

Justification of Rubber Band Ligation as a Treatment of Choice for Internal Hemorrhoid Grade II and III: a Retrospective Analysis of 116 Consecutive Cases in Maharat Nakhon Ratchasima Hospital

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Abstract Hemorrhoid is a common anorectal disease. One method for treating internal hemorrhoids is rubber band ligation (RBL). The procedure can be performed on most of grade I, II and some of grade III, IV internal hemorrhoids with low complication rates. This study aimed to determine the outcomes of RBL in Maharat Nakhon Ratchasima Hospital. It was conducted as a retrospective study, documenting data from all internal hemorrhoid patients who received RBL at the Department of Surgery during October 2010 to September 2013. There were altogether 116 cases. The male:female ratio was 2:1, with the age range of 18–85 years old. Most patients were grade II and III internal hemorrhoids (65.5% and 31.9% respectively). After 1–36 month (median=13 months) follow-up of treatment, symptom severity score was found to be significantly decreased ($p<0.001$). The complete cure rate was 95.7%. The cure rate in grade II patients was significantly higher than that of the grade III patients (98.7% vs. 89.2%) ($p=0.03$). Thus, the RBL should be a preferred choice in treating internal hemorrhoid patients. It can be performed safely with low complication rates in out-patient settings.

Key words: hemorrhoid, rubber band ligation, outcome, recurrent

Introduction

Hemorrhoids is a common anorectal disease. It's true incidence and etiology is still not well understood.^(1,2) There are many contributing factors such as genetics, standing position, hormonal changes, pregnancy, pelvic tumors, chronic constipations, frequent diarrhea, increased intra-abdominal pressure, heavy lifting, increased age and tight garments. In Western countries, the disease is found in 50% of population of age over 50 years old. In Thailand, it is

found in 10% of population age 10–70 years old. The male:female ratio is 3:1.⁽³⁾

Hemorrhoids can be divided into internal and external hemorrhoids depending on the relative locations with the dentate lines (pectinal line or anorectal line). Rectal bleeding is the most common presenting symptom. Other symptoms were prolapsed, pain and pruritis. The first line of treatment of hemorrhoids is lifestyle modifications and medications. For later grades or symptomatic patients, other modalities

should be considered. Outpatient treatment is feasible for majority of patients with hemorrhoids. Rubber band ligation (RBL) can be applied to most grade I, II, some of grade III internal hemorrhoids when the patient complains of bleeding or prolapsed. It can also be considered for patients with grade IV internal hemorrhoids who are unfit for surgery or with severe anemia.^(4,5) RBL was reported to be successful in symptom control of internal hemorrhoids between 70.5–97.5% with minimal morbidity.^(6–11) Iyer VS, et al. reported 2.8% bleeding, and 1.5% thrombosed external hemorrhoids.⁽⁶⁾ Some studies reported serious complications such as perineum sepsis, bacterial endocarditis, or massive lower gastrointestinal bleeding.^(12–19) There are several alternative outpatient procedures for treatment of internal hemorrhoid apart from RBL, including injection sclerotherapy, cryotherapy, infrared coagulation, dilation, etc. But evidences showed that RBL is the most effective simple outpatient procedure. RBL is considered the treatment of choice for grade II internal hemorrhoids and primary treatment for grade III. Surgical hemorrhoidectomy even though is the definitive treatment is not without complications. It should be reserved for large, prolapsed hemorrhoids or those failed primary outpatient procedures. In this regard, grade III hemorrhoids with

prolapsed have a higher tendency to be treated primarily by surgical hemorrhoidectomy. This study aims to determine the outcomes of RBL in treating internal hemorrhoids at the Department of Surgery, Maharat Nakhon Ratchasima Hospital.

Material and Methods

Settings: Maharat Nakhon Ratchasima Hospital

Study Design: retrospective study from chart review

Study Population: All outpatient records from October 2010 to September 2013 with diagnostic code (ICD-10) I84 (internal hemorrhoid) with treatment code (ICD-9CM) 42.33 (RBL) were retrieved and reviewed. Underlying conditions that might unfavorably affect the outcome were excluded from this reviews which included pregnancy (O22.4), chronic liver disease (K74.6), chronic kidney disease stage 3–5 (N18.3–5), malignant neoplasm (C00–C97), morbid obesity (E66.8), drugs intoxication (T36–T50), hyperplasia of prostate (N40) and urethral stricture (N35).

Data Collection

Variables collected from each patient included demographic data, diagnosis, symptom severity score (see Table 1),⁽²⁰⁾ the number of piles treated with

Table 1 Symptom severity score (maximum possible score = 15)

Symptom severity score	Pain	Pruritis	Prolapse	Bleeding	Soiling	Incontinence to gas
0	None	None	Never	Never	Never	Never
1	Only with stool	Occasionally	With staining	Spotting	Mucous discharge	Occasional
2	Constant	Permanent	Permanent	Dripping into pan	Occasional soiling	No control
3				Without stool	Gas incontinent	
4				Staining underwear		

From: Beattie GC, Lam JPH, Loudon MA. A prospective evaluation of the introduction of circumferential stapled anoplasty in management of haemorrhoids and mucosal prolapse. *Colorectal Disease* 2000;2:137–42.

