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The Place Of Infrared Photocoagulation In The Treatment Of Hemorrhoidal Disease, Experience Of The Proctology Unit: Retrospective Study.

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I. Introduction:

Hemorrhoidal disease (HD) is the most common anorectal disorder (1). Its treatment is not unequivocal, with medical treatment most often indicated as first-line therapy (1). Instrumental treatment of MH is a therapeutic option reserved for symptomatic internal hemorrhoids causing hemorrhage or reducible prolapse (2). Various techniques have been described, including Infrared (IR) photocoagulation and elastic ligation. Instrumental treatments (IT) are designed not to remove hemorrhoidal tissue, but to fix the hemorrhoids in their normal anatomical position, and reduce vascularization. Infrared (IR) photocoagulation was introduced as a basic procedure for the instrumental treatment of hemorrhoids by Neiger in 1977 (3). The principle of IR photocoagulation is to induce scarring fibrosis at the apex of the internal hemorrhoidal plexuses, with dual consequences: Fixation of the anal mucosa to the underlying muscular plane, and obturation of the submucosal vascular network originating from the superior rectal artery (4). The indications for this technique are well-defined, and it is recommended in cases of bleeding caused by stage 1 and 2 hemorrhoids after failure of medical treatment (4).

We report here on the experience of the Medicine B proctology unit at Ibn-Sina Hospital in Rabat, through a series of 120 patients followed up in our training unit for MH who benefited from several IR sessions, reviewing the data in the literature.

II. Materials and methods:

This study covers 120 patients followed for HD who underwent IR photocoagulation between January 2018 and December 2021. We studied several parameters including age, gender, symptomatology and stage of hemorrhoids. Therapeutically, we considered the indication for IR photocoagulation, its efficacy and failure.

III. Results:

476 patients were followed up for all stages of HD, of whom 120 patients underwent IR photocoagulation (34%) either immediately or after failure of medical treatment.

The mean age of the study population was 39 years (extremes: 22-71 years). The patients were divided into 74 men and 46 women, with a sex ratio M/F= 1.6.

Symptoms of HD included rectal discharge in 103 patients (86%), associated with severe anemia in 17 (14%), and proctalgia in 89 (74%). 99 patients (83%) complained of chronic constipation.

Stages I, II and III were found in 17, 40 and 63 patients respectively (14%, 33.3% and 52.5%) on proctological examination. The average number of sessions was 4, with extremes ranging from 2 to 7 sessions. All patients were offered anti-hemorrhoidal and transit-regulating medical treatment based on local venotonic therapy and laxatives.

The adverse effects of IR photocoagulation were moderate pain in 16 patients (13.3%) and minimal rectal bleeding in 11 patients (9.1%).

Follow-up was possible in all patients, with 98 (82%) reporting a clear improvement in their symptoms after IR photocoagulation at 3 months, and 22 (18.3%) failing the treatment, particularly in patients with stage III hemorrhoids, who were offered surgical treatment.

IV. Discussion:

Infrared photocoagulation is a thermal instrumental treatment based on the principle of applying radiation which is transformed into heat (1). The equipment used resembles a pistol, fitted with a tungsten bulb, emitting radiation which is transmitted onto a quartz rod and focused at the point of application (**figure 1**). The distal end of the device has a sterilizable Teflon-coated tip to prevent it from sticking to the mucosa when removed (3).

The advantage of this technique is that it can be performed in the office, without preparation or anesthesia, through a simple anoscopy during a proctological examination. The patient can be in the genu-pectoral position or in the left lateral decubitus position, with knees bent. Sessions can be repeated, usually at four-week intervals (3).

IR coagulation is performed in the consultation room, without any prior preparation. The anoscope is inserted, and the most voluminous or vascularized packets are identified (5). Locate the position of the internal hemorrhoids. Position the gun through the anoscopy so that the tip is in contact with the rectal mucosa just above the hemorrhoidal packets. Care is taken to ensure good contact between the flat surface of the tip and the mucosa to be sclerosed. The gun is then activated and the bright light is visible (5). The recommended impact time (ranging from 0.5 to 1 second) produces a "standardized" white coagulum 6 mm in diameter and 3 mm deep, which retracts in a few days and disappears in three weeks (3). Three to six impacts of one to two seconds each are made in the supra-hemorrhoidal zone (3).

