ORIGINAL ARTICLE

Randomized control trial comparing open and closed hemorroidectomy

Sameeah Hanif, Muhammad Nawaz, Batool Zehra

Abstract:

Introduction: Hemorrhoidal cushion are present in anal canal and are normal anatomical structure. The vascular component of these cushions help in maintenance of normal anal tone by avoiding damage to anal sphincters.

Objective: To compare open hemorrhoidectomy versus closed hemorroidectomy regarding post-operative pain, wound healing, mean operating time and bleeding.

Materials and Methods: This randomized control trial was conducted in Department of Surgery DHQ Abbottabad, from January 2019 till July 2020. 120 patients with 3rd and 4th degree hemorrhoid matching inclusion criteria were included in study comprising of 60 in each group. Open hemorrhoidectomy performed in group-A and closed hemorroidectomy in group-B. Groups were compared for post-operative pain, wound healing, bleeding and mean operating time.

Results: 120-patients were included in study. 60 in group-A (open hemorrhoidectomy) and group-B (closed hemorrhoidectomy). VAS score in group A was 5.40±0.74. Group-B pain score was 5±0.82 with a p value 0.006. Mean operating time in group A was 28.98±3.60 while mean operating time in group-B was 34.8±2.2 with a p value< 0.001. Wound healing occurred in 15(25%) patients in group-A while 49(81.7%) patients in group-B with p value <0.001 after 3 weeks. Bleeding occurred in 4(6.67%) patients in open group and 3(5%) in closed group p value 0.6.

Conclusion: Wound healing was early after closed hemorrhoidectomy and post-operative pain was less in closed technique. Incidence of bleeding was equal in both groups. Open hemorrhoidectomy took shorter time than closed hemorrhoidectomy. Closed hemorrhoidectomy can be used as first line procedure for 3rd and 4th degree hemorrhoid.

Received
Date: 8th February, 2021
Accepted
Date: 13th September, 2022

District Head Quater (DHQ) Hospital, Abbottaad
S Hanif,
M Nawaz

Hamdard University Hospital, Karachi
B Zehra

Correspondence:
Dr. Sameeah Hanif
Department of Surgery
DHQ, Abbottabad
Postal Address: House No: 57/C, Opposite Ali Plaza, Supply, Abbottabad
Cell No:+92 321-9960321
email: dr.sameeahhanif@gmail.com

Keywords: Open hemorrhoidectomy, closed hemorrhoidectomy, Milligan Morgan hemorrhoidectomy, Ferguson hemorrhoidectomy

Introduction:

Hemorrhoidal cushion are present in anal canal and are normal anatomical structure. The vascular component of these cushions help in maintenance of normal anal tone by avoiding damage to anal sphincters. Pathological changes in anal cushion occurs because of risk factors such as prolong diarrhea, constipation, diet low in fiber, straining while defecating for prolong period and increase age. All of these factor eventually cause hemorrhoidal cushion to slide, increase pressure in hemorrhoidal plexus, bulging of hemorrhoidal tissue.[1] Clinically hemorrhoid present with per rectal bleeding, prolapse of anal cushion, very few patients have pain while defecation and pruritus. They are categorized into four grades on the basis of degree of prolapse and bleeding.[2] Diagnosis is usually clinical. Medical treatment includes use of stool softener, drinking plenty of water, increase fiber diet usually for grade 1 and 2. Rubber bland ligation and infrared coagulation are also minimally invasive techniques for grade 1 to 3.[3] Treatment of grade 3 and 4 hemorrhoid includes hemorrhoidec-

Table 1: Demographic characteristics

Variables	Open hemorrhoidectomy N=60	Closed hemorroidectomy N=60
Age (years)	40.17±9.96	41.37±9.81
Gender		
Male	23(38.3%)	*22(36.7%)*
Female	37(61.67%)	*38(63.3%)*

Table 2: Comparison of variables between two groups

	Group-A (n=60)	Group-B (n=60)	p-value
VAS	5.40±0.74	5±0.82	0.006
Mean operating time	28.98±3.60 min	*34.80±2.2 min*	*<0.001*
Bleeding	4(6.67%)	*3(5%)*	*0.6*
Wound healing	15(25%)	*49(81.7%)*	*<0.001*

tomy. Open and closed hemorroidectomy are types. Apart from this stapled hemorroidopexy and Hemorrhoidal artery ligation are treatment options.[4] Milligan and Morgan's hemorrhoidectomy or open hemmorhoidectomy is the commonest procedure for management of hemorrhoid. Many complications are associated with the procedure like post-operative pain, wound infection and bleeding. Ferguson and Heaton hemorrhoidectomy or closed hemorrhoidectomy is thought to be better in regards to wound healing and post operative pain.[5] The purpose of this study is to compare the complications of open and closed hemorrhoidectomy like pain in post-operative period, bleeding, wound healing and mean operating time.

