

Original Article

A Comparative Analysis of the Postoperative Complications of LigaSure Haemorrhoidectomy and the Procedure for Prolapsing Haemorrhoids

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Key Words

LigaSure haemorrhoidectomy;

Procedure for prolapsing
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Purpose. This study aimed to compare the long-term postoperative complications of LigaSure haemorrhoidectomy and the procedure for prolapsing haemorrhoids (PPH).

Methods. A total of 316 patients who underwent either LigaSure haemorrhoidectomy or PPH at the Changhua Christian Hospital between January 1, 2016 and December 31, 2018 were included in this study. One-year postoperative follow-up data of these patients were obtained from the outpatient department and analysed. The patients' demographic characteristics, medical history, operative data, postoperative course, analgesic requirements, duration of hospital stay, and postoperative complications were also evaluated.

Results. The statistical data showed that the total postoperative complication rate of Ligasure haemorrhoidectomy was 2.7%, and that of PPH was significantly higher at 12%.

Conclusions. Our study demonstrated that PPH has advantages of shorter surgical duration and low pain scores postoperatively compared to LigaSure haemorrhoidectomy; however, it has a higher risk of postoperative complications.

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Haemorrhoidectomy is the most basic and common colorectal surgery and is considered the treatment of choice for patients with symptomatic grade III or IV haemorrhoids.¹⁻⁴ Unfortunately, the procedure may be accompanied by significant postoperative complications, especially pain and bleeding, which can require a protracted period of convalescence.

In addition to the traditional haemorrhoid resection surgery, several surgical techniques or instruments have been developed to reduce postoperative complications, especially pain, bleeding, and wound

dehiscence. LigaSure is a bipolar electrothermal haemostatic device that can seal the pedicle of the haemorrhoidal plexus, and automatically stop energy delivery when tissue sealing is complete. This procedure has been shown to reduce postoperative pain and operation time,⁵⁻¹¹ as it can coagulate with minimal thermal spreading and limited tissue charring. The procedure for prolapsing haemorrhoids (PPH), also called stapled haemorrhoidopexy, which involves using a circular stapler and stapled resection of a complete circular strip of mucosa above the dentate line, lifts

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the haemorrhoidal cushions into the anal canal. It is another alternative to conventional haemorrhoidectomy, and has been standardised and popularised worldwide. It also has the advantage of very low postoperative pain and a speedy postoperative recovery.¹²⁻¹⁶

However, statistical, and comparative studies on the long-term complications of these auxiliary methods are limited. This study mainly provides a statistical comparison of the postoperative complications of LigaSure haemorrhoidectomy and PPH.

Materials and Methods

We collected surgical records and 1-year postoperative follow-up data of all patients who underwent haemorrhoidectomy at the Changhua Christian Hospital between January 1, 2016 and December 31, 2018. The records included the patients' demographic characteristics, medical history, operative data, postoperative course, analgesic requirements, duration of hospital stay, and postoperative complications. Postoperative pain was evaluated by means of a visual analogue scale (VAS) in which 0 corresponded to "no pain" and 10 to "maximum pain." All patients underwent at least one preoperative examination, and a complete preoperative evaluation at the outpatient department.

The exclusion criteria used in this study were: patients aged < 18 and > 75 years, those who were not followed-up after the operation, those with other diseases of the anus before the operation, those with critical diseases (such as cancer), those with coagulation or wound healing-related problems (such as those undergoing long-term haemodialysis), and those who underwent other colorectal surgeries three months after the operation.

Complications were defined as follows: haemorrhoid recurrence was defined as recurrence at the same site within 3 months of the operation; anal fistula was defined as a postoperative diagnosis of a fistula at the site of haemorrhoidectomy which was not present preoperatively; anastomosis dehiscence was defined as a confirmed diagnosis of dehiscence and postoperative treatment in ≥ 2 outpatient follow-up visits. Symptoms such as tenesmus, rectal stricture, and ch-

ronic pain were confirmed postoperatively. Wound healing and the presence or absence of dehiscence and other anorectal related diseases were also ruled out postoperatively.

Patient characteristics are shown in Fig. 1. A total of 79 patients underwent LigaSure haemorrhoidectomy, and 272 underwent PPH. All patients remained hospitalised on the day of the operation and were discharged the following day. One patient was not followed-up after the operation, 1 patient died of lung adenocarcinoma 3 months after the operation, 13 patients had been diagnosed with other diseases of the anus before the operation (such as anal fissure or anal fistula), 4 patients underwent other colorectal surgeries within 3 months before or after the operation, 3 patients continuously underwent long-term therapies such as electrotherapy and chemotherapy for other cancers, 7 patients had coagulation and wound healing-related problems before the operation, and 1 patient suffered from post-stroke aphasia and could not communicate clearly. After excluding these patients, 316 patients remained, comprising 74 patient who underwent LigaSure haemorrhoidectomy and 242 patient who underwent PPH. All patients had at least one outpatient record at the Department of Colon and Rectal Surgery of the Changhua Christian Hospital within a year after the operation. Patients with postoperative complications were followed up and treated at least 3 times outpatient visits.

