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Original Article

Clinical Study on Application of Hemorrhoidectomy by Anal Canal Dilatation for Grade III or IV Internal Hemorrhoid Accompanied Anal Fissure

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ABSTRACT

Background and Aim: This study aimed to evaluate the efficacy of a novel surgical technique, hemorrhoidectomy by anal canal dilatation, for treating Grade III or IV internal hemorrhoids accompanied by anal fissures. **Methods:** A total of 202 patients were included in the study, with 96 patients in the study group undergoing hemorrhoidectomy by anal canal dilatation and 106 patients in the control group receiving the traditional Milligan-Morgan operation. Postoperative outcomes were assessed, including recovery rates, analgesic usage and duration of defecation difficulties. **Results:** The average recovery rate in the study group was 95.8%, significantly higher than the control group's rate of 86.8% ($p<0.05$). Additionally, the mean duration of analgesic use was significantly lower in the study group (2 days) compared to the control group (3 days) ($p<0.05$). The average duration of difficulty in defecation post-surgery was also shorter in the study group (2.0±0.75 days) compared to the control group (6.6±0.37 days) ($p<0.05$). **Conclusion:** The results indicate that hemorrhoidectomy by anal canal dilatation is an effective and satisfactory alternative to traditional methods for treating Grade III or IV internal hemorrhoids accompanied by anal fissures. This technique not only enhances recovery rates but also minimizes postoperative pain and complications.

Keywords: Anal canal dilatation, Anal fissure, Hemorrhoidectomy by anal canal dilatation, Hemorrhoidectomy, Internal hemorrhoid.

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INTRODUCTION

Hemorrhoids are a common yet often debilitating condition affecting a significant portion of the population. They occur when the vascular structures in the anal canal become engorged, leading to symptoms such as pain, itching and bleeding. Internal hemorrhoids can be classified into four grades, with Grade III and IV representing more severe cases that may require surgical intervention due to persistent symptoms and complications. Grade III hemorrhoids protrude during bowel movements but can be manually reduced, while Grade IV hemorrhoids remain prolapsed and cannot be pushed back into the anal canal.[1]

The management of advanced internal hemorrhoids often necessitates surgical procedures, with hemorrhoidectomy being the most widely accepted treatment option. Traditional hemorrhoidectomy involves excision of the hemorrhoidal tissue; however, this method can be associated with significant postoperative pain and complications, such as anal stenosis and bleeding.[2] Recent studies have explored alternative techniques to improve surgical outcomes and reduce recovery times. One such technique is anal canal dilatation, which may facilitate easier access to the hemorrhoidal tissue by reducing sphincter tone and allowing for a more straightforward excision.[3]

The presence of anal fissures in patients with Grade III or IV internal hemorrhoids complicates treatment further. Anal fissures are painful tears in the anal mucosa that can result from trauma or excessive straining during bowel movements.[4] The coexistence of these two conditions necessitates a comprehensive surgical approach that addresses both issues simultaneously. Research has indicated that patients with concurrent anal fissures may experience worse outcomes following standard hemorrhoidectomy procedures due to increased pain and delayed healing.[5]

In light of these challenges, this clinical study aims to evaluate the application of hemorrhoidectomy by anal canal dilatation specifically for patients diagnosed with Grade III or IV internal hemorrhoids accompanied by anal fissures. By assessing postoperative outcomes such as pain levels, recovery time and complication rates, we hope to determine whether this combined

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approach offers significant advantages over traditional surgical techniques.

Furthermore, understanding the efficacy of anal canal dilatation in conjunction with hemorrhoidectomy could provide valuable insights into optimizing treatment strategies for patients suffering from these debilitating conditions. This study seeks not only to enhance surgical techniques but also to improve overall patient satisfaction and quality of life post-treatment.

MATERIALS AND METHODS

We recruited 202 patients (study group 96 patients and control group 106 patients) with Grade III or IV internal hemorrhoids accompanied by acute and chronic anal fissures who underwent surgical treatment in the proctology department of Pyongyang University Hospital of Medical Sciences. The study group underwent hemorrhoidectomy by anal canal dilatation, while the control group underwent the Milligan-Morgan operation.

