Rubber Band Ligation Vs Injection Sclerotherapy in Early Haemorrhoids

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Haemorrhoids are common surgical problem all over the world and various treatment modalities are available. However, efforts are being made to treat the haemorrhoids as outpatient procedure. Injection Sclerotherapy has been the orthodox treatment for early haemorrhoids. Rubber Band Ligation (RBL) is a relatively new procedure. In this study RBL has been compared with injection sclerotherapy for the mamagement of 1st. and 2nd. Degree haemorrhoids. This was a prospective randomized study conducted at General Hospital(S-1) and Services Hospital, Lahore (S-3) from August 1995 to December 1998. The study included fifty patients in each category divided randomly. No patient was below 20 years in each category. Males were affected more than females and most patient were constipated chronically. Bleeding and prolapse were cardinal complaints in each category. In the RBL group 20% patients complained of post banding mild pain and at the end of 12 months 98.6% patients were free of cardinal symptoms of bleeding and prolapse. In the sclerotherapy group 14% patients complained mild pain after the injection and at the end of 12 months 88% patients were free of cardinal symptoms of bleeding and prolapse. RBL was found to be cost effective and showed better short and long term results, with low recurrence rate as compared to injection sclerotherapy. Therefore, RBL should be considered as the procedure of choice for early degrees of haemorrhoids.

Key words: Haemorrhoids, rubber band ligation, injection sclerotherapy

Haemorrhoids, is a Greek word meaning blood flowing. They are dilated internal anal venous plexus with in an enlarged displaced anal cushion.

Haemorrhoids are common surgical problems and according to data from National Centre for Health Statistics, USA, Ten million people complain of haemorrhoids, a prevalence rate of 4.4%. Peak age is between 35-65 years, and there is subsequent decline after 65 years[1]. Haemorrhoids are rare before 20 years and men are more frequently affected than womenHaemorrhoids are more common in European nations due to their high refined diet as compared to Asians.

Clinically haemorrhoids present as bleeding per rectum, prolapse, discharge and pain when complication supervene. When left untreated may complicate as profuse bleeding, thrombosis, strangulation, ulceration, gangrene and pylephlebitis.

Despite of the attention it has received for centuries the cause of haemorrhoids is still unknown. Haemorrhoids are not varicosities, instead they are vascular cushions composed of arterioles, venules and arterio-venous communications that slide down, become congested and bleed[2]. Although chronic constipation has been considered the cause of haemorrhoids, All patients with haemorrhoids are not necessarily constipated. However, it is a well known fact that constipation aggravates symptoms of haemorrhoids. Other factors that have been implicated in causation of haemorrhoids are heredity, erect posture, absence of valves in venous plexuses, pregnancy and pelvic tumors[3]. Paradoxically diarrhoeal states also predispose to the development of haemrrhoids.

Internal haemorrhoids can be divided into following categories:-

First degree haemorrhoids are those that bulge into the lumen of the anal canal and produce painless bleeding during daefecation (a splash in the pan).

Second degree haemorrhoids are those that protrude outside the anal verge at the time of a bowel movement but reduce spontaneously.

Third degree haemorrhoids are those that prolapse spontaneously or at the time of bowel movement and require manual replacement.

Fourth degree haemorrhoids are those that are permanently prolapsed and irreducible despite of attempts at manual replacement.

Mixed haemorrhoids are those in which elements of internal and external haemorrhoids are present.

In circumstances where the blood supply to the prolapsed haemorrhoids is cut off because of spasm of the sphincter, strangulated haemorrhoids are said to exist. In acute stage this will be a rather painful event for the patient. Progression results in thrombosis and gangrenous haemorrhoids.

Haemorrhoids occur in either sex and despite the predisposing factor of pregnancy, haemorrhoids predominate in men. A mucoid discharge is frequently present with prolapsed haemorrhoids. Pruritis almost always follows this discharge. Pain is absent unless complications supervene. Anaemia can be caused by persistent bleeding.

