Comparative Analysis of Post Rubber Band Ligation and Stapled Hemorrhoidopexy Complications of Grade 2 and 3 Internal Hemorrhoids

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Comparative Analysis of Post Rubber Band Ligation and Stapled Hemorrhoidopexy

Complications of Grade 2 and 3 Internal Hemorrhoids

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Abstract

Introduction. The management of second- and third-degree internal hemorrhoid consists of non-surgical and surgical treatments. If non-surgical treatment does not succeed, then the recommended therapy is minimal invasive or surgery, depends on the clinical condition. Along with the development of science and technology, a technique known as rubber band ligation (RBL) and stapled hemorrhoidopexy emerges. In Indonesia, there is no data that can describe the distribution of postoperative complication rate.

Method. A comparative cross-sectional study was conducted by gathering short term outcomes data from the subjects' medical records that underwent RBL or SH between 2011 to 2014 in three different hospitals in Jakarta. A univariate analysis was conducted to assess postoperative complications of RBL and SH subjects of second- and third-degree internal hemorrhoids. We use chi square test to assess the factors that influence the complications of categorical variables, and Fisher test if the chi square condition is not met.

Results. Among 183 subjects, 49.2% underwent RBL and 50.8% SH. Second degree internal hemorrhoids were 40% and third degree were 60%. Postoperative complications consist of pain (RBL 4.4%, SH 8.8%), hemorrhage (RBL 2.3%, SH 4.9%), urinary retention (RBL 0, SH 2.7%), infection (RBL 0.5%, SH 1.6%) and stenosis (RBL 0, SH 0.5%). Postoperative complications on second degree internal hemorrhoidal was 8.2% and third degree 13.1% (p = 0.71). Complication of subject with third degree internal hemorrhoids after RBL 2.8%, SH 19.4% (p = 0.03).

Conclusion. Complications of second- and third-degree internal hemorrhoids post RBL are no different with SH while for third degree internal hemorrhoid, complications after RBL were significantly lower than SH.

Keywords: hemorrhoid, rubber band ligation, stapled hemorrhoidopexy

Introduction

The surgical intervention of internal hemorrhoid varies greatly paralleled to the advancement in the knowledge of the pathophysiology of hemorrhoids. However, to date there is no a single treatment provides an optimal result that associated with minimal postoperative complications, which is painless and accepted minimal bloody stools. For instance, recently rubber band ligation (RBL) referred to a minimally invasive chosen method applied as it provides clinical advances that may be treated as an office surgery for outpatients and with satisfactory outcomes compared with other minimally invasive modalities such as sclerotherapy and coagulation. However, the procedure if ligation is not without drawbacks; the issue of pain remains, in addition to bloody stools, thrombosis of external hemorrhoids, and the symptoms of vasovagal reflex which is found in about 1–3%, and the recurrence. The kind of treatment failure, a hemorrhoidectomy is the recommended procedure of choice. With such a surgical procedure, the hemorrhoids are totally removed. Thus, the recurrence is then reduced off, but the issue of pain as well as bleeding remains the problem and associated with prolonged recovery.

Stapled hemorrhoidopexy (SH), is a recent method of choice used to restore the anal cushions to its anatomical sites. The procedure consists of removal of mucosa of the lower part of the rectum and inhibit blood vessels that supply hemorrhoid. Many studies have shown the benefit of SH. Peng (2003) found that SH is associated with less pain and minimal morbidity. In addition, it minimizes the need for a further intervention compared with RBL in those with third– to the fourth-degree internal hemorrhoid. Shannugam (2010) found that SH controls second-degree internal hemorrhoid better than RBL in one year with no major complications. Butterworth (2012) reported that only 10% of those who underwent SH were re-admitted due to rectal bleeding, postoperative pain, and urinary retention. Sutan (2014) also found that postoperative bleeding that needed further surgery after SH was 3 to 5%.

To date, there is no data focused on the postoperative complications of RBL and SH in those with second– and third-degree internal hemorrhoid. Thus, a study aimed to find out the complication rate of RBL and SH.