Several sessions (2 to 3) are often necessary, and should be spaced at least 3 to 4 weeks apart to allow the previous impacts to heal.

Indications for IR photocoagulation depend on the patient's symptoms, the anatomical condition of the hemorrhoids and the patient's terrain. It is recommended in cases of bleeding explained by stage 1 and 2 hemorrhoidal disease, after failure of medical treatment (6). Hemorrhagic hemorrhoids can still benefit from medical treatment, dominated by transit regulation, combined with short-term local treatment and possibly a venotonic, renewable in very symptomatic periods, as its results can be equivalent to instrumental treatments (7-8). Transit regulation must be maintained over the long term, even when instrumental treatment is being considered or has already been carried out, as it improves results.

Assessing the results of instrumental treatment is difficult, as it is based on disparate studies in terms of population, grade of hemorrhoidal pathology and techniques used (9). What's more, their efficacy seems to diminish with time, so results need to be weighted according to hindsight (10).

In the short term, at six and twelve weeks, there is no significant difference between the different instrumental treatments, whether the symptoms are rectorrhagia or moderate prolapse.

Overall, the efficacy of the different instrumental treatments at three months is comparable, with disappearance or improvement of symptoms in 70-90% of cases (4). At one year, the efficacy of IR photocoagulation falls to 40% (**Table 1**) (11).

At three years, elastic ligation is significantly superior to IR photocoagulation, with persistent efficacy in 75-90% of cases, especially if prolapse is present (Table 1) (3). Although elastic ligation has demonstrated superior, long-term efficacy, it has been associated with a significantly higher incidence of post-treatment pain (12). In contrast, IR photocoagulation has been reported to be a painless procedure (12).

Side-effects of IR photocoagulation are rare and not serious: transient discomfort in 20-35% of cases, moderate pain lasting no more than 48 hours in 4-8% of cases, minimal rectal bleeding or serohemorrhagic oozing for around ten days in 5-25% of cases (11). Bleeding is highly inconstant, between 5% and 25% depending on the study, almost always minor and delayed by a few days (**Table 2**) (3). Here too, healing is achieved in two to three weeks (3).

Many associated pathologies constitute a contraindication to instrumental treatment, due to the risks of bleeding, infection, pain or poor healing. Instrumental treatment must be refused in cases of hemorrhoidal thrombosis, anal fissure, anoperineal suppuration or severe hemostasis disorders (3).

Chronic inflammatory bowel disease of anorectal origin associated with symptomatic hemorrhoidal disease should be treated with great caution, and conservative medical treatment favored. Instrumental treatment should never be considered when the inflammatory disease is active, due to the risk of serious and unpredictable complications (3). The presence of radiation-induced anorectitis is also a situation with a high risk of complications, which strongly advises against any instrumental treatment (3).

Proven immunodepression is logically a contraindication to instrumental treatment, with serious complications reported (14). However, HIV-positive patients with no significant immunodeficiency, or well-balanced on antiretroviral therapy, do not appear to present any increased risk (15).

V. Conclusion:

Managing hemorrhoids involves confirming the diagnosis, responding to the patient's needs and expectations, and mastering the various therapeutic alternatives, or at least knowing their indications and limitations.

Patients must be reminded that hemorrhoids are a normal anal structure, informed of therapeutic possibilities, their advantages, potential side-effects and the possibility of therapeutic failure, and the treatment chosen with the patient's agreement.

Medical treatment should always be offered as first-line treatment, which may be sufficient in the case of acute events and in the case of grade I and II hemorrhoids. Instrumental treatment with infrared coagulation is recommended if medical therapy fails.

Figure 1: Infrared equipment (generator and gun)

IR Photocoagulation	Our serie	Literature
Technical success at 3 months	82%	70-90%
Technical success at 1 year	58,3%	40%

Table 1: Comparison of results from our study vs. literature

IR Photocoagulation	Our serie	Literature (13)
Pain	13,3%	4-8%
rectorrhagia	9,1%	5-25%

Table 2: Comparison of complications in our study vs. literature

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