RBL, the number of visits, and the complications. For the recurrent hemorrhoids, symptom severity score and other relevant data were collected again at 28 days after initial procedures were performed (evaluated by senior consultants).

Statistics

Percent, mean, standard deviation (SD), median and range were used for descriptive data analysis. For nominal data, either Chi-square test with Yates correction or Fisher's exact test was used. For continuous data, t-test (two tails), Mann-Whitney rank-sum test or Wilcoxon rank-sum test was applied as appropriate. $P < 0.05$ were considered as the level of statistical significance.

Ethical approval

This research was approved by Institute Review Board of Maharat Nakhon Ratchasima Hospital.

Results

Between October 2010 and September 2013, RBL were performed in 116 patients aged between 18–85 years old (Table 2). About two-thirds of patients were male; and the mean age was 49.7 (SD=14.99) years. The numbers of patients with grade I, II and III internal hemorrhoids were 3 cases (2.6%), 76 cases (65.5%) and 37 cases (31.9%) respectively. Median of symptom severity scoring was 2 (range=1–4). The average number of piles treated with RBL was 1.4 (SD=0.60, range=1–2); and the number session of RBL was 1.4 (SD=0.60, range=1–3). Twenty-five patients (21.5%) required more than one session of RBL.

Duration of follow-up was 1 to 36 months (median=13 months) (Table 3). There were bleeding complications in 5 patients (4.3%). Recurrent hemorrhoids were found in 5 patients (4.3%) which in-

cluded one case of grade II and four cases of grade III (the median number of piles treated with RBL was 1 (range = 1–2), the number session of RBL was 1 (range = 1–3), and time to recurrence was 5 (range = 2–9) months. Hemorrhoidectomy was done in these patients. The median symptom severity score after RBL was decreased from 2 (range = 1–4) to 0 (range 0–2). The prolapse score, bleeding score and sum score after RBL were significantly decreased ($p < 0.001$). Complete cure rate (no bleeding, prolapse or recurrence) in grade II patients was 98.7% which was significantly higher than that of the grade III patients (89.2%), ($p = 0.03$) (Table 4). No clinical or statistical significance in numbers of piles treated with RBL, number session of RBL, duration of follow-up between grade II and grade III hemorrhoids (Table 5).

Discussion

In this study, the male:female ratio among internal hemorrhoids patients was 2:1 which was concordant with previous reports.⁽³⁾ The age range (18–85 years old) was also similar to previous reports.^(2,3) Most patients (96.6%) had received medical treatment prior to this study. After 1–36 months (median=13 months) follow-up there was 95.7% cure rate, which was similar to that of previous studies (70.5–97.5%).^(6–11) Some patients required repeat RBL (21.5% compared to 18% in a previous report).⁽¹⁰⁾ This study showed significantly better cure rate in patients with grade II (98.7%) than the grade III's (89.2%); and the outcomes were nearly as good as the results in many previous studies which reported the range of 82.2–97.4% cure rate in grade II and 69.8% in grade III patients.^(21,22) No clinical or statistical significance in numbers of piles treated with

Table 2 Demographic data of the patients treated by rubber band ligation (N = 116 cases)

	Number	%
Age (year):	Mean = 49.7; SD = 14.99; Range = 18-85	
Sex		
male:	78	67.2
female	38	32.8
Occupation		
Employee	43	37.1
Unemployed	31	26.7
Farmer	28	24.1
Trader	10	8.6
Government employee	2	1.7
Student	1	0.9
Monk	1	0.9
Underlying diseases		
Essential hypertension	8	6.9
Diabetes Mellitus type II	2	1.7
Chronic Obstructive Pulmonary Disease	1	0.9
Diagnosis of Internal hemorrhoids (%)		
Grade I	3	2.6
Grade II	76	65.5
Grade III	37	31.9
Symptom Severity Score: Median = 2; range = 1-4		
Pain	0	0
Pruritis	0	0
Prolapse (1-2: score 1, n=79; score 2, n=37)	1	
Bleeding (1-2: score 1, n=83; score 2, n=33)	1	
Soiling	0	0
Gas incontinence	0	0
Previous treatments (%)		
Medications	112	96.6
RBL	2	1.7
Surgery	2	1.7
Numbers of piles treated with RBL:	Mean = 1.4; SD = 0.60; Range = 1-2	
Number session of RBL:	Mean = 1.4; SD = 0.60; Range = 1-3*	

*25 patients (21.5%) required more than one session of RBL.

