

# A Review of the Success and Recurrence Rate of Hemorrhoids Following Rubber Band Ligation in Blackpool and the Fylde Coast Area of England

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### ABSTRACT

**Introduction:** Despite the existence of various operative and non-operative procedures to treat hemorrhoids, no standard treatment procedure for the disease exists to date. Rubber band ligation is a simple outpatient and easy to perform procedure to treat hemorrhoids, which can be done at the doctor's office with no need for anesthesia and exceptionally minimal risk of complications. In this study, we report the efficacy of this technique among hemorrhoids patients in the in Blackpool and the Fylde Coast area of England.

**Materials & Methods:** A retrospective case study involving ninety-eight symptomatic grade I, II and III hemorrhoids' patients were conducted at Blackpool teaching hospital (NHS foundation trust), UK over a 3-year period. Electronic patients' data were retrieved and analyzed for efficacy of the rubber band ligation procedure and recurrence of hemorrhoids, one year after the procedure.

**Results:** Of the ninety-eight patients analyzed, 66 (67.3%) were males, and 32 (32.7%) were females. They had a mean ( $\pm$  SD) age of 53.6 $\pm$ 15.0 years. Most of the patients, 87 (88.8%), presented with the primary symptom of rectal bleeding. Only 8 (8.2%) of the patients reported recurrence of hemorrhoids 6 months after the procedure, while 11 (11.2%) reported recurrence at 12 months after the procedure.

**Conclusion:** In summary, it was an effective technique with only 11.2% recurrence rate 12 months after the procedure. Given its convenience and ease of performance, we believe it could be a useful technique for our setting. However, further studies, preferably prospective studies on larger number of patients and for longer duration will be required to establish its wider application.

Our study reveals a significantly lower rate of recurrence in comparison to previously carried out studies and further emphasized that is safe and highly effective procedure. We also noted a decreased rate of complications with only one patient requiring a readmission following the procedure, this in contrast to previous studies.

**Keywords:** Recurrence, Hemorrhoids, Rubber Band Ligation, Blackpool, Fylde Coast

### Introduction

Hemorrhoids result from enlargement of the hemorrhoidal plexus and pathological changes in the anal cushions, a normal component of the anal canal [1,2]. It is termed "internal hemorrhoid" when it arises above the dentate line and is lined by columnar epithelium, and "external hemorrhoid" when it arises below the dentate line and is lined by squamous epithelium [3,4]. An estimated 4.4% of the world populations suffer from hemorrhoids, with both men and women equally affected [5]. While most hemorrhoid patients are asymptomatic, common symptoms include; anal bleeding during or without defecation, swelling, anal itching and anal mass among others [2,6]. Various treatment modalities have been designed to treat symptomatic hemorrhoids, both operative and non-operative. Given the numerous methods for treating the disease, there is still no particular standard treatment in place [7].

Despite the high efficacy of surgical approaches to treating hemorrhoids, and their ability to offer permanent symptoms relief, they remain a very painful and expensive procedure [8]. For the management of low-grade hemorrhoids, non-surgical therapies are advised. They include; nonsurgical tissue fixing techniques such as sclerotherapy, cryotherapy, photocoagulation, and laser, or tissue excision fixation using the rubber band ligation technique [9]. Rubber band ligation is a simple outpatient and easy to perform procedure, that can be done at the doctor's office with no need for anesthesia and very low risk of complications, making it convenient and cheap for the patients [10]. Published reports indicate that the success rate of the rubber band ligation technique is about 60% to 80% however as the technique's efficiency improves success rates as high as 86.6% or more have been reported [9,11,12]. In this study, we report the efficacy of rubber band ligation conducted on ninety-eight patients at two tertiary hospitals in Blackpool and the Fylde Coast area of England.