Hemorrhoidectomy by Anal Canal Dilatation (Study Group)

After regional anesthesia, the left-handed index finger was placed into the anal canal to palpate the anal crypts in the direction of 6 o'clock. The flexor forceps was placed in the 6 o'clock anal crypts and forced into the skin to allow the anal gland tissue and some of the external sphincter (subcutaneous layer) to exit and penetrate the skin. Then, a forceps was opened to dissect between them.

When an incised right skin and subcutaneous tissues were opened with small artery forceps, the left part was held with another forceps and slightly pulled in the direction of 7 o'clock. All the inner hemorrhoidal pedicles were pulled out and then the pectinate line was cleared, while another non-forceps was used to align the central part of the hemorrhoid in line with the exterior forceps to place the tip of the non-forceps 0.5 cm above the pectinate line. At this point, the forceps were pushed to allow the 7 o'clock node to be deflected in the 6 o'clock direction as much as possible and the 6 o'clock laceration was also involved.

Then, with the left hand, both forceps were held and lifted upward, resecting and dissecting cutaneous or subcutaneous tissues. At 0.5 cm above the dentate line, a needle with NO. 3 silk was passed through the dissected proximal part of the hemorrhoid, ligated back and forth and resected.

Then, when the tip of the incised right skin was slightly pulled with a non-forceps in the 5 o'clock direction, the main pedicle of the hemorrhoid in the 3 o'clock position was pulled out, allowing for clear visibility of the dentate line. Another non-forceps was used by placing its tip 0.5 cm above the dentate line to align with exterior forceps to grasp the hemorrhoid involved laceration while pushing it in the 5 o'clock direction.

Then, the hemorrhoids were ligated and resected in the direction of 7 o'clock. Additionally, an anal retractor was inserted into the anal canal, fully opened and the internal sphincter at 6 o'clock was sectioned to widen the narrowed anal canal caused by hemorrhoidectomy.

The 11 o'clock hemorrhoid was then ligated and resected. Consequently, an anal retractor was placed carefully into the anal canal to check for bleeding or abnormal injury. The ligature was cut for good emission and pressure gauze was fixed with adhesive tape to finish the procedure (Figure 1).

Milligan-Morgan Hemorrhoidectomy (Control Group)

Resection of the hemorrhoids was performed in the order of 7:00, 3:00 and 11:00 for the primary hemorrhoids.[6,7] First, the outer skin of the internal hemorrhoidal tubercle at 7 o'clock, which had been elevated or prolapsed by the main anesthetic, was grasped using non-forceps 1 and a slight pulling of the inner hemorrhoidal pedicle led to a clear appearance of the dentate line, which was aligned with the outer forceps to place the tip of non-forceps 2 at 0.5 cm above the dentate line.[7,8] At this point, if it was accompanied by an anal fissure at 6 o'clock, the laceration (including the hypertrophied papilla) was grasped together.

The two forceps were then grasped together in the palm of the left hand, creating a virtual line for the incision in a cumulative manner that was approximately equal to the size of the hemorrhoid from the perianal skin towards the root of the hemorrhoid.[8,9] Along the incision, the forceps were raised upward; the hemorrhoidal pedicle was resected and dissected proximally, with only the skin and subcutaneous tissues being resected so that the sphincter remained intact. The width of incision and dissection was narrowed as it approached the hemorrhoidal root. Once a height of 0.5 cm above the dentate line was reached, the incised hemorrhoidal root was ligated anteroposteriorly and resected by passing it through its center with a No. 3 needle.[6,7,9]

The operation then proceeded via the 3 o'clock and 11 o'clock hemorrhoids and hemostasis was checked. The anal retractor was carefully inserted into the anal canal to ensure that there was no bleeding or abnormal injury. The ligator was left with a good shot, then cut, placed with pressure gauze and secured with a bandage to complete the operation (Figure 2).

Statistical Analysis of Data

All data were expressed as mean±SE. Data was analyzed using SPSS. The differences between 2 groups were analyzed by unpaired t test. p value <0.05 was considered as statistically significant.

RESULTS

Analgesic use rates according to postoperative days

Table 1 shows that postoperative analgesic use rate according to the days of treatment in study group was 2 days and mean in study group was significantly lower than in control group ($p<0.05$).

Table 1: Analgesic use rates according to postoperative days.

