

# A CLINICAL TRIAL OF COMBINED INFRARED COAGULATION AND RUBBER BAND LIGATION AS AN ALTERNATIVE TO HAEMORRHOIDECTOMY IN THE MANAGEMENT OF THIRD- AND FOURTH-DEGREE HAEMORRHOIDS

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## ABSTRACT

### BACKGROUND

Purpose of this study is to show that for grade III & IV haemorrhoids, surgery can be avoided in selected group of patients. Fine faecal incontinence due to damage of anal cushion is a major concern of patients who under gone surgical procedures. Combined Infrared coagulation and rubber band ligation is completely safe and can be done as an office procedure.

### METHODS

We have included 25 patients with grade III & IV haemorrhoids in this study. They were given 3 courses of infrared coagulation and rubber band ligation at an interval of 2 weeks for 8 weeks period.

### RESULTS

48% of patient had complete cure and 36% had improvement in symptoms and 16% had no improvement at all.

### CONCLUSIONS

Management of grade III & IV normally involves haemorrhoidectomy. But combination of non-invasive procedure (infrared coagulation and rubber band ligation) shows symptoms free results in 48% of cases in this study. Most of the patients are not willing for surgical procedures due to excess apprehension regarding pain and incontinence. According to this study, surgery can be avoided in selected cases.

### KEYWORDS

Infrared coagulation (IRC), Rubber band ligation (RBL), Anal cushion, Haemorrhoids, Haemorrhoidectomy.

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### BACKGROUND

The incidence of anorectal disease is increasing in the society due to change in food habits. The "fast food" culture is influencing the whole section of society especially adolescents and young adults. According to studies 15% of population is suffering from constipation worldwide prevalence of haemorrhoids is found to be 4.4%. Race, genetics, age, location and socioeconomic status are factors concerned with aetiology.<sup>1</sup> Caucasians are found to have increased incidence compared to other race. It is more attributed to low residue diet. Inborn errors in collagen fibre synthesis is another relevant factor. It is more common when intra-abdominal pressure increases due to obesity, constipation and pregnancy. Symptoms of haemorrhoids include bright red painless bleeding, mucus discharge,

prolapse and pain only with obstruction and other complications. Patients often complaints perianal itching or discomfort due to mucus discharge from displaced rectal mucosa. Faecal soiling is another contributing factor for itching due to imperfect closure of anal canal by the large pile mass. In elderly, fragmentation of connective tissue occurs leading to failure of anal Cushion to retract after defaecation.<sup>2,3</sup>

According to the modern view haemorrhoid is considered as a symptomatic anal cushion. It is located above the dentate line of consisting of mucosa, sub mucosa, muscular and connective tissue.<sup>4</sup> The sub mucosa contains of vascular network. Various forces acting on the anus causes movement of anal cushion and mucosal injury. With ageing process anal cushion loses its elastic property hence fail to retract after defecation. It is the real mechanism behind the pathogenesis of haemorrhoids according to the recent studies.

According Goligher, haemorrhoids are classified in to four types based on clinical prolapse.

- First degree - bleeding per rectum, no prolapse.
- Second degree - prolapse, but reduces spontaneously.
- Third degree - prolapsed, but to be manually reduced.
- Fourth degree - permanently prolapsed.

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Management protocol varies according to the degree. For first- and second-degree haemorrhoids life style modification,<sup>5</sup> sclerotherapy,<sup>6,7</sup> infrared coagulation<sup>8,9,10</sup> are successful. Rubber band ligation gives good result for second degree haemorrhoids. third and fourth degree need surgical procedures. Which include Open haemorrhoidectomy,<sup>11</sup> closed haemorrhoidectomy,<sup>12</sup> stapler haemorrhoidectomy<sup>13</sup> and haemorrhoid artery ligation (HAL).<sup>14,15</sup> Minimal invasive procedures like laser and radiofrequency ablation may be also tried in many centres.<sup>16</sup> It is worthwhile to study the late post-operative complications. The minor injury to anal sphincter complex is not properly evaluated since majority of patients tolerate the problem. After surgery a segment of patient population complains about itching in the perianal region. It is due to perianal faecal soiling from fine faecal incontinence as a result of the injury of anal cushion.

The question is, how to avoid such morbid situation? the role of non-invasive or minimal invasive procedure is relevant in this scenario. In this study we used infrared coagulation and rubber band ligation for the treatment of advanced haemorrhoids. Here three doses of infrared coagulation is given at an interval of 2 weeks followed by rubber band ligation given to all cases 2 weeks after the 3<sup>rd</sup> dose of IRC. Two weeks after the RBL all patient were subjected to digital rectal and proctoscopic examination and final grading of haemorrhoids is done. Detailed history from all patients is recorded in special proformas.