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**Materials and Methods**

This was a retrospective case study involving ninety-eight patients from Blackpool and the Fylde Coast area of England. The patients underwent rubber band ligation to manage hemorrhoids at the outpatient surgical department of Blackpool teaching hospital (NHS foundation trust), UK over a 3-years period. Permission to conduct the study was obtained from the Blackpool Teaching Hospital Research Ethics Committee. Major patient symptoms at consultation were anal bleeding, mucosal prolapse, and anal itching. Recruited patients were from grade I, II and III hemorrhoids, where ninety-two were first time patients for rubber band ligation, while six underwent previous procedure for hemorrhoid management. The hemorrhoids were classified using Modified Goligher grading system [13]. Patients' information including demographic data, symptoms, grade of hemorrhoids, and recurrence of hemorrhoids were retrieved from the electronic patients' database and analyzed. These included letters dictated by the operating surgeon on the day of the procedure as well as follow up clinic visits. Success of the procedure was defined as non-recurrence of symptoms 1 year after the procedure.

**Statistical Analysis**

Statistical analysis was conducted using SPSS (Statistical Package for Social Science) version 20. Qualitative data were summarized in form of counts and percentages, while age was summarized using mean (± SD).

**Results**

In this study, ninety-eight patients with symptomatic Grade I, II, and III hemorrhoids were recruited and analyzed. 66 (67.3%) of them were males, while 32 (32.7%) were females. The patients had a mean (± SD) age of 53.6±15.0 years. Of the ninety-eight patients, fifty-five patients (55.6%) had Grade I hemorrhoids, twenty-nine patients (29.3%) had grade II, and fourteen patients (14.3%) had grade III hemorrhoids. Most of the patients 87 (88.8%) presented with primary symptoms of rectal bleeding, while 10 (10.2%) reported mucosal prolapse and 1 (1%) had anal itching. All the patients underwent rubber band ligation, with ninety-five undergoing a single procedure, while three had planned re-banding conducted at different time intervals after the first procedure. Table 1.

**Table 1. Summary of Patients' Characteristics**

Variables	Total patients (n = 98)
Age, years, mean (SD)	53.6±15.0
<b>Gender, n (%)</b>	
Male	66 (67.3)
Female	32 (32.7)
<b>Grade of hemorrhoids, n (%)</b>	
Grade 1	55 (56.1)
Grade 2	29 (29.6)
Grade 3	14 (14.3)
<b>Reported symptoms, n (%)</b>	
Rectal bleeding	87 (88.8)
Rectal bleeding & mucosal prolapse	10 (10.2)

Anal itching	1 (1.0)
<b>Recurrence, n, (%) after 6 months</b>	
Yes	8 (8.2)
No	90 (91.8)
<b>Recurrence, n (%) after 12 months</b>	
Yes	11 (11.2)
No	87 (88.7)
<b>Patient category by procedure time</b>	
First time procedure	92 (93.9)
Repeat procedure	6 (6.1)

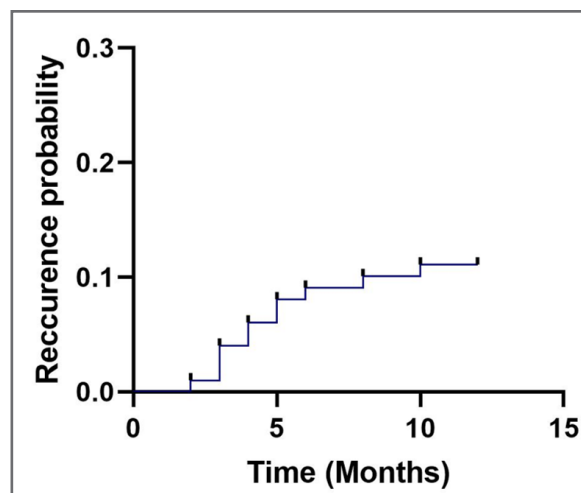
SD: Standard Deviation

**Success of the Procedure**

Success of the procedure was patients reporting no recurrence of symptoms after 6 months from the date of the surgery. Using this parameter, only 8.2% of the patients had recurrence after 6 months from the procedure time. However, as a precaution, results of all patients were further assessed at 12 months after the procedure. At this point, recurrence was observed in 11.2% of the patients. Therefore, the probability of recurrence was 0.08 at 6 months and 0.11 at 12 months. Figure 1. When analyzed by grade of hemorrhoids, most of the recurrences at 12 months adjusted by percentages occurred among grade II, and grade III patients. Table 2.

