Indirect coagulation of residual lesions of circumferential piles after excisional hemorrhoidectomy; a prospective controlled pilot study

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Research Article

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Abstract

Background

*"*Circumferential prolapsed piles" poses great challenge for colorectal surgeons. "Infrared photocoagulation" (IFC) is a safe procedure for early stages of piles but is not readily available due to high costs. We introduce a simple simulation of (IFC) for management of residual daughter piles after surgical excision of the main piles.

Method

10 patients with circumferential grade III-IV piles were recruited for "indirect cauterization" of residual daughter piles after open excision of the main piles and were observed for one month for postoperative complications. The results were compared to those of the last 10 correlated patients in the database managed by simple excision of the main piles only.

Results

Three cases of SSI (Surgical Site Infection) with minimal, temporary spotting after removal of dressing were found in the study group. No case of incontinence was recorded

Conclusion

The "indirect cauterization" technique is feasible with satisfactory outcome for cases of circumferential piles in low resource areas.

1. Introduction

Despite the confusion posed by the term; being used for both normal and abnormal variants, hemorrhoids is one of the most common anorectal diseases. Hemorrhoids, or more precisely hemorrhoidal disease, is blamed by the patients for any anorectal complaint [1]. It is prevalent among the general population, reaching up to 38.9% in some studies [2]. In its simplest form, hemorrhoids can be defined as a symptomatic dilatation of the hemorrhoidal venous plexus leading to distal displacement of the normal anal cushions [3] manifested as perianal swelling, itching, fresh bleeding per rectum and fecal soiling [4]. Hemorrhoids used to be described as anal varicose veins. However, it is now believed that they are sliding anal lining due to the disintegration of the supporting tissue with increased microvascular density suggesting neovascularization [3]. With the patient in lithotomy position, the bulging hemorrhoids may be seen in one, two, three or four quadrants (i.e., circumferential) [5]. The usual complaint reported by patients includes circumferential prolapse, repeated bleeding, continuous soiling, and itching. In advanced stages, it is common to find some pathologic changes such as local tissue fibrosis, disappearance of the anal dentate line, and downward movement of the anus and anal cushion i.e., partial, or complete prolapse [6]. According to their position from the dentate line, hemorrhoidal disease (commonly referred to as piles) are classified into internal, external, or mixed [1]. Circumferential, mixed hemorrhoids are the most challenging type confronted by colorectal surgeons. The "external dissection and internal ligation" or Milligan-Morgan technique, is the gold standard technique for mixed hemorrhoids [7] leaving behind too much hemorrhoid-bearing mucosa and skin tags, interpreted by the patients as incomplete resection or recurrence [8]. In general, prolapsing hemorrhoids can be dealt with via many modern techniques, infrared photocoagulation is deemed to be superior when compared to surgical hemorrhoidectomy. However, high price of its equipment may limit its application [9]. In this technique, infrared light is used to induce thrombosis and scarring of the hemorrhoidal plexus [10] generating sclerosis and fixation of hemorrhoids [9]. Trying to deal with the residual lesions in cases of circumferential piles after surgical hemorrhoidectomy using the same principles of infrared photocoagulation at affordable costs and available resources, we introduce the technique of "indirect coagulation" of lesions remaining after open excisional hemorrhoidectomy in patients with circumferential mixed piles.

2. Patients And Methods

Ten "10" patients with circumferential prolapsed piles were recruited for this pilot study after having the research protocol approved by *the ethical committee of scientific research of general surgery department, Faculty of medicine, Ain Shams University.* The patients included, should have no other colonic pathologies i.e., their hemorrhoids were not secondary to other diseases e.g., inflammatory bowel disease (Crohn's), rectal/anal canal carcinoma, being pregnant at the time of the study……This mandated to take thorough medical history and perform complete physical examination including digital rectal examination (DRE) during the office visit or under anesthesia if there was intolerable anal pain (for example due to associated anal fissure) or patient noncompliance during examination. Patients found to have thrombosed piles or associated anal fistulae, were excluded and managed accordingly. Patients with history suggestive of persistent pelvic congestion due to earlier pelvic operations, and those on medications that would affect wound healing (e.g., steroids including long-acting hormonal contraception and immunosuppressant drugs) were, also, excluded. Patients with complete rectal prolapse were excluded. It was decided to exclude patients on prolonged anticoagulation and those with bleeding tendency (their co-morbidities make them more liable to have postoperative bleeding that would not be exclusively, attributed to the studied technique). In our institute, preoperative colonoscopy is not a routine investigation for patients with hemorrhoids unless it is highly indicated for exclusion of other pathologies (e.g., malignancy in old age patients and when there is a high suspicion index for Crohn
$sdisease). Patientswereadmiedo \neq daybef \text{ or } etheoperation \rightarrow havetherout \in epreoperativelab \in vestigations \text{ and } \rightarrow bereviewedatthea \neq$
clock with low voltage diathermy device after applying two artery forceps at the muco-cutaneous junction and the internal pedicle. This was followed by dissection of the hemorrhoidal columns from the internal sphincter up to the level of their pedicle that would be ligated with a transfixing 2/0 vicryl suture.

