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Radiofrequency Y-V anoplasty in the treatment of anal stenosis

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Abstract. – *Background:* **Anal stenosis is a common proctologic disease often caused from hemorrhoids surgery. Treatments adopted are many and varied. In this study we applied radiofrequencies to the classic Y-V anoplasty operation and reported results obtained.**

Methods: **Eligibility criteria consisted of patients affected by anal stenosis. Exclusion criteria were those with contraindications to the surgical operation: pregnant patients or American Society of Anaesthesiologists Score III or IV.**

Results: **From January 2002 to December 2004 we operated 7 patients, 4 of them were males. Mean age at the time of diagnosis was 46 years. All patients referred obstructive defecation, painful evacuation or bleeding. Mean values for operative time were 30 min. Postoperative pain was 3.9 at day 1 and 3.0 at 7th day (VAS scale). Patient satisfaction rate was 6.6 at three weeks and 8.3 at 6 and 12 months. No recurrences were observed after 1 year.**

Conclusion: **Radiofrequency Y-V anoplasty is a feasible and effective for the treatment of anal stenosis. The radiofrequency bistoury easies the procedure, lessens operating times and the healing process of surgical wounds.**

Key Words:

Radiofrequencies, Proctology, Anal stenosis, Anoplasty.

Introduction

Anal stenosis is a common disabling proctologic disease often derived from hemorrhoids surgery. It usually results from surgical procedures, especially hemorrhoidectomy, carried out overzealously or without the required technical knowledge. This produces an abnormal narrowing of the anal canal due to the replacement of the epithelial lining by an anelastic fibrous connective tissue[1].

The effective management of this condition is challenging and failed by a high percentage of recurrences. Symptomatic mild stenosis may be managed conservatively with diet changes, fibres supplements, and stool softeners[1]. However, moderate or severe anal stenosis are best served by numerous surgical techniques described in literature. All techniques have reported good results but no consensus exists to which one gives best results.

We have gained, during the past 13 years, a wide experience and obtained positive results with the use of radiofrequencies in all proctologic operations[2-4]. We now describe the use of radiofrequencies to the classic technique of Y-V anoplasty[5-7] and describe our 3-years experience with the first 11 patients treated.

Patients and Methods

We followed CONSORT criteria for the development and description of this clinical trial[8]. Eligibility criteria consisted of patients affected by anal stenosis that came to our attention in the outpatient setting of the Department of General Surgery - University of Tor Vergata in Rome. Exclusion criteria were those with contraindications to the surgical operation: pregnant patients or those with American Society of Anaesthesiologists Score III or IV.

Patients underwent accurate preoperative outpatient proctologic history and physical examination. Oral anticoagulants, when present, were discontinued 7 days before surgery. All patients were operated with one-day surgery hospitalisation, being recovered and operated in the morning and sent home the next day.

Preoperative preparation consisted of a first enema applied the day preceding surgery and a second 4 hours before the operation. Metronida-

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zole 400 mg and Ceftriaxone 2 g i.v. have been administered at the induction of anaesthesia as prophylaxis. All patient received general anesthesia.

Technique Employed

All patients underwent Y-V anoplasty using the radiofrequency bistoury. The radiofrequency bistoury is able to simultaneously cut and coagulate tissues with the emission of 4 MHz radiofrequencies, contrarily to most of diathermic bistouries that work in the range from 300 KHz to 3 MHz. This ability gives lower temperatures and advantages in terms of postoperative comfort (oedema, pain and healing)[9].

Preparation of the perianal skin was performed with a soapy disinfectant solution. Infiltration of a few millilitres of saline containing 1:150,000 adrenaline facilitated dissection and control of bleeding. Patient was placed in a jack knife position with buttocks taped apart. A"Y" shaped incision was made along the outlines on one side and the flap was raised, taking full thickness skin and a small amount of underlying fat (1-2 mm), and mobilised from the lateral position (Figure 1). The flap was then advanced and sutured to the most cephalad point of the incision with 3-0 sutures (Figure 2). Ischemic damage was reduced by a sharp rather than cautery dissection and with avoidance of an excessive undermining. The lateral perineal crosslimb of the "Y" was approximated under minimal tension with interrupted simple 3-0 absorbable sutures. Bolsters were tied in place and the relocated skin was then covered with a nonadherent gauze dressing. The procedure was then repeated on the opposite side if indicated. Additionally, all patients underwent subcutaneous lateral internal sphincterotomy.