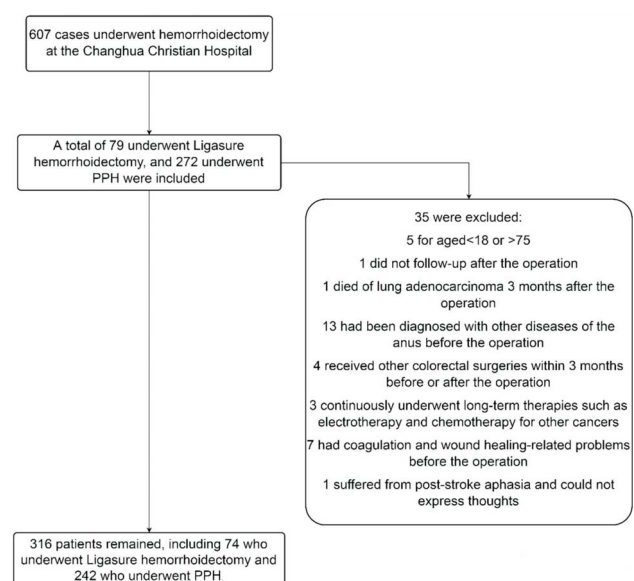


Fig. 1. Screening and follow-up of the patients.

Results

As shown in Table 1, no significant differences in the age, gender, or severity grade of haemorrhoids were observed between the treatment groups. However, both groups differed significantly from each other with respect to surgical time and pain scores on postoperative day 1 ($p < 0.01$ in both options) (Table 2).

The incidence of complications (Table 3) such as rectal stenosis ($p = 0.076$) and tenesmus ($p = 0.093$) was higher in the PPH group than in the LigaSure group; however, the difference in the incidence of both complication between the two groups was not statically significant ($p > 0.05$). A total of 2 patients (2.7%) in the LigaSure group had postoperative complications, and 29 patients (12.0%) in the PPH group also had postoperative complications, revealing a significant difference between the two groups ($p = 0.019$).

Discussion

Haemorrhoidectomy is the most definitive and ef-

fective treatment for prolapsed haemorrhoids. Although it is considered a minor operation, the postoperative course is protracted and postoperative complications, especially those related to pain and bleeding, are not negligible. Therefore, various new treatment methods and medical devices for overcoming postoperative pain have been developed. The LigaSure diathermy system seems to be an ideal instrument for haemorrhoidectomy because it offers localised coagulation and minimal collateral thermal spread. Several studies have shown that compared to conventional

Table 2. Surgical time and postoperative pain score

Characteristic	Total trial population (N = 316)	PPH (N = 242)	Ligasure (N = 74)	<i>p</i> value
Surgical time – min				
Mean	26.8	23.3 ± 7.33	38.2 ± 11.3	< 0.01
Range	8-78	8-55	29-78	
Pain score (0-10)				
Mean	1.4	1.05 ± 0.60	2.04 ± 1.07	< 0.01
Range	0-6	0-4	0-6	

Pain score: the largest VAS score recorded during hospitalisation.

Table 1. Demographic and clinical characteristics of the patients at baseline

Characteristic	Total trial population (N = 316)	PPH (N = 242)	Ligasure (N = 74)	<i>p</i> value
Age – yr				
Mean	49.12 ± 6.18	49.23 ± 6.25	48.70 ± 6.15	0.705
Range	21-74	21-74	27-73	
Sex – no. (%)				
Male	127 (40)	97 (40)	30 (41)	0.687
Female	189 (60)	145 (60)	44 (59)	
Diagnosis – no. (%)				
3rd degree haemorrhoids	287 (91)	230 (95)	57 (77)	0.527
4th degree haemorrhoids	29 (9)	12 (5)	17 (23)	