Consequently, the classic trifoliate clove leaf pattern was obtained leaving residual daughter piles in between. Hemostasis was then assured. For the study group, the needle of a 10-cc syringe was inserted within the residual piles and diathermy was applied to those piles via the inserted needle. It was important to assure the needle was inserted within the hemorrhoidal mass and not transfixing the sphincter complex nor penetrating the internal sphincter. This was achieved by placing the needle while palpating the intersphincteric groove through a Ferguson anal retractor. In case that contractions were noticed within the sphincter complex, the needle would be withdrawn and repositioned more superficially. The wound was then covered with a gauze (it is very unusual at our hospital to perform tight packing for hemorrhoids wounds). Patients were kept on clear fluids till full recovery from anesthesia. After that, the patient was discharged on mild laxative, analgesia, and instructions for appropriate diet (high fibers), sitz bath twice daily for one week, and an appointment at the outpatient clinic (OPC) after one week then weekly for one month. At the OPC visits, patients were examined for bleeding, soiling, and wound infection (in the form of hyperemia, necrosis). The degree of postoperative pain was recorded as severe, tolerable, or absent. During the last follow up visit one month after the operation, DRE was done to determine the anal sphincter tone and any residual or recurrent lesion. The results of our study group were compared to those of the last ten (10) correlated patients from our database as regards the age group and comorbidities.

3. Results

In our research, dealing with patients having circumferential mixed piles, 10 patients presenting at our OPC were recruited within the period of *January 2021* and *September 2021*. They were compared to the last 10 correlated patients in our database. The average age of the patients was 40 with 12 males and 8 females. All the studied males as well as those retrieved from the database, were heavy smokers (more than 20 cigarettes per day). 80% of the recruited patients were chronic strainers, whether due to stressful physical work, chronic chest co-morbidities, multiple vaginal deliveries or chronic constipation. Table 1. More details about the associated co-morbidities are given in Table 2. All male cases were done under spinal anesthesia. The female cases were done under general anesthesia (upon patient request) with the except of one case (due to associated chest problems). The mean operative time was similar in both groups (20 min for the study group and 15 min for the control group). Minimal blood loss was recorded in both groups. Pain was tolerable in all cases and was controlled by oral analgesia (NSAIDS and paracetamol). All cases were discharged one day after the operation after removal of the applied dressing to assure hemostasis. During the postoperative visits, the studied ten patients were found to have no major bleeding, only serous blood-tinged discharge coming from the raw area of the preexisting hemorrhoids. The residual daughter piles were found to have shrunken significantly, barely coming from the anal verge that it had nearly disappeared 1 month after the operation. Pain was still tolerable that 4 patients did not take any analgesia except the sitz bath, 3 patients received a single oral dose, and the rest of patients did not take any analgesia after postoperative day 3 after discharge. 3 patients developed grade I SSI in the form of hyperemia at the edges of the wound and were managed conservatively by frequent washing of the wound. Concerning the control group, 3 patients reported bleeding during defecation that persisted for three days after the operation, 2 of them described it as persistent that they put a dressing during those first days. There was minimal shrinkage of the daughter piles during the first postoperative visit, described by 6 patients “as if the piles were not removed”. However, their size decreased during the next visits, reaching about 30% of the initial size after one month of follow up. The pain was tolerable in all patients, that none of them required analgesia after the second day and 4 patients did not take even a single dose of analgesia. All the patients in both groups reported normal return of their preoperative bowel habits with no manifestations suggesting incontinence. Normal anal sphincter tone was detected by DRE one month after the operation.