**METHODS**

25 patients with grade III & IV were selected for this study. Among this 10 were grade IV and 15 were grade III. Study period was from 2015 to 2017 from a single institution (2-year period).

**Selection Criteria**

Only patients with grade III & grade IV haemorrhoids are included in this study. Age group is fixed to 30-60 years. Patients with external haemorrhoids, multiple anal tags fissure in ano, fistula in ano, deformed anus, patient treated with surgery in the past (haemorrhoid recurrence), those with colitis, diabetes, circumferential haemorrhoids, ischemic heart disease were excluded from this study. All the patients selected for this study were well informed about the procedure and about the possible final outcome. Only with full consent are they included in this trial. They are also given advice regarding life style modification. No drugs were given during the period. They were advised to take three glasses of water three hours prior to food, avoid straining during defaecation, use abundant vegetables, avoid smoking and alcohol. Moreover, they were told to take 30 minutes brisk walking daily. These patients are divided in to three categories. Age group 30-40 years, 41-50 years, 51-60 years. 15 males and 10 females were included in this study (see Table 1). Period of treatment was 8 weeks and was completed by 4 sitting at an interval of 2 weeks 3 doses by infrared coagulation were given every two weeks in the 6 weeks period. Rubber band ligation is given 2 weeks after

the last dose of IRC for all patients having symptoms. Two weeks after RBL all patients were strictly evaluated by clinical examination including history, digital rectal and proctoscopic examination of all cases. Detailed history from the patients is also recorded in special proformas.

Analysis of data shows in 12 (48%) cases are free of symptoms, 9(36%) cases had improvement in the symptoms and 4(16%) cases have no change at all (see Table 2).

**RESULTS**

48% of the patients had complete cure, 36% had improvement in the symptoms and 16% had no improvement.

Age Group	Male n-15	Female n-10	Total n-25
30-40	4 (26)	1 (10)	5 (20)
41-50	6 (40)	7 (70)	13 (52)
51-60	5 (33)	2 (20)	7 (28)
Values in parenthesis are percentages. chi-square: 2.2527, p-value : 0.689385			
<b>Table 1. Distribution of Cases According Age and Sex</b>			

Age Group		Analysis of Study		
		Symptoms Free n- 12	Slight Improvement n-9	No Change n-4
30-40	5	2 (40)	2 (40)	1 (20)
41-50	13	7 (54)	4 (31)	2 (15)
51-60	7	3 (43)	3 (43)	1 (14)
Values in parenthesis are percentages. Chi-square: 0.4762, p-value: 0.975777				
<b>Table 2. Outcome of Patient Analysis</b>				

**DISCUSSION**

Various modalities of treatment is available for advanced haemorrhoid (grade III & IV) like open, closed and stapler haemorrhoidectomy.

Laser is used for ablation of haemorrhoidal vessels. Ligation of haemorrhoidal artery using Doppler is a recent innovation. All those procedures have merits & demerits. Surgical procedure are causing maximum financial burden to the patients and society. Moreover, certain minor complications seen in large segment of post-surgery cases is an eye opener. In normal healthy individual perianal region is clean and least contaminated. Fine fecal incontinence is a major problem in majority of patients undergone surgical procedure. But they fail to seek medical advice due to social stigma. This fine incontinence results from damage to the anal cushion. Another important cause seen in females being complicated vaginal delivery. The amount of anal cushion excision varies from surgeon to surgeon according to their expertise. The less experienced young surgeons have to exercise maximum caution during the dissection by removing minimum tissue of anal cushion and protecting the anal sphincter complex from injury,

hence, to avoid the problem of faecal incontinence. The basic principle is to remove minimum tissue during the procedure. Anal cushion consists of mucosa, submucosa, connective tissue muscular tissue, vascular network above the dentate line has an important role in the defecation act. Two important factors concerned with anal closure. They are anal sphincter complex and anal cushion. Major part of anal closure is done by anal sphincter complex (internal, external anal sphincters and longitudinal muscle) and final part of closure is by anal cushion. Relaxation allows anal cushion to distend fully and complete closure occurs (air tight seal). After defecation. Anal cushion act like an air tight seal hence 100% closure occurs after defecation. When this action is compromised by injury, final part of anal closure becomes incomplete which leads to perianal faecal soiling. It is the cause for excoriation around the anus which leads to itching. In this scenario an alternate to open surgery is advocated. Here we took this study by combining infrared coagulation and rubber band ligation in selected cases and result were encouraging.

### CONCLUSIONS

Management of grade III & IV normally involves haemorrhoidectomy. But combination of non-invasive procedure (infrared coagulation and rubber band ligation) shows symptoms free results in 48% of cases in this study. Most of the patients are not willing for surgical procedures due to excess apprehension regarding pain and incontinence. According to this study, surgery can be avoided in selected cases.

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