Cryosurgery and ligation (Cryo-plication) of symptomatic hemorrhoids – “an ideal procedure”. Initial experience and review of literature

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Abstract Haemorrhoidal disease has been in limelight again due to emerging newer modalities of treatment over the last decade. The range varies from simple rubber band ligation to stapled rectopexy. But a rational and ideal approach is still unclear. This study aims to analyze the ideal modality in today's scenario of managing haemorrhoidal disease. A prospective study on 12 patients, was carried out over 24 months in a surgical unit of a tertiary care hospital. The pain, bleeding, rectal discharge, anal stenosis were observed. Results show that the Cryoplication procedure had no anal stenosis, minimal bleeding, less pain and cost was effective. When compared with other contemporary modalities it has lesser complications and short and easy learning curve.

Keywords Haemorrhoidal disease · Cryoplication

Introduction

Haemorrhoidal disease is one of the most common among benign diseases known since Egyptian era. The first surgical treatment was described in the Hippocratic Treatises of 460B.C. But the aetiopathogenesis of hemorrhoids is still unclear [1]. Approximately 60–80% of people in western countries experience haemorrhoidal complaints at least once during their lifetime, which is attributed mainly to diet and life-style pattern. Incidence increases with age and 10% of above group will need surgical treatment. Scenario is no better in India despite our diet being richer in fibers.

According to Thomson, haemorrhoids are “anal cushions” which assist in continence of air and liquid by providing a final seal of the anal canal. This is a typical “angiocavernous structure” with arterial-venous shunts allowing the blood volume regulation which increases and decreases their size to provide a “watertight” seal [1]. The emptying and filling is believed to be controlled by receptors, which detect the presence of gas and liquid in the anal canal. There are three main haemorrhoids at places of origin of rectal veins i.e. 3, 7 and 11 o'clock position with the patient in lithotomy position. Starting with submucosal channels these vessels ascend through muscle layer and ultimately become subserosal. When a person with constipation strains during defecation these vessels get pinched by muscle ‘pinch valve action’ and venous return during the period of straining practically stops while arterial flow continues. Thus pooling and formation of dilated, capacitated channels occurs over a period of time known as haemorrhoids. Moreover these vessels have no valves and backpressure in the portal venous systems will therefore fill the haemorrhoidal plexus.

With many treatment modalities being available and none being labeled as Gold standard, it is difficult for

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surgeons to make a decision [2]. In this article different modalities of haemorrhoidal disease treatment are compared with cryoplication.

Material and methods

Twelve consecutive patients of symptomatic hemorrhoids were studied, of whom 4 opted for open hemorrhoidectomy and 8 underwent cryoplication procedure.

Pre-operative period

All patients were prepared for surgery on an outpatient basis. Relevant investigations included ultrasound abdomen especially for portal hypertension, in addition to routine hematological and biochemical investigations. All patients were admitted a day prior to surgery.

Anaesthesia and patient position

All patients were given spinal anesthesia and positioned in lithotomy position.

Surgical technique

Prophylactic antibiotic (cefoperazone + sulbactam) 1 gm was given intravenously. Manual anal stretching (Lord's procedure) was performed till the sensation of giving way (accommodating 4 fingers easily) was achieved. Cryosurgical probe was applied on the haemorrhoidal mass and the mucosal aspect of anal verge. Ice ball formation 2–3 times i.e. cryo exposure for approximately 10–15 seconds was followed by plication ligation of haemorrhoidal mass (cryoplication). This was performed at 3–4 places using '000' Chromic Catgut interrupted sutures. The mucocutaneous deformities or anal tags were removed and haemostasis achieved with electrocautery. Gentle anal packing with xylocaine jelly coated pack was performed (Figs. 1–6).

Post-operative period

Oral intake was resumed four hours following surgery. A second dose of antibiotic was repeated intravenously after 12 hours. Subsequently the patients were switched over to oral ciprofloxacin-Tinidazole combination b.i.d. for 5 days. Anal pack was removed on post op day 1 and xylocaine jelly 2% applied locally. Patients were put on Sitz bath, fiber diet and mild laxatives for next 14 days at the time of discharge on post op day 1 (Fig. 7).

Follow-up

The study protocol included analysis of degree and duration of post-operative pain, bleeding, discharge per rectum, stay

Fig. 1 External piles

Fig. 2 Primary piles at 3,7,11 O'clock position and small secondary piles mass at 7 O'clock position

Fig. 3 Cryoprobe application and ice ball formation

Fig. 5 Wound after completing the procedure

Fig. 4 Ice ball formation (Probe removed)

Fig. 6 Xylocaine- Povidone iodine pack in situ

in hospital, hospital expenses, anal stenosis and any significant complications at days 7, 14 and 30, and thereafter if indicated clinically.

An extensive Pub Med search was performed for the treatment options of hemorrhoids.

Results

The study included 12 consecutive patients, of whom 4 patients (Group A) opted for open hemorrhoidectomy (Mil-

ligan-Morgan hemorrhoidectomy) and 8 patients (Group B) opted for Cryoplication procedure. The mean duration of surgery, by the same surgeon, was 75 minutes for group A patients as compared to 45 minutes for group B. The blood loss was significantly less in group B patients (Table 1). Pain in group B was less as compared to group A. The mean duration of post op discharge or bleeding per rectal was observed up to 10.5 days in group A and 7.0 days in group B. Anal stenosis was seen in 1 case in group A. Post operative stay and consumable expenses were comparable in the both groups.