4. Discussion

Hemorrhoidal disease is very common in daily surgical practice. It has different forms of presentation, occupying different proportions of the anal canal. Despite being not so common, circumferential piles is the most challenging form that could be encountered by a coloproctologist. It has been a gold standard to manage that subset of piles via the excisional hemorrhoidectomy technique which implied to excise the primary three hemorrhoidal columns i.e., the left lateral and the right anterolateral and posterolateral, leaving secondary piles within the preserved skin islands in between to avoid the development of postoperative anal stenosis [11]. The philosophy behind that technique is that the inevitable postoperative scarring and fibrosis would eventually contract leading to repositioning those residual lesions within the anal canal. However, that was not always, the full picture nor the inevitable sequence. Persistence of daughter piles was most of the times, interpreted by the patients as recurrence or failure of the primary operation. Not to mention, some patients would even, develop early (1–3 days) or delayed (more than 3 days) post-hemorrhoidectomy hemorrhage. The source of bleeding is often, the residual lesion especially those lesions found to be posterior (12 – 1 o`clock). This could be explained by independent risk factors in those patients (male sex, heavy smoking and straining) [12] as well as anatomical factors [13]. This was exactly the case in our control group: The three cases reporting postoperative hemorrhage were all males, heavy smokers with chronic constipation. The reported bleeding was self-limited; may be due to the tamponading effect of the internal sphincter tone as described by *Yano et al.*, [13]. Our proposed technique dealt with this aspect; coagulating those residual lesions. The result was no case of major bleeding in the study group. This is the same principle upon which the infrared photocoagulation technique is based [9], but at much lower costs utilizing the already available resources. The coagulated columns retract upwards repositing the residual lesions within the anal canal (the anal mucosa sliding theory of hemorrhoids pathogenesis). However, the consequence of coagulation is expected to be an increase in the incidence of SSIs due to the presence of charred coagulated tissues. This may explain the reason for having 3 cases with SSI in the study group. It is worth to state, that the cases had grade I (mild) infection that they were managed conservatively. The risk of inducing injury to the sphincter complex is, for sure, higher with our proposed technique; having the diathermy applied via the blindly inserted needle to the submucosal hemorrhoidal plexus. This explains why it was important to 1-ascertain the position of the needle outside the sphincter complex before current application; palpating the mildly dilated sphincter by anal retractor 2- apply the coagulation current at low voltage 3- look for any contraction that may occur as this would indicate to reposition the needle more superficially. Some concerns may arise about the possibility of late postoperative anal stenosis on the long run; having the already produced raw area of the removed piles in continuity with the coagulated submucosal plexus. This point was not possible to be investigated in our short-term pilot study pilot study for a proposed technique and is to be investigated on a wider scale of patients for long term follow up intervals.

5. Conclusion

The “indirect coagulation” of residual lesions after excision of the main columns in cases with circumferential piles is a feasible approach in face of limited resources.

6. Limitation

Being a novel technique, the study only included a small number of patients to assess safety and feasibility. The risk of the delayed anal stenosis of the proposed technique would be studied within a long-term research and on a wider range of patients. The use of monopolar diathermy raises concerns about the application of that technique in cardiac patients with pacemaker in situ; an aspect to be studied with the appropriate precautions for patient safety. The role of preoperative prophylactic antibiotics in limiting the expected postoperative SSI for the proposed technique has to be studied in a separate research.

Declarations

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Conflict of interests: There is no conflict of interests.

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Tables

Table 1: preoperative data

	Study group (n=10)	*Control group (n=10)*
Gender (M: F)	6: 4	
Age (average)	30-47 (39)	29-52 (41)
Associated co-morbidities	7	7
Smoking (more than 20 per day)	6	6
Persistent straining	8	8

Table 2: details of preoperative co-morbidities

	Number (n=10)	*Notes*
Diabetes	5	3 Controlled by oral hypoglycemic drugs
Hypertension	7	4 controlled by 2 medications
Multiple vagina deliveries (>3)	3 out of 4	1 patient has APA syndrome with aspirin during gestation
Chronic chest problems (e.g., asthma, COPD)	7	Controlled by medications other than regular steroids regimen

Table 3: postoperative results

	Study group	*Control group*
Mean operative time	20 min	15 min
Average blood loss	Minimal (1 gauze)	Minimal (1 gauze)
Hospital stay	1 day	1 day
Secondary hemorrhage	—-	3 (2 cases required padding for 3 days)
SSI	3 (grade I)	—-
Residual lesions after 1 month	Nearly disappeared	residual piles about 30% of preoperative size