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THE MANAGEMENT OF HEMORRHOIDS: A TAILORED APPROACH MIGHT BE A GOOD OPTION

CONSERVATIVE TREATMENT

Most patients with hemorrhoids (around 90%) do not need a surgical treatment but may be managed conservatively. Chronic constipation is frequently associated and may be treated by means of HIGH RESIDUE DIET (large leaf vegetables and fruit with skin) bulking laxatives, bran and either psyllium or macrogol.

Patients with piles do not have to strain at stool, otherwise the pressure in the lower rectum arises to about 400 cm of water, thus stretching the thin wall of the hemorrhoidal vessels and favoring bleeding or pushing them downwards through the anus, i.e. favoring their prolapse.

In case of hemorrhoids of first degree, which often bleed and do not prolapse, the most indicated treatment is LOCAL INJECTION of phenol 5% in almond oil, which may be easily carried out in an ambulatory setting and repeated if necessary.

A more expensive alternative is FOTOCOAGULATION, with the tip of the probe just kept in contact with the hemorrhoids for few seconds.

When dealing with a second-third degree prolapsing internal hemorrhoids, the treatment of choice is RUBBER BAND LIGATION (RBL) either using a suction device, distributed in Italy by Sapimed® Alessandria, or the most common Baron ligator. According to our experience, reported by Mattana et al. (1) with the Baron ligator it works in around 85 % of the patients if they have a normal bowel habit, in around 25

% if they are constipated. More than one ligation may be carried out at the same time, possibly not more than two. Hemorrhoids' ligation is contraindicated in presence of local sepsis or in patients with weak immune defense, as it may give complications. Antibiotics are suggested in immune-depressed patients or with cardiac disease. Care must be taken if the patient is under anticoagulant drugs such as aspirin, as he/she may have the tendency to bleed.

MINI-INVASIVE SURGICAL PROCEDURES

DOPPLER-LASER (HELP) may be carried out in an ambulatory setting and has been proposed by Giamundo et al. (2). The doppler identifies the hemorrhoidal arteries and a laser probe obliterates them through a special proctoscope. No anesthesia is required and postoperative pain may affect 10% of the patients, bleeding occurred in 12% of the cases and required suture of the bleeding area in two of them.

THD is the most recently reported mini-invasive procedure, mainly when dealing with high degree prolapsing internal hemorrhoids. THD means trans-hemorrhoidal doppler artery ligation and is usually doppler guided. A dedicated proctoscope mounting a doppler probe may reveal the site of the arterial supply to the piles, identified by the typical doppler "noise". Subsequently, the thin arteries of the lower rectum are transfixated and ligated from below and the blood supply to the hemorrhoids is interrupted, which decreases their size and their tendency to bleed. Dal Monte et al. reported good results using this technique (3). Ratto et al. reported successful THD for fourth degree hemorrhoids (4).

The question arises whether an alternative arterial blood supply may take place from below after surgery, but the first results achieved by authors such as Infantino et al (5) are cheering. However, long-term results (5-10 years) are still lacking. Most of the "THD surgeons", in other reports, associated a MUCOPEXY ligature, aimed at ischemizing and flattening the rectal mucosal prolapse which may be associated with the hemorrhoids, thus displacing a bit upward the ligature and the knot. The complication rate, including postoperative pain, which is unlikely to occur following THD, may slightly increase when a mucopexy is associated. However, basically, THD and mucopexy, also called HAL and RAR, even used for fourth degree piles are still low complication rate procedures (6).

Another minimally invasive procedure is the HUSSEIN LIGATION-PEXY of hemorrhoids. First reported on 2001 by the Egyptian surgeon Hussein, it was compared with conventional hemorrhoidectomy in a subsequent randomized prospective trial published in 2015 (7,8). The results showed that both methods were similarly effective in the management of piles.