Method

A cross-sectional study carried out enrolling adults with second– and third-degree internal hemorrhoid underwent RBL and SH at dr. Cipto Mangunkusumo General Hospital (RSCM), Metropolitan Medical Centre (MMC) Hospital, and Mitra Kemayoran Hospital (MKH), Jakarta, Indonesia during January 2011 to December 2014. Those underwent both RBL and SH in a single session were excluded. Subject characteristics such as age and gender, hemoglobin
content and hematocrit, leukocyte count, platelet count, prothrombin time (PT), and activated partial thromboplastin time (APTT), surgical procedure, and postoperative complications including pain, bleeding, urinary retention, infection/sepsis, were the data of interests. These data were analyzed using SPSS 17 for Windows. Numeric variables were analyzed using independent T-test, while categoric variables were analyzed using Chi-Square or Fisher's exact test. This study had been approved by the Committee of Ethic, Faculty of Medicine, Universitas Indonesia, No 670/UN2.FI/ETIK/2015 and Research bureau RSCM No LB.02.01/X.2/593/2015.

Results

A total of 183 subjects enrolled in this study. Subjects characteristics presented in table 1. The postoperative problems including pain, anal bleeding, urinary retention, infection, and rectal stenosis are demonstrated in table 2. The association of overall surgical procedure and postoperative problems with internal hemorrhoids in both of second- and third-degree presented in table 2 and for third-degree internal hemorrhoid presented in table 4. In this study we found complication rate in RBL was lower than SH (p = 0.01). In both of second- and third-degree of hemorrhoids, these complications were not significantly differed (p = 0.718), but it was shown that complication in those with third-degree internal hemorrhoid, were found lower in RBL than SH (p = 0.03).

Table 1 Characteristics of the subjects

| Characteristic | Rubber band Ligation | Stapled hemorrhoidopexy | Total | p  |
|----------------|----------------------|-------------------------|-------|----|
| Hemorrhoid     |                      |                         |       |    |
| 1. 2nd degree  | 58                   | 77.3%                   | 17    | 22.7% | 75 | 40  | 0.000 |
| 2. 3rd degree  | 32                   | 29.6%                   | 76    | 70.4% | 108 | 60  |
| Age            |                      |                         |       |    |
| 1. <45         | 29                   | 36.7%                   | 50    | 63.3% | 79 | 43.2% |
| 2. 45-54       | 24                   | 55.8%                   | 19    | 44.2% | 43 | 23.5% |
| 3. 55-64       | 18                   | 58.1%                   | 13    | 41.9% | 31 | 16.9% |
| 4. >65         | 19                   | 63.3%                   | 11    | 36.7% | 30 | 16.4% |
| Gender         |                      |                         |       |    |
| 1. males       | 56                   | 55.4%                   | 45    | 44.6% | 101 | 55.2% |
| 2. females     | 34                   | 41.5%                   | 48    | 58.5% | 82 | 44.8% |
| Total          | 90                   | 49.2%                   | 93    | 50.8% | 183 | 100% |

Table 2 Complications after rubber band ligation and stapled hemorrhoidopexy

| Complications | Rubber band Ligation | Stapled hemorrhoidopexy | Total | p  |
|---------------|----------------------|-------------------------|-------|----|
| Pain          | 8                    | 4.4%                    | 16    | 88.8% | 24 | 13.2% |
| Bleeding      | 4                    | 2.3%                    | 9     | 4.9%  | 13 | 7.2%  |
| Urine retention | 0               | 0%                      | 5     | 2.7%  | 27 | 2.7%  |
| Infection/sepsis | 1           | 0.5%                    | 3     | 1.6%  | 4  | 2.1%  |
| Stenosis      | 0                    | 0.0%                    | 1     | 0.5%  | 1  | 0.5%  |
| No complication | 78           | 42.6%                   | 66    | 36.1% | 144 | 78.6% |
| Total         | 91                   | 47.6%                   | 100   | 56.7% | 191 | 104.3% |

Table 3 Association between both surgical procedure and hemorrhoid degree and surgical complications

| Type of operation | Complications | p  |
|------------------|---------------|----|
| RBL              | 12            | 6.6% | 78 | 42.6% | 0.010 |
| SH               | 27            | 14.8% | 66 | 36.0% |
| Internal hemorrhoid |              |     |    |       |       |
| 2nd degree       | 15            | 8.2%  | 60 | 32.8% | 0.718 |
| 3rd degree       | 24            | 13.1% | 84 | 45.9% |