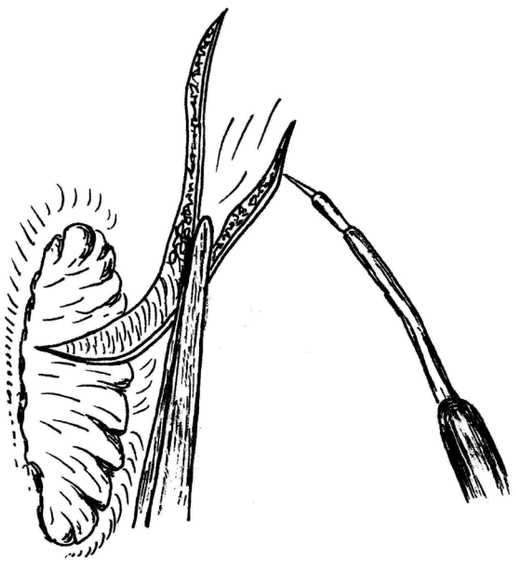

Figure 1. Y shaped incision and mobilisation of the flap from the lateral position.

Figure 2. Flap is advanced and sutured to the most cephalad point of the incision.

Postoperative treatment consisted of Metronidazole (400 mg three times, only the first postoperative day), Ketorolac p.r.n. as analgesic. Patients were discharged home after 24 hours from the operation. Discharge therapy consisted of Ketorolac p.r.n., regular hygiene with chloride solutions, an appropriate high-fiber diet and Vaseline Oil as stool-softeners to reduce trauma in the anal canal. After 24-36 hours a mild laxative (Lactulose per os) was administered to stimulate evacuation in those patients who still did not evacuate spontaneously.

Follow-up was performed at 1, 2, 7, 15 and 30th postoperative day by outpatient visits with the surgeon and qualified nurses. Our primary endpoints included the operating time, postoperative pain (measured at day 1, 2 and 7), complete

wound healing, resume of daily activities, satisfaction rate (measured at 3 weeks, 6 and 12 months). Secondary endpoints were the presence of complications, such as dehiscence of the wound, incontinence, urinary infections, and recurrences.

We used for pain assessment the Visual Analogic Scale (VAS) based on patients' statements with 0 referring to the minimum value (no pain) and 10 to the maximal value (maximal pain experienced in the past by patients). Additionally, VAS was used for patients' satisfaction rate with 0 referring to minimal patient's satisfaction and 10 as maximal satisfaction (best result expected from the operation). All patients were investigated about these scores during the outpatient visits and with phone calls.

Statistical Analysis

All data analysis were performed using the Statistical Package for the Social Sciences Windows version 13.0 (SPSS, Chicago, Illinois, USA). Descriptive statistics consisted in mean, minimum and maximum values (range).

Results

Between January 2002 and December 2004 we recruited 11 patients. The study terminated on December 2005 with the last follow-up visit. There were 6 males and 5 females. Mean age was 46.1 years (range 39-60). Three patients had postoperative stenosis after previous hemorrhoidectomy. The others were associated with traumas, non treated hemorrhoids, anal fissure and anal fistulas. Two patients were affected also by celiac disease and irritable bowel disease suffering from persistent diarrhea (6-7 daily bowel movements/day).

All patients reported obstructive defecations and painful evacuations limiting their daily activities for a value of 7 on a VAS score (range 5-9). Additionally, all patients suffered bleeding during defecation. Symptoms lasted from at least one year (range 1-6). All of them received initial conservative therapy but progressive worsening of the symptoms mandated surgical operation. At physical examination all but one had a moderate degree of stenosis, the remaining were severe.

Mean values for operative time were 30 min (range 20-40 min). Intraoperative bleeding has always been negligible. Pain score decreased from 3.9 at day 1 to 3.0 at day 7 (Figure 3). Five patients required analgesics (one or two i.m. daily injections of Ketorolac during the first postoperative day). The first evacuation occurred always at home during the second postoperative day. Two patients (both males) had urinary infections, successfully treated with antibiotics.

Patients resumed daily activities after 16 days from surgery (range 8-25). Healing was complete in 20 days (range 15-30). Four patients had transient gas incontinence that resolved after 6 months of biofeedback therapy. No cases of persistent incontinence were observed. Patient's satisfaction rate, as shown by Figure 4, is high at 3 postoperative weeks and increase after 6 months from the operations.

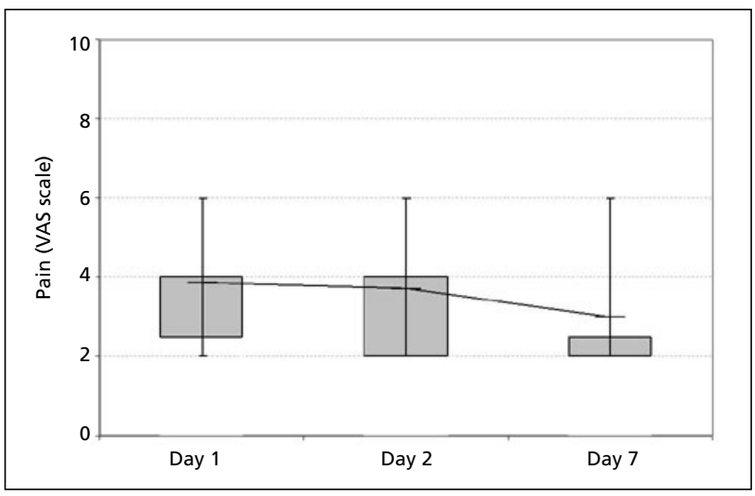

Figure 3. Postoperative pain measured on a VAS scale at day 1, 2 (first evacuation) and 7.