Fig. 7 Status- Post op Day 1

Discussion

On Pub Med search there is ample data available supporting combined use of cryosurgery and plication in cases of surgical treatment for piles [3]. Although this study is a very small sized observational. Post-operative pain after open technique is very distressing in most of the patients up to 2 weeks or more [4, 5]. Anal stenosis is seen due to loss of mucosal lining and scarring in 2.9–5.0% cases after open hemorrhoidectomy [6]. Stapled hemorrhoidectomy is frequently used technique for correction of piles as well as prolapsed rectal mucosa [7]. This technique is new and needs long-term evaluations such as recurring instrumentation cost which is approximately 14,000 INR per case apart from other consumables. There have been reports of some serious complications like rectovaginal fistula [8], sigmoid perforation [9], stenosis, fistula, anastomotic dehiscence and sometimes reoperation was required in 3–15% of stapler hemorrhoidectomy [1, 10]. Radio frequency ablation and plication of piles in combination have been used with good results [11]. Here the limitation is cost of infrared coagulator which costs around 4, 50,000 INR versus cryo apparatus costing a mere 10,000 INR. The cryosurgery and rubber band ligation in combination has been studied in 205 patients with grade I–III piles and it was found that 81.8% patients gave an account of good result [12]. The important point in preventing postoperative edema in cryoplication is

Table 1 Analysis of data observed in 2 groups of patients

		Group A (n=4)	Group B (n=8)
Duration of surgery		75 min	45 min
Blood loss		50–100 ml	<10 ml
Consumables or drugs expenses [@]	Includes- Chromic Catgut, Nitrous oxide gas, antibiotics etc.	2500 INR	2800 INR
Pain	Tolerable (no analgesics)	0	5
	Analgesics required after 3 days	4 (100%)	3 (38%)
Duration of post-op bleeding / staining per rectum		10.5 days	7.0 days
Anal stenosis		1 (25%)	0 (0%)
Post op stay		2 days	2 days

[@]Alchemist Hospital being a Private corporate hospital the total expense to the patient was same with either method.

to avoid freezing anal verge and freeze only on the rectal side of anal verge in 2–3 stages on hemorrhoidal mass [13].

The cryoplication technique has been studied in 25,000 patients at Rudd Clinic, Toronto and found to be most suitable as a day care procedure, cost effective and recommended all fellow surgeons to adopt this technique [3].

These 2 procedures i.e. cryo application and plication when combined together act complimentary to each other and the problems observed in past because of individual procedure are obviated. The profuse discharge, edema and bleeding during shedding of piles in second week after cryosurgery alone are not seen. Moreover failure rates of doing plication alone are checked.

Therefore, in the Indian scenario where availability of apparatus, simplicity of technique (short learning curve), initial investment as well as recurring cost of procedure is prime consideration, the combination of cryosurgery and plication is the most appropriate procedure.

References

- Hardy A, Chan CLH, Cohen CRG (2005) The surgical management of haemorrhoids –a review. *Dig Surg* 22:26–33
- Gupta PJ (2005) Ambulatory hemorrhoid therapy with radiofrequency coagulation. Clinical practice paper. *Rom J Gastroenterol* 14:37–41
- Rudd WW (1989) Ligation and cryosurgery of all hemorrhoids. An office procedure. *Int Surg* 74:148–151
- Amorotti C, Mosca D, Trenti C, Pintaui U (2003) Usefulness of lateral internal sphincterotomy combined with hemorrhoidectomy by the Milligan Morgan's technique: result of a prospective randomized trial. *Chir Ital* 55: 879–886
- Balasubramaniam S, Kaiser AM (2003) Management option for symptomatic hemorrhoids. *Curr Gastroenterol Rep* 5: 431–437
- Sielezneff I, Salle E, Lecuyer J, Brunet C, Sarles JC, Sastre B (1997) Early postoperative morbidity after hemorrhoidectomy using the Milligan-Morgan technique. A retrospective study of 1134 cases. *J Chir* 134:243–247
- Staude G (2004) Surgical treatment of hemorrhoids. *Wien Med Wochenschr* 154:56–64
- McDonald PJ, Bona R, Cohen CR (2004) Rectovaginal fistula after stapled hemorrhoidopexy. *Colorectal Dis* 6: 64–65
- Amosi D, Werbin N, Kashtan H, Skornik Y, Greenberg R (2003) Stapled hemorrhoidectomy – early experience in 30 patients. *Harefuah* 142:654–658, 720
- Jongen J, Bock JU, Peleikis HG, Eberstein A, Pfister K (2006) Complications and reoperations in stapled anopexy: learning by doing. *Int J Colorectal Dis* 21:166–171
- Gupta PJ (2003) Radiofrequency ablation and plication of hemorrhoids. *Tech Coloproctol* 7:45–50
- Krasznay P (1990) Ambulatory treatment of hemorrhoids using rubber band ligation and cryodestruction. Early results. *Orv Hetil* 131:467–468
- Yamamoto Y, Sano K (1982) Cryosurgical hemorrhoidectomy: how to prevent the postoperative swelling and prolapse. *Cryobiology* 19:289–291