We slightly modified the Hussein procedure, adding two transverse stitches, similar to the ones reported by Farag for internal hemorrhoids, just at the level of the anopexy, in the lower part of the rectum, aimed at reinforcing the suture and prevent the descent of the pexied pile (9). The operation is illustrated by drawings on our website www.ucp-club.it. The positive results achieved at three years follow-up in our series is under press by Ayabaca et al in Ann It Chir. Postoperative complications were rare. We perform this procedure in selected cases, usually accompanied by either a Ferguson or a Milligan Morgan hemorrhoidectomy in the same patient. In our Unit, the "MODIFIED HUSSEIN PROCEDURE" is usually indicated in patients with three-quadrant hemorrhoids, with two piles being both internal and external, whereas the third hemorrhoid is large and prevalently internal, with either no or just a little external component. Or, alternatively, one external and internal pile, on which we carry out an hemorrhoidectomy and one or two prevalently internal hemorrhoid(s), on which we carry out the "modified Hussein" procedure. We do not take too large bites of rectal muscle, aimed at minimizing postoperative pain due to rectal innervation. By associating ligation-anopexy to conventional hemorrhoidectomy we decrease the risk of sepsis, stricture, bleeding and "non healing wound", which may follow three formal hemorrhoidectomies. None of these complications occurred in our series of modified Hussein procedures. Therefore, we are in favor of a "mixed tailored procedure" in the same patient, when indicated.

Care must be taken in avoiding to catch fibres of the puborectalis muscle when pexying the hemorrhoids with the deep rectal "U" suture, as this will cause intense postoperative pain to the patient. It happened once in our series. Therefore, the pexy suture has to take just part of the rectal muscle, well above the anorectal ring and, downwards, it has to catch the lower part of the prevailing internal pile just above the dentate line, where there are almost no sensitive nerve endings, aimed at reducing postoperative pain. We recommend to the patient to avoid excessive straining at stool, especially early after surgery, aimed at preventing a descent of the pexied pile from the rectum downwards into the anal canal.

STAPLED HEMORRHOIDOPEXY

An operation for hemorrhoids, which has been reported as carrying “potentially devastating complications” (10) is the PPH or STAPLED HEMORRHOIDOPEXY. Using such procedure, a ring of mucosa and submucosa in the lower rectum is resected, thus pulling upward the internal piles, which are thought to contribute to maintain anal continence. The point is that such pexied diseased piles, with microanatomical changes, less elastine and often fibrotic component, are not soft and elastic as the anal cushions, therefore their contribute to anal continence is doubtful.

Pescatori and Gagliardi (11) extensively reviewed postoperative complications following PPH. Rectal perforation and pelvic sepsis requiring a diverting stoma has been first reported by Molloy and Kingsmore (12). Many rectal perforations requiring a temporary diverting stoma were reported on by the U.S. FDA (13). Other complications have been reported, such as complete closure of the rectum with subsequent intestinal obstruction (14,15), recto-vaginal fistula (16), retroperitoneum and pneumomediastinum (17, 18), seven deaths due to pelvic sepsis (13), life-threatening sepsis and mortality (19), bleeding due to retained staples or to a peri-staples granuloma (20), proctalgia (21), hemoperitoneum (22), retrorectal hematoma (23), excruciating anal pain (24).

As far as the recurrence rate of the hemorrhoids, metanalyses, showed that it is higher following PPH than after hemorrhoidectomy (25-27). More recently, a multicenter comparative prospective trial published on the Lancet showed higher recurrence rate after PPH than after hemorrhoidectomy (28). A different way of performing PPH has been reported at the Singapore General Hospital, where the colorectal surgeons use to perform the purse-string at the level of the anorectal ring, a few cms lower than reported by the consensus paper on PPH (29). The “Singapore variation” is aimed to be more radical, as it excises the piles instead of pexying them and reports a lower percentage of recurrence compared with the conventional PPH. Surprisingly, there is not the increase of postoperative pain that one would expect, being the resection closer to the anal sensitive zone. To be precise just 1.6% of reintervention rate due to pain (30).

The Corman’s et al “consensus” paper, supported by the manufacturing company, recommends (and I fully agree) that the PPH should be performed by specialized

colorectal surgeons, well aware of the anatomy and the physiology of the pelvic floor. Instead, many PPH are performed by general surgeons. This might explain the high number of complications. In case a recurrent or persisting hemorrhoidal prolapse has to be excised following a failed PPH, there is more risk of postoperative bleeding if compared with conventional hemorrhoidectomy (31).

PPH may be followed by urgency and tenesmus in a number of patients ranging between 3 and 25% (32) as after this operation the rectal reservoir may become either smaller or less compliant. Another minor complication, the so-called "rectal pocket syndrome", occurring in about 3.5% of the cases, has been reported following PPH, due to the slippage of the purse-string causing the formation of a semi-blind cavity in the lower rectum, where faecolyth may take place, causing local sepsis and requiring a surgical lay-open (33).

CLOSED FERGUSON AND OPEN MILLIGAN-MORGAN HEMORRHOIDECTOMIES.