Internal haemorrhoids cannot be felt unless they are thrombosed but digital examination is essential to rule out

any other pathology, esp. rectal carcinoma. On proctoscopy, the internal haemorrhoids bulge into the lumen of the proctoscope, just below the anorectal ring, especially when the patient is asked to strain. Sigmoidoscopy should be done as a precaution in every case to rule out any other pathology. Rectal polyps, inflamatory bowel disease, melanoma, carcinoma, rectal prolapse, inter-sphincteric abscess and perianal endometrioma must be considered in the differential diagnosis of the haemorrhoids[4].

Management depends upon the degree of haemorrhoids, choice of the surgeon and the facilities available. However, following treatment modalities are available:

1. Modification of diet composition, a high roughage diet and regulation of bowel habits.
2. Injection sclerotherapy with STD (sodium tetradecyl sulphate) or 5% phenol in almond oil.
3. Rubber band ligation
4. Infra-red photocoagulation.
5. Cryotherapy
6. Bipolar and direct current therapy.
7. Lords anal stretch.
8. Laser treatment
9. Open and closed haemorrhoidectomy.

Efforts are being made to treat the patients of haemorrhoids as outpatient and ambulatory procedure and for this, the modalities available are 1,2,3, and 4. The purpose of this study was to compare and contrast between rubber band ligation (RBL) and injection sclerotherapy in first and second degree haemorrhoids.

Injection sclerotherapy has been the orthodox treatment for early haemorrhoids (first and second degree). Rubber band ligation is a relatively new modality of treatment practised at few centres in Lahore.

Material and method

The study was conducted at Surgical Unit-I of General Hospital and Surgical Unit-III, Services Hospital, Lahore. This study included 50 patients in each category divided randomly and the materials used were as follows:

1. Proctoscope.
2. Baron's gun.
3. Rubber bands.
4. Atraumatic pile holding forceps
5. Gabriel syringe
6. Inj. STD(Sodium Tetradecyl Sulphate).

A: Rubber band ligation (RBL)

This technique was first described by Blaisdell in 1958, and later on special gun device was developed by Barron in 1963[5]. This is basically a fixation technique. The objective is to place a latex band around the mucosal part of the internal haemorrhoid, so that it becomes ischaemic, necrosed and sloughs away in one to two weeks leaving a clean granulating wound.

The advantage of this technique is that it is simple and almost painless. No local or general anaesthesia is required and there is no need of hospitalization or time off work. In our study not more than two piles were banded in one sitting and the procedure was carried as following:

1. The rectum should be empty, as it is important to have a clear view of the rectum and anal canal to permit accurate placement of rubber bands.
2. The patient was placed in left lateral position.
3. Rubber band loaded on to the gun or ligator.
4. Proctoscope was introduced and positioned so as to let the haemorrhoids protrude into it.
5. The gun was introduced and through it the mucosal part of the internal haemorrhoid was grasped with atraumatic pile holding forceps and drawn in. The gun was fired, resulting in placement of the rubber band at the base of the pedicle, 2cm above the dentate line. The ligated internal haemorrhoid changes colour and becomes cyanotic.
6. The procedure was repeated with the next pile.
7. Post banding a bulk laxative was prescribed along with non-narcotic analgesic as required.
8. Patients were re-examined after two and four weeks and further bands applied if necessary.

Post banding complications are unusual if correct technique has been used. At the time of application patient may feel some discomfort, but this should last only a few minutes. Few patients have dull aching pain in rectum which lasts for about 48 hours and can be controlled with analgesics.

If the anal canal mucosa below the dentate line is caught in the band, there will be immediate severe and persistent pain and the band has to be removed by cutting with scissors or knife. Occasionally when the band fails to separate, pain may occur about seven days post-banding and band is removed if the symptoms are severe.