Table 3 Treatment outcomes among patients treated by rubber band ligation (N = 116 cases)

Outcomes		
Duration of follow-up (months): median (range)		13 (1-36)
Complications (%)		
Bleeding		5 (4.3)
Infection		0
Fissure		0
Tags		0
Thrombosed external hemorrhoid		0
Recurrent hemorrhoids (%)		5 (4.3)
Symptom severity score (after treatment): median (range)		0 (0-2)*
Pain		0 (0)
Pruritis		0 (0)
Prolapse		0 (0-1: score 1, n=5)
Bleeding		0 (0-1: score 1, n=5)
Soiling		0 (0)
Gas incontinence		0 (0)

*Compared with symptom severity scoring (prolapse score, bleeding score and sum score) (before treatment), p<0.001.

Table 4 Comparison of outcomes between grade II and grade III hemorrhoids

	Cure		Recurrence		p
	Number	%	Number	%	
Grade II internal hemorrhoids	75	98.7	1	1.3	0.03*
Grade III internal hemorrhoids	33	89.2	4	10.8	

*p<0.05

Table 5 Comparison of numbers of piles treated with RBL, number of visit for RBL, duration of follow-up between grade II and grade III hemorrhoids

	Internal Hemorrhoids		p
	Grade II (n=76)	Grade III (n=37)	
Numbers of piles treated with RBL (mean (SD))	1.3 (0.52)	1.5 (0.73)	0.63
Number session of RBL (mean (SD))	1.3 (0.59)	1.4 (0.68)	0.36
Duration of follow-up (months): median (range)	13 (1-34)	13 (2-36)	0.82

RBL, number session of RBL, duration of follow-up between grade II and grade III internal hemorrhoids ($p>0.05$). Hemorrhoidectomy was performed in all recurrent cases.

With such high level of achievements, the RBL should be considered a treatment of choice for patients with internal hemorrhoids, particularly for grade II and uncomplicated grade III.

Conclusion

RBL is an appropriate treatment of internal hemorrhoids. It can be performed safely in an out-patient setting. It has better cure rates in grade II than in grade III internal hemorrhoids.

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Abstract: การรักษาริดสีดวงทวารภายในระยะที่ 2 และ 3 ด้วยวิธี Rubber Band Ligation: การศึกษาย้อนหลังผู้ป่วยริดสีดวงทวารชนิดภายใน 116 ราย โรงพยาบาลมหาราชนครราชสีมา

สมอาจ ตั้งเจริญ พ.บ.

กลุ่มงานศัลยกรรม โรงพยาบาลมหาราชนครราชสีมา

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โรคริดสีดวงทวารเป็นโรคที่พบได้บ่อย การรักษาวิธีหนึ่งคือการทำ rubber band ligation ในริดสีดวงทวารชนิดภายใน ระยะที่ 1, 2 หรือผู้ป่วยบางรายในระยะ 3 และ 4 โดยมีภาวะแทรกซ้อนน้อย การศึกษานี้มีวัตถุประสงค์เพื่อประเมินผลการทำ rubber band ligation ในผู้ป่วยริดสีดวงทวาร โดยเป็นการศึกษาย้อนหลังในผู้ป่วยที่มารับการรักษาที่หน่วยศัลยกรรมทั่วไป โรงพยาบาลมหาราชนครราชสีมา ตั้งแต่เดือนตุลาคม 2553 ถึงกันยายน 2556 ผู้ป่วยที่มารับการรักษาด้วยวิธี rubber band ligation มีทั้งสิ้น 116 ราย สัดส่วนเพศ ชาย:หญิง ประมาณ 2:1 ส่วนใหญ่ผู้ป่วยเป็นริดสีดวงทวารระยะที่ 2 และระยะที่ 3 (ร้อยละ 65.5 และ 31.9 ตามลำดับ) อายุที่มารับการรักษาอยู่ในช่วง 18-85 ปี ผลการรักษาพบว่า มี symptom severity score ดีกว่าก่อนการรักษาอย่างมีนัยสำคัญทางสถิติ ($p < 0.001$) ผู้ป่วยมีอัตราการหายขาด ร้อยละ 95.7 การติดตามผล 1-36 เดือน (median = 13 เดือน) อัตราการหายขาดในกลุ่มริดสีดวงระยะที่ 2 ดีกว่าระยะที่ 3 อย่างมีนัยสำคัญทางสถิติ ($p = 0.03$) (ร้อยละ 98.7 และ 89.2) จากผลการศึกษาสรุปได้ว่า การรักษาริดสีดวงทวารด้วยวิธี rubber band ligation น่าจะเป็นทางเลือกที่เหมาะสม มีภาวะแทรกซ้อนน้อย และสามารถรักษาแบบผู้ป่วยนอก แพทย์สามารถนำไปฝึกปฏิบัติได้ โดยริดสีดวงระยะที่ 2 มีผลการรักษาดีกว่าระยะที่ 3

Key words: ริดสีดวงทวารภายใน, การรักษาด้วยวิธี rubber band ligation, ผลการรักษา, อัตราการหายขาด