These classic procedures are likely to be the most used by the surgical community worldwide and consist in the excision of the hemorrhoids with or without a running suture of the surgical wound. When a bit of rectal internal mucosal prolapse is present at the apex of the pile it may simply be removed, if clinically indicated, by extending the surgical dissection just a few centimeters upwards. The main hemorrhoidal pedicle may be or may be not ligated at the apex of the pile. Phillips, the St Mark's surgeon, and Lentini, a Spanish coloproctologist, were the first to avoid the ligation of the pedicle and to carry out the hemorrhoidal dissection by diathermy. A comparison between diathermy and scissors hemorrhoidectomy was published by Andrews et al. (34).

Open hemorrhoidectomy may be followed by anal stricture (Eu et al, *Aus N Z J Surg* 1995) when too much disepithelized tissue or insufficient mucosal-skin bridges are left in the anal canal at the end of the operation (35).

Open and closed hemorrhoidectomies were also compared in several randomized prospective trials but, apparently, none of them clearly demonstrated the superiority of one over the other technique, however suture thickness has an effect on postoperative pain in closed hemorrhoidectomy (36). Mattana et al. compared PPH and open hemorrhoidectomy in patients with 4th degree hemorrhoids: long term results were in favor of Milligan-Morgan hemorrhoidectomy (37). Maybe

stapled hemorrhoidopexy should be used just in third degree internal hemorrhoids, as already suggested by Altomare et al. in the Guidelines of the Italian Society of Colorectal Surgery (38).

MANAGEMENT OF POSTOPERATIVE BLEEDING

Postoperative bleeding is a complication affecting all the surgical procedures for hemorrhoids and occurs up to 5.9% following PPH (39). Retained staples may cause rectal bleeding and severe proctalgia after PPH (40). Most of those who are in favor of PPH suggest to carry out a manual suture over the stapled line in the lower rectum, aimed at minimizing the risk of p.o. bleeding. The p.o. bleeding rate was very low (0.4%) after closed hemorrhoidectomy in a French study (41). Local epinephrine injection for delayed hemorrhage after hemorrhoidectomy was successfully used by Cirocco (42).

In case of life-threatening rectal bleeding in the postoperative course after excisional hemorrhoidal surgery, the advice is to irrigate the rectum with cold water until the blood almost disappears and then insert a Foley catheter and inflate its balloon in the lower rectum, with 20-30 ml of either air or water. Then withdraw the catheter until the balloon is blocked at the level of the anorectal ring and secure it to the buttocks under tension with tapes. By using this method, which positions the balloon over the bleeding area in almost all cases, we could stop the bleeding in 23 of 25 patients after either closed or open hemorrhoidectomy in almost one thousand cases at our Units. In seven cases a blood transfusion was needed due to a severe anemia. Just two cases kept bleeding after balloon tamponade and then required a 2 stitches suture of the bleeding area, one in the office, the other one in the ward. It should be noted that none of these patients who bled needed to be taken to the operating theatre and that most patients were successfully cured at home.

POSTOPERATIVE PAIN AND CONVALESCENCE

As far as postoperative pain, it may occur following any type of hemorrhoidal surgery, apart the THD after which pain is very rare as no stitch is positioned in the sensitive anal canal. Internal sphincterotomy with hemorrhoidectomy does not

relieve pain (43), but botulinum injection and topical glycerin trinitrate at the end of surgery have an effect postoperative pain (44). Kraemer et al. (45) reported more pain after PPH than after Ligasure hemorrhoidectomy. The use of 4/0 absorbable suture to close the surgical wound following Ferguson hemorrhoidectomy may reduce postoperative pain.

In the absence of surgical wounds in the anal canal after PPH, the convalescence after this operation is usually better and shorter than following hemorrhoidectomy.

The same happens following THD, i.e. the absence of any either endoanal or external wound makes the convalescence short and comfortable in the vast majority of the cases.

OTHER SURGICAL PROCEDURES FOR HEMORRHOIDS

Other types of operations have been used worldwide for the management of hemorrhoids, but some of them are updated and some of them are confined to few countries and carried out by few surgeons. Despite that, some of them are still considered good operations and it is worth to mention them.

Among those which merit to be quoted, there is the PARKS' SUBMUCOSAL HEMORRHOIDECTOMY, which according to Filingeri et al. and Rosa et al. gave fairly good results (46,47). The advantage of such procedure is that it keeps intact almost all the epithelium of the anal canal, therefore one may expect that most sensation at that level is still maintained after surgery, thus ensuring a good continence. Intraoperative bleeding may sometimes be a problem, when dissecting the epithelium of the lower rectum and of the anal canal from the hemorrhoid vessels.