Bleeding may occur from tearing of the haemorrhoid with grasping forceps. This is controlled when the band is in place. Secondary haemorrhage may occur 10-16 days postbanding.

B: Inj. Sclerotherapy :--

Injection sclerotherapy has been the orthodox treatment for early haemorrhoids. The aim of injection sclerotherapy is to produce a sub-mucosal fibrosis around the vessel of the internal haemorrhoidal plexus, which obliterates them and thereby causes the haemorrhoid to shrink. It is suitable for all first degree and the smaller second degree haemorrhoids. The solutions used are 5% Phenol in almond oil, 5% aqueous solution of quinine urea, 5% carbolic acid in water or STD.

In our study solution of 1% STD was used. STD is Sodium Tetradecyle Sulphate and is also available in 2%, 3% and 5% solutions, but higher concentrations produce

more irritation and greater slough. Injection sclerotherapy was carried out as an outpatient procedure as following :

1. The rectum should preferably be empty before injections are given.
2. The procedure was performed while patient was in left lateral position, however, lithotomy or buie positions may be used.
3. The proctoscope was inserted into the rectum, then withdrawn until its tip was just below the anorectal ring.
4. Then look for haemorrhoids at 3°, 7° and 11° O' clock positions, and if present the sclerosant was injected into the submucous space over the pedicle of the pile. The overlying mucosa should blanche and small capillaries over it become visible. 1/2cc of STD was given at each pedicle.
5. Post injection a bulk laxative was prescribed along with non-narcotic analgesic as required.
6. Patients were re-examined after 2 and 4 weeks and reinjected if necessary.

Care was taken not to inject into mucosa as this causes an intense white area which ultimately ulcerates. If injection is given too deep, no distention occurs and there is resistance to the injection.

Serious complications are rare but dull aching pain, faintness, bleeding and injection ulcer (which may feel and look like a small carcinoma) may occur. Rare complications such as submucosal abscess, haematuria and prostatic abscesses have been reported when injections have been made too deeply[6].

All patients were advised about dietary and bowel habits so as to avoid constipation and straining while passing stools.

Results

In our study one hundred (100) patients with 1st and 2nd degree haemorrhoids were randomly allocated for RBL and injection sclerotherapy (50 patients in each group). Seventy two (72) patients were males and twenty eight (28) were females. The age range was between 20-75 years, mean age being 35 years in males and 32 years in females. Incidence among different age groups is shown in table 1

Table 1. Age incidence

Age (Years)	Male	Female
20-30	28	10
31-41	21	8
41-50	10	6
51-60	8	3
61-70	5	1

Rubber band ligation was done in fifty (50) patients, thirty eight (38) were males and twelve (12) were females. Fifteen (15) patients had taken some form of conservative treatment in the form of ointments, tablets or medicines from hakeems. Fifteen patients (37.5%) were constipated chronically. Sixteen patients (32%) presented with 1st degree and thirty four (68%) with 2nd degree haemorrhoids(bleeding and prolapse). Two females were pregnant in their second trimester. Ten patients (20%) complained of post banding pain and tenesmus which was relieved by Diclofenac Sodium. Two patients (4%) required removal of bands as their symptoms persisted (bands were reapplied sucessfully in the next session). Six patients (12%) complained of bleeding after band application which settled without any intervention. Three patients (6%) developed infection which required a course of antibiotics. Not a single patient suffered from any serious complication. Only one patient (2%) had to undergo haemorrhoidectomy,because of symptomatic recurrence. Table2.