Groups	Unit	Postoperative days							Mean
		1	2	3	4	5	6	7	
Study	96(100.0)	2(2.0)	1(1.0)	-	-	-	-	-	3(3.0)
Control	106(100.0)	27(25.5)	21(19.8)	10(9.4)	8(7.5)	6(5.7)	4(3.8)	2(1.9)	78 (73.6)*

*indicates $p<0.05$.

Table 2: Postoperative duration of difficulty in defecation.

Groups	Unit	Duration of difficult defecation (days)				Mean (days) ±SE
		1~3	4~7	8~10	11~	
Study	96(100.0)	89(92.7)	5(5.2)	2(2.1)	-	2.0±0.75
Control	106(100.0)	17(16.0)	60(56.6)	21(19.8)	8(7.6)	6.6±0.37*

*indicates $p<0.05$.

Table 3: Short-term total outcome.

Groups	Unit	Criteria				Recovery rate	Effective rate
		Perfect	Good	Constant	Bad		
Study	96 (100.0)	94 (97.9)	2 (2.1)	1 (1.0)	1 (1.0)	92 (95.8)	94 (97.9)
Control	106 (100.0)	92 (86.8)	9 (8.5)	3 (2.8)	2 (1.9)	92 (86.8)*	101 (95.3)

* indicates p<0.05.

Figure 1: Hemorrhoidectomy by anal canal dilatation.

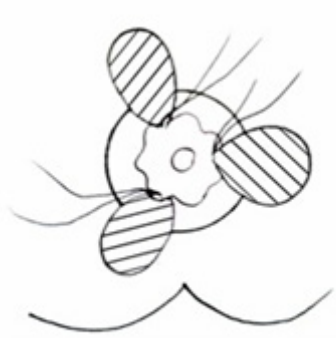

Figure 2: Milligan-Morgan hemorroidectomy.

The postoperative duration of difficulty in defecation

As shown in Table 2, the average postoperative duration of difficulty in defecation after surgery in patients with Grade III or IV internal hemorrhoid was significantly shorter in the study group compared to the control group (p<0.05).

Short-term total outcome

Table 3 shows that recovery rate in patients with Grade III or IV internal hemorrhoid accompanied anal fissure in study group was higher as 95.8% than in control group as 86.8% (p<0.05).

DISCUSSION

The findings from this clinical study highlight the effectiveness of hemorrhoidectomy by anal canal dilatation as a surgical intervention for patients with Grade III or IV internal hemorrhoids accompanied by anal fissures. The significant recovery rate of 95.8% observed in the study group suggests that this technique may offer superior outcomes compared to traditional methods such as the Milligan-Morgan operation, which reported an 86.8% recovery rate.[6]

One of the primary advantages of this new approach is its ability to minimize postoperative pain and complications associated

with conventional hemorrhoidectomy techniques. Previous studies have indicated that traditional procedures often result in increased postoperative pain due to sphincter muscle trauma and subsequent complications such as anal stenosis and prolonged difficulty in defecation.[7,10] By employing anal canal dilatation, our technique effectively reduces sphincter tension and facilitates easier access to the hemorrhoidal tissue, thereby preserving normal anatomical structures and physiological functions.[8]

Moreover, our results demonstrated a statistically significant reduction in both analgesic usage and duration of defecation difficulties among patients treated with this novel approach. This aligns with findings from other studies that emphasize the importance of minimizing surgical trauma to enhance recovery times and overall patient satisfaction.[11,12]

The presence of anal fissures complicates treatment for patients with advanced hemorrhoids, often leading to worse outcomes when managed through conventional methods.[10] Our approach not only addresses the hemorrhoids but also effectively manages concurrent fissures, thereby improving overall surgical outcomes.

CONCLUSION

In a clinical study assessing the application of hemorrhoidectomy by anal canal dilatation for Grade III or IV internal hemorrhoids accompanied by anal fissures, 202 patients were analyzed. The study group underwent the new technique, achieving a recovery rate of 95.8%, significantly higher than the 86.8% observed in the control group that received the traditional Milligan-Morgan operation. Additionally, patients in the study group experienced reduced postoperative analgesic use and a shorter duration of defecation difficulties. These findings suggest that hemorrhoidectomy by anal canal dilatation is a more effective and satisfactory surgical option compared to conventional methods for this patient population.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

Nil.

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