Table 4. Association between surgical procedure and surgical complications in third-degree internal hemorrhoid

| Type of operation | Complications | p  |
|------------------|---------------|----|
| RBL              | 3             | 2.8%  | 21 | 19.4% | 32 | 22.2% | 0.030 |
| SH               | 21            | 19.4% | 55 | 58.4% | 76 | 77.8% |
| Total            | 24            | 22.2% | 84 | 77.8% | 108 | 100% |

Discussion

In the study, postoperative problems such as pain, rectal bleeding, and infection following RBL showed no significant difference to SH (p >0.05). The logic explanation is due to the surgical margin that is close to line of dentata, narrow anal canal, anal spasm, sphincter rigidity, and mucosal injury. Study of Fontenot (2015) showed that pain is an issue found when the surgical intervention carried out close to the mucocutaneous line.4,6 Garg (2013) found that postoperative pain following SH is quite minimal, while as study of Shanmugam (2010) showed that pain following RBL is not significantly different to those in SH.6 Rectal bleeding following the procedure of SH may occurred due to mucosal injury as well as anal mucosal inflammation. Whereas, in the procedure of RBL, necrosis of the hemorrhoid may cause rectal bleeding. Peng (2003) and Sultan (2014) showed that rectal bleeding following the procedure of SH is 3 to 5%. In the other side, Fontenot (2015) reported the incidence of postoperative rectal bleeding after RBL is 1 to 3%.5,8,10 Postoperative infection following SH may be found both in early and a later phase. Abscess formation, perirectal bacterial seeding, pelvic cellulitis, and perirectal necrotic tissues due to electrocoagulation. Whereas, post-RBL infection is caused by pelvic sepsis. Fontenot (2015) stated that post-RBL infection rarely occurs, and Oughriss (2005) reported that the incidence of post-SH infection was 0.5 to 0.9%.5,18

The mechanism regarding urinary retention that may occur after SH remains unclear; however, the use of regional anesthetics may contribute to urinary retention. Nevertheless, the authors were unable to confirm this as they did not observe the anesthetic effect in the subjects.9,18 This study showed that stenosis post-SH was 0.5%. It was associated with scar retraction and anal sphincter hypertonia. This number is not so much different compared to the number of stenosis reported by a study by Oughriss in the year 2005 (0.8 to 1.6%).18

According to the degree of the hemorrhoid, second-degree internal hemorrhoid postoperative complication did not differ significantly with third-degree internal hemorrhoid (p = 0.718). It could be concluded due to the expertise of the surgeon in performing RBL and SH; thus, the complication rate could be reduced.6 Shanmugam (2010) also found that those with second-degree internal hemorrhoid had similar postoperative complication with those with third-degree ones.

Regarding the association between surgical procedures and their complications in third-degree internal hemorrhoid (table 4), post-RBL complications were significantly lower than post-SH complications (p = 0.03). Although, there may seem to be an inequity in comparing an outpatient procedure with another that requires general anesthesia, yet for the patient, such differences are significant for them to weigh in the advantages and disadvantages of each procedure. This would assist them to consent for a procedure preferred. The more radical approach in SH, which are the size of the circular stapler inserted trans-anally and the magnitude of the tissue
excision, is reflected in the higher complication rate compared with RBL.8

The diagnosis of internal hemorrhoid worldwide has formal standards that are adopted by each physician; however, the characteristics of those with hemorrhoids in the United States, Europe and Asia differ in terms of socioeconomic level, race, lifestyle including diet and defecation, which are known to affect the course of internal hemorrhoidal disease. Despite differences in the characteristics of the research subjects, medical service standards, and diverse expertise of medical personnel, this study has findings that are similar to previous studies that were conducted in various countries regarding post–RBL and –SH complications in internal and second–degree hemorrhoids. This may be due to the similarity in the understanding of the pathophysiology of the disease and the nature of the disease.

Conclusion

Complications of second– and third–degree internal hemorrhoids post RBL are no different with SH while for third degree internal hemorrhoid, complications after RBL ware significantly lower than SH.

Disclosure

Authors declare no conflict of interest.

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