Table 2: Degrees of the Haemorrhoids

Procedure	First Degree	Second Degree
RBL	16 (32%)	34 (68%)
Inj.Sclerotherapy	20 (40%)	30 (60%)

Patients had a follow-up after two weeks, four weeks, three months, six months and twelve months. In this group only five patients did not turn up after four weeks, when they were found to be symptom free. Thirty one patients (62%) had satisfactory results after one application of bands; fourteen patients (28%)required two; and five patients (10%) required three applications. Table 3

Table 3: No. of sessions in each category

No. of Sessions	RBL	Inj. Sclerotherapy
One	31 (62%)	23 (46%)
Two	14 (28%)	18 (36%)
Three	5 (10%)	9 (18%)

Eighty percent (80%) of the patients were prolapse free and sixty five percent (65%) were free of bleeding per rectum at the end of three (3) months. At the end of twelve (12) months more than ninty eight percent (98.6%) were free from cardinal symptoms of bleeding and prolapse.

Injection sclerotherapy was also given to fifty (50) patients, thirty four (34) were males and sixteen (16) were females. Seven patients had already taken some form of conservative medicines / and treatment from hakeems. Thirty eight patients (76%) were chronically constipated. Twenty patients (40%) presented with 1st degree and thirty patients (60%) with 2nd degree haemorrhoids. One female was pregnant in her last trimester. Seven patients (14%) felt mild pain relieved by Diclofenac Sodium tablets. Nine patients (18%) suffered from bleeding after sclerotherapy and one patient suffered from fainting which settled with rest and conservative treatment. Signs and /symptoms were not relieved in twelve patients (24%) and these patients underwent successful rubber band ligation. Two patients (4%) developed infection but this settled with a course of

antibiotics. No serious complication occurred in a single patient..

Patients were followed–up after two weeks, four weeks, three months, six months and twelve months. Seven patients (14%) failed to return after three months, being symptom free. Twenty three patients (46%) required 1 session; eighteen patients (36%) required two sessions and nine patients (18%) required three sessions of injection sclerotherpy. Tale 4.

Table 4: Complications

Complication	RBL	Inj. .Sclerotherapy
Pain/Tenesmus	10 (20%)	7(14%)
Bleeding	6(12%)	9(18%)
Infection	3(6%)	2(4%)
Recurrence	1(2%)	12 (24%)

Sixty seven percent (67%) of the patients were free from prolapse and fifty eight percent (58%) of the patient were free from bleeding per rectum at the end of three months. At the end of 12 months eighty eight percent (88%) were free from cardinal symptoms of bleeding and prolapse.

Discussion

Haemorrhoids are a very wide spread disease, causing pain by thrombosis, fear by bleeding and a burden by weeping and pruritis[7] Usually multiple remedies are used by these patients without medical advise and for several reasons consultation with a specialist is often delayed. Feelings of embarrassment or apprehension about surgery may make patients, especially the women, reluctant to discuss anorectal symptoms with their physician. In Pakistan the large prevalence of popular misconception adds to this and occasionally makes adequate treatment difficult.

The purpose of this study was to define and highlight the real advantages (efficacy, better short and long term results with low recurrence rates and cost effectiveness) of rubber band ligation as compared to the injection sclerotherapy with STD (Sodium tetradecyl sulphate) in early degrees of haemorrhoids.

This technique (RBL) is easy and carreid out as an outpatient or outdoor procedure. It is painless and requires neither any fancy equipment nor any anaesthesia. It can be performed even in those remote areas of Pakistan where electricity is not supplied and a torch light is sufficient .RBL enables to achieve results just as valid as those of traditional methods with the added advantage that it enables the patient to immediately return to his normal working activity[8].

The advantages of rubber band ligation are indisputable; it offers the possibility of a definitive and ambulatory solution without the necessity of hospitalisation and anaesthesia. It is repeatable in the time and has an overall percentage of complications (0.4%) inferior to that of the surgical haemorrhoidectomy[9]. . Bat L et al in his study concluded that rubber band ligation is a miniature haemorrhoidectomy and reliance on this method is justified in treating symptomatic haemorrhoids[10,11,12,13].

From this study we have concluded that the RBL is a better modality of treatment for early degree haemorrhoids, as compared to injection sclerotherapy. There is early relief of cardinal symptoms of bleeding and prolapse. Although postbanding complain of pain is more, the short and long term results are better with low overall recurrence rate (2%),compareable with other studies[7,14,15].