Materials and Methods:

This study was carried out in the Department of Surgery DHQ Abbottabad from January 2019 till July 2020. Patients presenting to surgical outpatient department with complain of bleeding and prolapse through anal canal were examined by digital rectal examination and proctoscopy. Those with 3rd and 4th degree hemorrhoid were chosen for study. Patients with diabetes, immunosuppressed or with coexisting disease like perianal abscess and perianal fistula were excluded from study. Those fitting inclusion criteria were explained about the procedure being carried out. 120 patients were included in study and were randomly divided into two groups. Both groups were prepared for operation in the same way. Complete blood count, screening and x-ray chest and ECG were carried out according to individual requirement. Both procedures were carried out under spinal anesthesia. In post-operative period patients were assessed for pain using VAS score, bleeding, wound healing. Both groups were advised stool softener in immediate post-operative period along with sitz bath. They were discharged on 2nd post-operative day and were advised to report in case of pussy discharge or other signs of wound infection. Regular follow up was done on 10th post-operative day and later after 3 weeks. SPSS 20 used for analysis. Independent t-test used for comparing mean post-operative pain and mean operating time. Chi square test used for bleeding and wound healing. p<0.05 was considered significant.

Results:

120 patients were included in study. 60 in group-A (open hemorrhoidectomy) and group-B (closed hemorrhoidectomy). Group-A consisted of 23 male and 37 female. Group-B consisted of 22 male and 38 female. Mean age in group-A was 40.17±9.96 years. Mean age of group-B was 41.37±9.81 as shown in table No.1. VAS score in group-A was 5.40±0.74. Group-B pain score was 5±0.82 with a p value 0.006. Mean operating time in group-A 28.98±3.60 while mean operating time in group-B was 34.8±2.2 with a p value< 0.001. Wound healing occur in 15(25%) patients in group-A while 49(81.7%) patients in group-B with p value <0.001. Bleeding occurred in 4(6.67%) patients in open group and 3(5%) in closed group p-value 0.6 as shown in table No.2.

Discussion:

Hemorrhoids also known as piles are dilated vascular cushion located in anal canal. Exact incidence is not known as most of the people suffering from condition do not seek treatment due to social, cultural and personal reasons. However, various studies have shown prevalence to be about 4.4% in adults in USA and 30% of population in London.[6] The criteria indicating

success of surgery is less recurrence, minimal post-operative time. However nearly every procedure is associated with adverse effects. Both open and closed hemorrhoidectomies can have complications.[7] In index study 81.7% patient had wound healing in closed group while 25% in open group had healing at 3-weeks post-operative. This was comparable with a study which found healing rate of 78% and 26% in closed and open technique respectively at the end of 3rd weeks post-operatively.[8] In our study there was difference in pain between two groups VAS in group-A was 5.40±0.74 while in group-B VAS score was 5±0.82 with a p-value 0.006. Closed group had less pain in post-operative phase. This finding was in agreement with a study which showed pain was less with closed technique with a p-value of 0.046.[9] In contrast to this a study found that post-operative pain was less in open technique and requirement of analgesia was less required for open case.[10] The reason explained behind less post-operative pain in open technique according to some authors is that in order to save lower anal mucosa it is compulsory to use narrow elliptical incision on hemorrhoid, later both flaps are undermined forming thin wound margin. Suture material of heavy material applied to thin wound margin may result in pain and ischemia. Anal spasm is also the cause of increase pain.[5] Some studies have found no difference in pain sensation between two groups.[11] Mean operating time in open hemorrhoidectomy was 28.98±3.60 min while in closed group was 34.80±2.2 min with a p value of <0.001. An author also found that open hemorroidectomy takes less time than closed hemorrhoidectomy 35±07 vs 45±08 p value less than 0.001.[12] Another study showed that mean operating time in open group 25.2±5.6 vs 31.3±4.8 with a p-value of 0.06.[13] In our study 4(6.6%) patients had post-operative bleeding in open case while 3(5%) in closed case. In all cases bleed was mild. Another author reported 3.3% had severe bleed in closed group and 46.7% mild to moderate bleed and 30% cases of moderate bleed in open case.[14] Incidence of post-operative bleeding in studies is reported to be 0.6-5.4%.[15] Open excisional hemorrhoidectomy is considered best treatment modality for 3rd and 4th degree hemorrhoid. Since open or Milligan Morgan is simple procedure, it is widely used procedure in Pakistan. Ferguson hemorrhoidectomy is more intricate for learners particularly juniors and often requires more time. In our study the mean age group was in 4th and 5th decade. Also other studies have found the incidence of disease to be in this age group.[16,17] Some authors have reported lower mean age of 35.5 years.[18] As gold standard operative procedure for treatment of hemorrhoid is hemorrhoidectomy. Milligan Morgan or open hemorrhoidectomy and Ferguson or closed hemorrhoidectomy both are effective surgical procedures. Open technique involves excising hemorrhoidal pedicle till apex keeping safe internal sphincter. After excision wound is either left open (Milligan-Morgan) hemorrhoidectomy or closed (Ferguson) hemorrhoidectomy. Most studies have advocated closed technique due to early wound healing on outpatient follow up comparison.[19]

Conclusion:

Both procedures are efficient for 3rd and 4th degree hemorrhoids. With alike effects and less adverse effects. However closed technique has advantage of early healing and less post-operative pain. Open hemorrhoidectomy took less time than closed. Bleeding incidence was equal in both groups. Closed hemorrhoidectomy can be used as first line operative procedure for 3rd and 4th degree hemorrhoids.