Table 3. Postoperative complications

Characteristic	Total trial population (N = 316)	PPH (N = 242)	Ligasure (N = 74)	<i>p</i> value
Complication – no./total no. (%)				
Total complications	31/316 (10)	29/242 (12)	2/74 (2.7)	0.019
Hemorrhoids recurrence	6/316 (1.9)	6/242 (2.5)	0/74 (0)	0.173
Anal fistula	2/316 (0.6)	1/242 (0.4)	1/74 (1.4)	0.375
Rectal tenesmus	9/316 (2.8)	9/242 (3.7)	0/74 (0)	0.093
Rectal stenosis	10/316 (3.2)	10/242 (4.1)	0/74 (0)	0.076
Chronic pain	3/316 (0.9)	2/242 (0.8)	1/74 (1.3)	0.685
Anastomotic dehiscence	1/316 (0.3)	1/242 (0.4)	0/74 (0)	0.375

haemorrhoidectomy, LigaSure has a significant effect in reducing operating time and postoperative pain, resulting in shorter hospital stay and early return to work or normal activity.⁵⁻¹¹ Various controlled studies have also shown that PPH has significantly less postoperative pain and is associated with more rapid return to work or normal activities compared to conventional haemorrhoidectomy.¹²⁻¹⁶ However, the incidence of complications associated with the LigaSure procedure and PPH is unclear.¹⁷⁻²²

With the LigaSure procedure, the level of postoperative pain would be expected to be low because of the minimal collateral thermal spread, limited tissue charring, improved tissue apposition, rapid wound healing, and reduced anal spasm. With PPH, pain levels would also be expected to be low because there is no external wound and the staple line is positioned above the dentate line. Our findings showed that both procedures had short operative time, low postoperative pain scores, and short duration of hospital stay. Although, the two groups did differ significantly from each other with respect to surgical time and pain scores on postoperative day 1, since all our patients remained hospitalised on the day of the operation and were discharged on the following day, we could not clearly compare the difference in the length of stay.

Some studies have reported that acute urinary retention is the most common complication after haemorrhoidectomy.^{22,23} The risks for urinary retention after haemorrhoidectomy vary widely among different reports, with risk estimates ranging from 4.9% to 46.1%.²³ In our study, reviewing the medical records revealed that 26 patients had difficulties in micturating on the night of the operation or the following day, and required short term ureteral catheterisation or required an indwelling urethral catheter. However, all patients improved at the time of discharge and showed no signs of complications at outpatient follow-up. Considering that temporary urine retention may be caused by pain or anaesthesia, we did not include it in the complications of complications analysed in this study.

This study showed that PPH has a higher incidence of long-term complication ($p < 0.05$), such as rectal tenesmus and rectal stricture compared to the

LigaSure procedure; however, the differences were not statistically significant. This may be attributable to the fact that the number of patients was probably too small to detect a real difference, or there was a low rate of individual complications. Similar findings with PPH have been reported in the literature.¹⁸⁻²² This finding may be of concern, particularly for patients looking forward to a better quality of life. In the future, we may be interested in examining the effective methods to deal with these complications.

Although not as significant as rectal tenesmus and rectal stricture, haemorrhoids recurrence with haemorrhoidal prolapse also showed a high rate of complications. Similar findings with PPH have been reported in the literature.¹⁸⁻²² This may explain why some studies of PPH have not included grade IV disease, and why some randomised clinical trials have studied only grade III haemorrhoids.²⁴ The practical difficulty with PPH is in deciding how much mucosa to remove, the amount varies according to the extent of prolapse. PPH also has the drawback of occasional failure when used to treat large external haemorrhoidal components and skin tags, resulting in higher rates of recurrence of haemorrhoids.

This study has some limitations. This study was not conducted as a randomisation research study from the very start, so there is a considerable difference in the number of subjects between the two methods. The effect of this on the statistical results is unknown. However, both procedures use self-paid medical materials, so it is difficult to evenly distribute the patients to each operating surgeon because this study was not a funded experimental project.

Conclusions

Based on the data from our statistical analysis study, it may be concluded that compared to the LigaSure procedure, PPH had more long-term complications, a higher rate of haemorrhoid recurrence. The purpose of this statistical analysis study is to provide surgeons with a reference material when selecting surgical methods. A controlled study with a larger number of patients and a longer follow-up period is ne-

eded to reach solid conclusions regarding postoperative long-term complications associated with the treatment of haemorrhoids.

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原 著

比較使用組織凝集刀痔瘡切除術與痔瘡環切手術術後長期併發症

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目的 比較使用組織凝集刀痔瘡切除術與痔瘡環切手術術後長期併發症。

方法 統計自 2016 年 1 月到 2018 年 12 月，共 316 名病患接受組織凝集刀痔瘡切除術或痔瘡環切手術的術後併發症及各項手術資料之回顧性研究。

結果 與組織凝集刀痔瘡切除術術後併發症率 (2.7%) 相比，痔瘡環切手術明顯有著較高的併發症風險 (12%)。

結論 我們的研究顯示雖然痔瘡環切手術在手術時間及術後短期疼痛控制上有著較優秀的表現，但長期併發症率卻明顯高於組織凝集刀痔瘡切除術。

關鍵詞 組織凝集刀痔瘡切除術、痔瘡環切手術、術後併發症。