There is early relief of cardinal symptoms of haemorrhoids e.g. prolapse and bleeding. Long term results are also better as compared to injection sclerotherapy. The recurrence rate is low.) RBL demonstrated greater long term efficacy[16,17]

RBL was superior than sclerotherapy in response to treatment for all haemorrhoids, with no difference in complication rate. Patients treated with sclerotherapy were more likely to require further therapy than those treated with RBL. We cannot inject a pedicle thrice or more, on the other hands rubber bands can be repeated safely whenever there is recurrence say after three years.. RBL is recommended as the initial mode of therapy for grades 1 to 3 haemorrhoids. In RBL there is controlled sloughing of the mucosa while in injection sclerotherapy, the sloughing of the mucosa is not controlled[18,19,20].

Although in our study only 1st and 2nd degree haemorrhoids were included, RBL has also been successfully applied in 3rd and even 4th degree haemorrhoids. It is also safe in patients with liver disease and portal hypertension[21,22,23,24].

RBL is also cost effective as compared to injection sclerotherapy[25]. One rubber band costs about Rs.10/- whereas one vial of Injection STD 1% costs about Rs.300/- .In Pakistan most of the patients are those who are on daily wages. The patient can go to his work right from the outpatient department and there is no need for time off work. So his daily wages are not disturbed.

Inspite of all these benefits, RBL is not widely practised even at higher institutions. The rubber bands are not available in Pakistan and same is true for the Baron's gun. This can only be done by popularizing the method both at graduate as well as postgraduate levels. It is also important to learn correct method of band application and no doubt this would come with experience, however, initial application must be supervised by a trained person. Comlications are much less if RBL is carried out by an expert.. the technique mastered and a close patient follow up maintained[26]

Proper anal hygiene and correction of chronic constipation are essential to prevent recurrence of haemorrhoids.[27].

RBL should be considered as procedure of choice for early degrees of haemorrhoidal disease. Awareness among the public should be produced about the safety, efficacy of this procedure by the use of posters, pamphlets, and health

education via print and electronic media. This is very important as haemorrhoids are common, and in a country like Pakistan people feel shy of discussing their problem to a doctor and are scared of operations.

Rather they go to hakims, jarahs and quacks. Why the patients go to quacks or hakims for the treatment of the haemorrhoids. The answer is three fold.

1. The fear of operation. It has been stuck in the mind of the public that the doctor treat haemorrhoids only by operation and it is a major undertaking, so they adopt short cut and go to the hakeems or quacks.

2. Fabulous and attractive propaganda of quacks or hakeems. In almost every city small or large, the walls are chalked out with attractive words e.g. **"Aik Haftay Mein Khuni Bawaseer Ka Mukammal Elaj" or "operation key baghair bawaseer a mukammal khatama"**. These words attract the patients and they not only waste their money and time but their disease also becomes more advanced and complicated.

3. Illiteracy of course is the major problem.

We can counteract these misconcepts by (a) telling the public that haemorrhoids can be treated without operation and without pain in outpatient department at a very low cost.. (b) Proper training of doctors at graduate and postgraduate level.

We conclude that rubber band ligation should be the first choice among treatment modalities. This procedure is ideal in pregnant females, elderly patients, patients with portal hypertension and in those who are unfit for surgery. Therefore a combined effort is required to promote RBL as the procedure of choice for treatment of early degree haemorrhoids as it is safe, simple, effective and economical as compared to injection sclerotherapy.