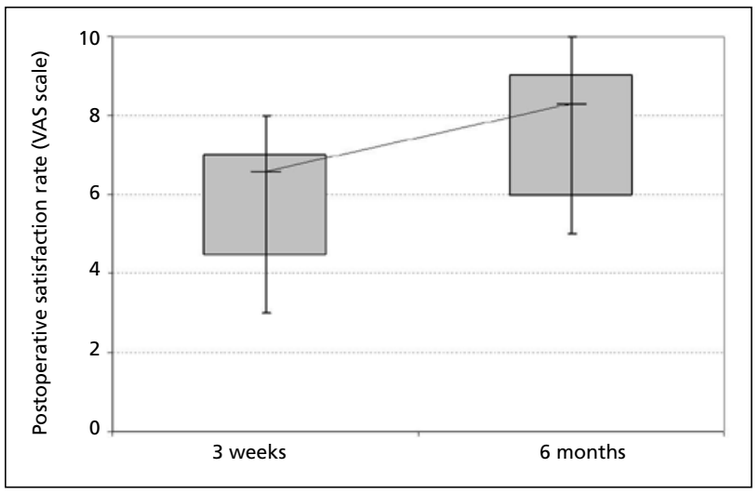

Figure 4. Postoperative satisfaction rate measured on a VAS scale at three weeks and six months.

Discussion

Anal stenoses, although infrequent, are a condition that should receive great attention from proctologic surgeons. Most of them are postoperative[6-7,10] and the rest inflammatory or functional due to intense anal spasms. We will not treat in this discussion non-operative treatments because they are usually dedicated to mild stenoses that, by definition, do not require surgery for correction. Anyway all patients of this study, although affected by moderate stenosis, already tried without success non surgical therapies and used to relieve their symptoms with regular clysters and laxatives.

Hemorrhoidectomy is the most incriminated operation deemed responsible of postoperative stenoses and, among the various techniques, the Whitehead seemed to have the highest incidences[7]. However, it is necessary to point out that not only the surgical technique but also its correct execution is important to be considered. An example of this is the Milligan-Morgan hemorrhoidectomy. Although some stenoses have been reported with this technique, if correctly executed it usually leaves enough mucosal-cutaneous bridges to prevent their insurgence[11]. In this view it is difficult to evaluate from published series the surgeon's ability to perform the technique correctly.

The choice of the operation for correction depends both from the severity of the condition and from the surgeon's personal experience. This explains why in literature there are many corrective techniques that often disagrees for functional results[1]. Additionally, some of them have been abandoned (i.e. Ferguson's S-flap anoplasty), not for their results but for the complexity of execution and the prolonged hospital stay. We believe that the ideal technique should be easily executed, give satisfactory results with low complications and shorten the hospital stay. We selected the Y-V anoplasty technique[12] for its easy execution, good long term results, low risk of complications and the possibility to perform it on both anal versants if deemed necessary by the severity of the stenosis. Additionally, we always associated an internal lateral sphincterotomy (20% of internal sphincter) to give better postoperative comforts and reduce the risk of recurrences [13].

The application of radiofrequency bistoury to the Y-V anoplasty easied the technique. It allowed to cut and coagulate tissues in an atraumatic manner, contrarily to the diathermic bistoury, derived from physical properties of radiowaves used. In fact the latter uses very high external temperatures (300-600°C) to reach the target temperature because thermal energy is produced on mucosal surfaces by Joule effect and is transmitted in tissues by convection, lowering itself during the tract. The deeper the point to be reached, the higher the external temperatures required. Radiofrequencies add energy to electrons inducing a vibration of cellular ions ("molecular resonance") and develop the target temperature from within the tissues producing a constant heating pattern in all cells through their passage. For this reason they produce lower external temperatures than classic diathermy (45°C for cutting and 65°C for coagulating)[9]. The histologic

thermal damage generated by radiofrequencies is thicker than that of diathermy bistoury[2].

The atraumatic nature and the contemporarily cutting-coagulating ability helped to eliminate unfavourable postoperative sequelae in our patients, mainly represented by pain, excessive blood loss and oedema. It reduced the diffuse bleeding without compromising the flap vascularization and thereby shortened the operating times.

In conclusion, Y-V anoplasty is the most advantageous operation for the treatment of non complicated anal stenosis. The execution of the technique with the radiofrequency bistoury to the technique easies the procedure, lessens operating times and fastens surgical wound healing.

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