An operation which is widely and successfully used in Brazil is the REIS-NETO SEMIOPEN HEMORRHOIDECTOMY, which consists in ligating the internal and excising the external component of the piles (48).

The WHITEHEAD-RAND operation has been used in case of circumferential internal and external hemorrhoids (49). It consists in excising both internal and external piles, without excising the epithelium of the anal canal below the dentate line and the perianal skin, which are then used as flaps to be sutured to the mucosa of the rectum and pulled up once the suture has been completed. Using this technique, we

operated on 25 cases at our Units, but we had four cases of cutaneous flaps detachment, who then required a reintervention to be excised.

As shown by the last Annual Report published in Techniques in Coloproctology, the most used operation for hemorrhoids among the surgeons of the Italian Coloproctology Units (UCP Club) is the MILLIGAN-MORGAN OPERATION USING LIGASURE, which is likely to allow a better hemostasis (50). However, Ramcharan and Hunt reported anal stenosis following this procedure (51).

DO WE HAVE THE “GOLDSTANDARD OPERATION”?

Having examined all the interventions reported by the literature for the management of hemorrhoids, the question arises if there is a GOLDSTANDARD OPERATION, i.e. an operative procedure which has been demonstrated to be THE BEST when compared to the others. For me the answer is: probably not. According to the results reported by the literature, it seems that hemorrhoids may be considered a disease in which a TAILORED APPROACH should be carried out, similarly to other colorectal diseases, such as rectal prolapse and obstructed defecation, the reason being that the hemorrhoidal pattern is not the same in all patients who need an operation.

TOWARDS A TAILORED APPROACH FOR HEMORRHOIDS

In case of both internal and external three-quadrant piles either a FERGUSON OR A MILLIGAN-MORGAN procedure might be successfully carried out. The long-term recurrence is usually very low, as all the hemorrhoidal tissue is removed. In case a RESIDUAL ACCESSORY PILE is left after a Milligan-Morgan hemorrhoidectomy, instead of excising it, thus risking an anal stenosis due to the loss of an epithelial bridge, it can be raised upwards and flattened at the level of the lower rectum, by using a “U” stitch without interrupting the epithelium. I learned this trick from the late Sir Alan Parks at St Mark’s Hospital in the eighties of the last century.

In case of circumferential hemorrhoids, both internal and external, either a PARKS’ SUBMUCOSAL HEMORRHOIDECTOMY or a WHITEHEAD-RAND procedure may be carried out, aimed at removing ALL the diseased tissue. The advantage of the first

procedure is that there is no circumferential anastomosis and no risk of flap dehiscence, requiring a further excisional surgery.

If the hemorrhoids are internal, either three quadrants or circumferential, they may be ischemized and then flattened interrupting their vascular supply: either HELP or THD could be the appropriate technique in these cases, and a MUCOPEXY might be added in case of concomitant rectal internal mucosal prolapse.

The same disease might be dealt with a PPH, provided that there is no suspect of enterocele or descending pouch of Douglas in a multiparous vaginal woman after hysterectomy, because in this case an injury to the excessively descended pouch of Douglas might occur, leading to either pelvic sepsis or enterocele injury. Moreover, a PPH might be a good option in patients willing a short convalescence and a rapid return to work. As far as postoperative pain is concerned, one may prefer a PPH procedure as it does not carry any wound in the sensitive anal canal. My personal experience with other tailored interventions (either excision or pexy) suggest that, using an elastomer with i.v. pain killers in the first 24 hours, pain is almost absent the 1 to 10 VAS ranging between 2 and 3.

In a patient with just one or two internal piles, either a FARAG ligature or a THD or a HELP might be indicated, whereas in a subject with a single internal and external hemorrhoid, with or without a tag, a simple EXCISION seems to be the most advisable approach.

Finally, when one or two of the three piles are large and prevalently internal, the (MODIFIED) HUSSEIN LIGATION AND ANOPEXY represents a good minimally - invasive alternative to a conventional three-quadrant hemorrhoidectomy.

CONCLUSION

In conclusion, A TAILORED APPROACH seems to be advisable when dealing with a patient with hemorrhoidal disease, as piles may be different, sometimes even in the same anus. Either single or multiple. Either internal or external or both. Either circumferential or involving one-two-three quadrants. Either just hemorrhoids or associated with rectal internal mucosal prolapse and or tags.

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