References

1. Bayer I., Myslovaty B., Picovsky BM., Rubber band ligation of haemorrhoids: convenient and economical treatment. J. Clin. Gastroenterol. 1996 Jul; 23(1): 50-2.
2. Philip HG, Santhat N Principles and Practice of Surgery for Colon, Rectum and Anus by, 1992.page 1171-72
3. Dennison AR., et al., New thoughts on the etiology of haemorrhoids and the development of non-operative methods for their management. Minerva Chir. 1996 Apr; 51(4): 209-16.
4. Scarpa FJ, Hillis W, Sabetta JR, Surgery 1988 Mar. Short Practice of Surgery, Bailey & Loves, 21st edition page 873.
5. Vanheuverwyn R., et al., Haemorrhoids: Review. Acta Gastroenterol. Belg. 1995 Sep-Dec; 58(5-6): 452-64.
6. Newstead GL, Gastroenterol Jpn, 1991 Jul. Outpatient Surgery by G.J.Hill page 607-9.
7. Butters M., Haemorrhoids-etiology, symptoms and therapy. Ther. Umsch. 1997 Apr; 54(4): 185-9.
8. Di-Giorgio A.,et al., Ambulatory treatment of haemorrhoidal pathology with elastic bands according to a modified Barron technique. Ann. Ital. Chir. 1997 Sept – Oct; 68(5): 687-92.
9. Pezzullo A.,Palladino E., Rubber band ligation of haemorrhoids-5 year follow-up.G.Chir. 2000 May; 21(5):253-6.
10. Wrobleski DE., Rubber band ligation of haemorrhoids. R. I. Med. 1995 Jun; 78(6): 172-3.
11. Dodi G: Int J Colorectal Dis 1992 Jan.
12. Rasmussen OO, Larsen KG, Naver L, Christiansen J: Eur J Surg 1991 Oct.
13. Murie JA, Sim AJ, MacKanzie I: Br J Surg 1982. Sept.
14. Shemesh EL, Kodner IJ, Fry RD, Neufeld DM, Dis Colon Rectum 1987 Mar. Snell's Anatomy page 348, 349.
15. Jeffery PJ, Ritchie SM, Miller W, Hawley PR: Postgrad Med J 1980 Dec
16. Savioz D.,et al.,Rubber band ligation of haemorrhoids:relapse as a function of time. Int. J. Colorectal Dis.1998; 13(4): 154-6.
17. Fried M, Peskova M, Rozhl-chir, 1993 April: Farquharson's Textbook of operative Surgery page 513.
18. Bat L, Melzer E, Koler M, Drezanick Z, Shemesh E: Dis Colon Rectum 1993, Mar.page:388-389.
19. Walker AJ, Leicester RJ, Nicholas RJ, Mann CV: Int J Colorectal Dis 1990 May 5(2):113-6.
20. Watson SJ.,Phillips RK., Haemorrhoidectomy: current status. Chirurg. 1996 Mar; 67(3): 213-21.
21. MacRae HM.,McLeod RS., Comparison of haemorrhoidal treatments: a meta-analysis. Can. J. Surg. 1997 Feb; 40(1): 14-7.
22. Dickey W., Garrett D.,Haemorrhoid banding using videoendoscopic anoscopy and a single-handed ligator.Am. J. Gastroenterol. 2000 Jul; 95(7): 1714-6.
23. Komborozos VA., et al.,Rubber band ligation of symptomatic internal haemorrhoids:result of 500 cases.Dig.Surg.2000; 17(1): 71-6.
24. Basile M.,et al., Rubber band ligation of haemorrhoids: a four- year experience. Minerva Chir. 1996 Dec; 51(12): 1067-70.
25. Marshman D, Humber PJ Jr, Timmerman W, Simmonton CT, Odom FC, Kaplan FR: Dis- colon rectum, 1989 May.page 340-51.
26. Spallanzani A.,et al., Rubber band ligation of haemorrhoids: Our experience.Minerva Chir. 1997 Sept; 52(9): 1047-51.
27. Pfenninger JL., Surrell J., Non surgical treatment options for internal haemorrhoids. Am. Fam. Physician 1995 Sep 1; 52(3): 821-34,839-41.