**Table 2. Recurrence by Grade**

Variables	Grade I (N = 55)	Grade II (N = 29)	Grade III (N = 14)	Overall (N = 98)
Recurrence, n	4	5	2	11
Percentage, %	7.27	17.24	15.38	11.11



**Figure 1:** Time to recurrence plot showing the probability of recurrence of hemorrhoids among the patients after 12 months following rubber band ligation.

NB: some of the patients had planned return procedures (planned rebanding) Patient 35, 55, 89

**Discussion**

Hemorrhoids are managed in a number of ways, with the choice of procedure dependent on the severity of the symptoms and the

grade of the disease. It is important that any treatment chosen is safe and affordable for the patient. Rubber band ligation is a popular out-patient procedure that has been extensively examined either independently or in contrast to other techniques [14,15]. Its success rate ranges from 68.33% to 92% especially for low grade hemorrhoids [8,16,17].

The technique can be employed using an endoscope with forward view or retroflexion or without an endoscope, using a suction elastic band ligator or a forceps ligator. Single or multiple ligations can be performed in a single session [10]. In our study, the suction elastic band ligator technique was employed. One to three bandings were carried out per session. Some patients were scheduled for planned re-banding sessions.

According to a retrospective analysis of the short and long-term efficacy of rubber band ligation for hemorrhoids, Lu et al. analyzed two months follow up data and discovered that 92% of grade II, and 76% of grade III patients had no residual symptoms, though the difference in success rate was not statistically significant ( $p = 0.32$ ) [18]. In our study, the differences in success rates among the different grades of hemorrhoids were not statistically significant too.

Reports from various studies indicate that recurrence rate for rubber band ligation ranges from 6% to 20% [18,19]. In their study, Bayer and colleagues discovered that 18% of their patients required one or further RBL sessions to attain cure, while 2.1% were not treated by RBL and were referred for traditional hemorrhoidectomy [20]. Majority of studies show a more than 70% cure rate after 5 years [17,21]. Vassilios et al. observed that two years following RBL, symptomatic recurrence was 11.9%, with 9.2% requiring repeat RBL or surgery [22]. In our study, the overall recurrence rate was 11.11%, while when stratified by grade, it was 7.27%, 17.14% and 15.38% in grade I, II and III hemorrhoids respectively, making our results consistent with those in the above literatures.

A review of 39 trials involving 8060 rubber band ligation patients indicated that post-banding complications were majorly severe pain in 5.8% of the patients, and bleeding in 1.7% of the patients [23]. Similarly, Lu and colleagues found that mild to moderate pain 12 to 48 hours post procedure occurred in 41% of their patients, requiring oral analgesics [18]. While, Bat and colleagues noticed a total complication rate of 4.2% among their patients with 2.5% needing hospitalization [24]. In our study, one grade III patient experienced anal pain after the procedure that required hospitalization.

In comparison to other operative procedures for the management of hemorrhoids, the rubber band ligation technique is the most economical and saves large number of hospitalization days and operating room time [19]. With improved safety and efficacy, it will be the best technique applicable for both resource rich and limited clinical settings [25].

## Conclusion

In summary, our study indicates that rubber band ligation is a safe procedure that requires minimal equipment and can be easily performed in an outpatient setting. We found that it is more effective in lower grade hemorrhoids (Grade I) with

limited complications and exceptionally low recurrence rate. We recommend this procedure as first line treatment for grade I to III hemorrhoids. Our findings indicate that rubber band ligation could be especially useful in our setting of Blackpool and the Fylde Coast area of England. However, further studies, preferably prospective studies on larger number of patients and for longer duration will be required to establish its wider application.

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## Author Contribution

Mr. Zaid Al-Hamid (Consultant Surgeon). -Lead author  
Mr. Nicolas Wamaani Mwesigwa (Surgical registrar)  
Lujain Al-Wattar (Doctor)

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