty.

(n= total no. of patients)	Joined duty after days	Total days
62	20	1240
18	28	504
28	35	980
12	38	456
Total n= 120		Total days= 3180
	Average mean	3180/120 =26.5(7.9) days

Table 15 showing comparison of pain 24 hours after stapled haemorrhoidopexy (PPH) versus Conventional haemorrhoidectomy (CNV). *values are mean (s.d.).

Table 12: PPH pain scores.

(n= no. of patients)	Visual analogue scale (VAS)	Total
28	1	28
8	2	16
2	3	6
2	4	8
Total n= 40	Total	58
	Average mean	58/40 =1.45(+/-0.6)

Table 13: Open haemorrhoidectomy pain score.

(n = no. of patients)	Visual analogue scale (VAS)	Total
18	2	36
58	3	174
44	4	176
Total n=120	Total	386
	Average mean	386/120 =3.216(±1.1)

Table 14: Pain score at 24 hours post-operatively.

	PPH		CNV	
	N	Pain score*	N	Pain score*
Pavlidis et al.[21]	40	0.70(0.20)	40	2.40(0.50)
Shalaby and Desoky[22]	100	2.50(1.30)	100	7.60(0.70)
Bikhchandani et al.[27]	42	3.64(1.79)	42	6.36(1.44)
Correa-Rovelo et al.[29]	42	2.80(1.40)	42	5.50(1.40)
Hetzer et al.[31]	20	2.70(2.20)	20	6.30(3.60)
Present study	40	1.45(0.6)	120	3.216(1.1)

Satisfaction of patients

Patients satisfaction was assessed by different studies during follow up, but using different measurements.[22,26,27,29] However no significant difference was observed between treatments when visual analogue scale was used.[26,27,29] In present study, satisfaction of patients was observed among two groups and it was seen that there was no statistical difference between the overall satisfaction level of patients among both the groups are considered as evident from p value.

Table 16 and 17 shows satisfaction of patients among two procedures with estimate dp=0.16, statistically insignificant.

As evident from the table for recurrence and requirement of second surgery our results are as comparable with other studies. (PPH 1 pt. developed second degree pile due to non-following of strict dietary advice and was treated with inj. Sclerotherapy and in CNV group(n=120) none developed recurrence.)

Table 15: Satisfaction of patients in PPH.

Satisfaction of patients	No. of patients (n)	% satisfaction
Satisfied	37	92.5 %
Partially satisfied	2	5 %
Un satisfied	1	2.5 %
Total	(n=40)	100

Table 16: Satisfaction of patients in open haemorrhoidectomy.

Satisfaction of patients	No. of patients (n)	% satisfaction
Satisfied	109	90.833 %
Partially satisfied	11	9.166 %
Un satisfied	0	0
Total	(n=120)	100

Table 17: Recurrence and requirement of second surgery in different studies.

	PPH	CNV
Senagore et al [12]	2 of 77	11 of 79
Shalaby and Desoky[22]	1 of 100	0 of 100
Rowsell et al[23]	1 of 11	0 of 11
Correa-Rovelo et al.[29]	1 of 42	0 of 42
Hetzer et al.[31]	1 of 20	1 of 20
Ortiz et al[32]	5 of 11	0 of 16
Present study	1 of 40	0 of 120

CONCLUSION

In present study there is definite difference noted between two surgical methods as evident from table 1- 10 as evident from p-value. As far as satisfaction of patient is considered in both the groups satisfaction is similar except for the cost of device which added for the most cause of dissatisfaction. Authors are of opinion that although tempting superiority of PPH over CNV(open) in terms of pain, earlier return to normal activity and minor reduction in operative time cannot circumvent open haemorrhoidectomy as overall better option for haemorrhoids. Apart from higher cost of device, there are compelling reasons for CNV which cannot be met with PPH including acutely inflamed, incarcerated and thrombosed haemorrhoids, presence of gangrene, the need of limited haemorrhoidectomy and presence of numerous skin tags as also evident in other studies. Since both operations are associated with satisfactory results and complications of PPH can be managed by CNV it is advisable that all surgeons learn both the techniques and surgeon should be aware of all the complications of PPH although some are exceptionally rare. A surgeon competent of performing either technique should decide on specific technique to be used in the patient after detailed counselling with the patient.

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