Conflict of interest: None

Funding source: None

Role and contribution of authors:

Sameeah Hanif, collected the data, references and did the initial write-up

Muhammad Nawaz, collected the data and helped in introduction and discussion writing.

Batool Zehra, critically review the article and made useful changes.

References:

1. Dehdari S, Hajimehdipoor H, Esmaeili S, Choopani R, Mor-

tazavi SA. Traditional and modern aspects of hemorrhoid treatment in Iran: a review. J Integr Med. 2018 Mar;16(2):90-98.
2. Shankar MR, Satyaveni MB. Study of Hemorrhoids–Clinical Features and Risk Factors. IJSS Journal of Surgery. 2019 May 30;5(3):31-3.
3. Sandler RS, Peery AF. Rethinking What We Know About Hemorrhoids. Clin Gastroenterol Hepatol. 2019 Jan;17(1):8-15.
4. Mott T, Latimer K, Edwards C. Hemorrhoids: Diagnosis and Treatment Options. Am Fam Physician. 2018 Feb 1;97(3):172-179.
5. Khalil-ur-Rehman, Hasan A, Taimur M, Imran M. A comparison between open and closed hemorrhoidectomy. J Ayub Med Coll Abbottabad. 2011 Jan-Mar;23(1):114-6.
6. Acheson AG, Scholefield JH. Management of haemorrhoids. BMJ. 2008 Feb 16;336(7640):380-3.
7. Jamali AH, Khowaja MA, Zardari IA, Memon ZA, Ghumro AH, Soomro IA. Comparison of Postoperative Outcomes of Open Versus Closed Hemorroidectomy at Tertiary Care Hospital. InMed. Forum 2019 Jun 29;30(6):28-30.
8. Mohapatra R, Murmu D, Mohanty A. A comparative study of open and closed hemorrhoidectomy. Int Surg J. 2018 May 24;5(6):2335-8.
9. Malik GA, Wahab A, Ahmed I. Haemorrhoidectomy: open versus closed technique. J Surg Pak. 2009 Oct;14(4):170-2.
10. Mohab GM, Alaa A, Mohamed GQ, Ashraf MA. Comparative Study between Milligan Morgan and Closed Hemorrhoidectomy With or Without Plication. Medical J Cairo Univ. 2021 Dec 1;89:2253-64.
11. Rahmani N, Sayadi S, Mohammadpur Tahamtan RA, Mosavar Ali A, Tayebi P. Comparison with result open vs. closed hemorrhoidectomy. J Maz Uni Med Sci. 2012 Feb 10;21(86):54-62.
12. Gençosmanoğlu R, Sad O, Koç D, Inceoğlu R. Hemorrhoidectomy: open or closed technique? A prospective, randomized clinical trial. Dis Colon Rectum. 2002 Jan;45(1):70-5.
13. Shaikh AR, Dalwani AG, Soomro N. An evaluation of Milligan-Morgan and Ferguson procedures for haemorrhoidectomy at Liaquat University Hospital Jamshoro, Hyderabad, Pakistan. Pak J Med Sci. 2013 Jan;29(1):122-7.
14. Somer M, Syed G, Akbar A, Usman H, Zeeshan A, Zainab Z. The outcome comparison of the open Vs closed haemorrhoidectomy: a quasi-experimental study in tertiary care hospital. Esculapio.2014;10(14):83-87.
15. Chen HH, Wang JY, Changchien CR. Risk Factor associated with post hemorrhoidectomy secondary hemorrhage. Dis colon Rectum. 2002;45:1096–1099.
16. Johanson JF, Sonnenberg A. The prevalence of hemorrhoids and chronic constipation: an epidemiologic study. Gastroenterology. 1990 Feb 1;98(2):380-6.
17. Agbo SP. Surgical management of hemorrhoids. J Surg Tech Case Rep. 2011 Jul;3(2):68-75.
18. Tariq M, Inayat HR, Zaffar H. Outcome of open versus closed hemorrhoidectomy. Theoretical & Applied Science. 2018(11):334-7.
19. Ray-Offor E, Amadi S. Hemorrhoidal disease: Predilection sites, pattern of presentation, and treatment. Ann Afr med. 2019 Jan;18(1):12.