

Transanal repair of rectocele with high frequency radio scalpel

D. SFORZA, C. BELARDI, M. PELLICCIARO, V. FILINGERI

SUMMARY: Transanal repair of rectocele with high frequency radio scalpel.

D. SFORZA, C. BELARDI, M. PELLICCIARO, V. FILINGERI

Aim. This is a prospective randomized study to analyze results obtained in two groups of patients, affected by stage 2 rectocele and treated with rectum anterior wall repair and strength, performed with standard or modified Khubchandani technique, using High Frequency (HF) Radio Scalpel.

Materials and methods. A cohort of 24 patients with stage 2 rectocele (Mellgren's classification) have been included. Twelve (group A) underwent surgery with standard technique and twelve (group B) underwent surgery using the HF Radio Scalpel, which cuts and coagulates tissues without damage thanks to its low working temperature (45-70°C). Each patient underwent proctolo-

gical examination and anoscopy in 7th, 15th, 45th POD and after 6 and 12 months.

Results. During post-operative follow-up 5 patients from group A and 1 from group B didn't show up so that they drop out the study. As a result, group A is composed by 7 patients and group B by 11 patients. Mean operating time was significantly favourable in group B (51 vs 33 minutes, $p < 0.01$). The differences between other parameters weren't statistically significant, even if post-operative course was less difficult in HF Radio Scalpel group.

Conclusions. The surgical technique to repair and reinforce anterior rectal wall is easier and faster if performed with HF Radio Scalpel respect to the standard procedure described by Khubchandani. Post-operative course was less painful and, even more importantly considering the patient age, surgical time was shorter. Therefore, the results obtained cast positive light on using this technique to treat uncomplicated grade 2 rectocele.

KEY WORDS: Rectocele - Rectocele repair - Transanal surgery - Radiofrequency scalpel.

Introduction

Surgical treatment of rectocele represents a controversial issue among colorectal surgeons. Many techniques have been considered and this means that the ideal one has not been chosen yet. In fact, each procedure has its own advantages and disadvantages from a technical, clinical and economical point of view. Transanal surgical treatment seems to have the best clinical results so it is the favourite treatment of the majority of authors at the moment. The aim of this study is to estimate the results obtained with modified Khubchandani technique performed with High Frequency (HF) Radio Scalpel (1, 2), compared to the standard technique (3).

Patients and methods

For this study we used the CONSORT criteria (4). Once we received the approval of the ethical committee, we informed patients and obtained their consent. Twenty-four patients with stage 2 rectocele (according to Mellgren's classification) (5) were selected and divided into 2 groups: 12 underwent surgery with standard Khubchandani's technique (group A) and 12 underwent surgery using the HF Radio Scalpel (group B). The surgeon was always the same one.

Diagnoses were obtained using defecography or defeco-MR. Exclusion criteria were: recto-anal prolapse and other proctological disorders (each patient underwent proctological examination and proctosigmoidoscopy), previous proctological surgery, pregnancy and high anaesthesia risk (ASA III or IV). Anticoagulant drugs were stopped 7 days before surgery. No particular diet was advised.

Department of Experimental Medicine and Surgery, Transplant Unit, University of Rome "Tor Vergata", Rome, Italy

Corresponding author: Vincenzino Filingeri, e-mail: v.filingeri@tiscali.it

An enema was administered 4 hours before surgery as preoperative preparation. At the induction of anaesthesia prophylactic antibiotics were used: metronidazole 500 mg and ceftriaxone 2 g by intravenous infusion (iv). General and epidural anaesthesia were alternatively used according to anaesthesiologist evaluation.

Post-operative treatment consisted of Metronidazole 500 mg iv every 8 hours in the first post-operative day and Ketorolac 30 mg if needed for pain control. After 24-36 hours, we administered a mild laxative (lactulose 10-20 mg) to facilitate the first evacuation or paraffin oil (3 spoons/day) in order to make stool softer and reduce traumas in the anal canal. After procedure a high-fiber diet was prescribed with administration of Flavonoid pills "Deflanil Plus" (quercetin 200 mg and hesperidin 50 mg, with Resveratrol, Bromelain, Folic acids, vitamin C and D). We preferred this product because it is more complete and it is sold in single use packages (6).

Every patient underwent proctological examination and anoscopy on the 7th, 15th, 45th POD and after 6 and 12 months.

Surgical technique

Surgical technique adopted derives from Khubchandani's one modified using HF Radio Scalpel. The aim was to correct the deformation of the anterior anorectal wall using a trans-anal approach trying to reconstitute the solidity of the pathological wall through the use of internal sutures to allow the formation of scarring fibrosis.

The patient is positioned in gynaecological and slightly Trendelenburg position, and for optimum exposure of the rectocele, the Parks retractor is used. The mucosal tissue is infiltrated with adrenaline, diluted with saline solution (concentration 1: 200 000), to facilitate the detachment and hemostasis maneuvers. Using the HF Radio Scalpel a lozenge surface incision is performed with a transversal axis relative to the intestinal lumen, only on the margin of the rectocele. The mucosa covering the rectocele is delicately detached and removed to promote the development of scarring fibrosis. After an accurate hemostasis the rectal wall is repaired. Two stitch are positioned on the end of lozenge, held in tension to facilitate the suture. Interrupted suture is performed, usually with 7-8 stitches, using absorbable sutures (Vycril 2/0). In order to obtain a plication of the rectocele wall and therefore its re-

duction and correction (Figure 1), the suture of the upper margin is first performed, then the muscular layer with at least two passes and finally the lower margin (Figures 1, 2). During the plication it is advisable to insert a finger into the vagina both to facilitate the suture and to verify that the vagina is not involved in the suture.

HF Radio Scalpel, used for the detachment and removal of the mucosa, allowed to cut and coagulate without damaging the tissues. This is made possible by the lower operating temperature of the HF Radio

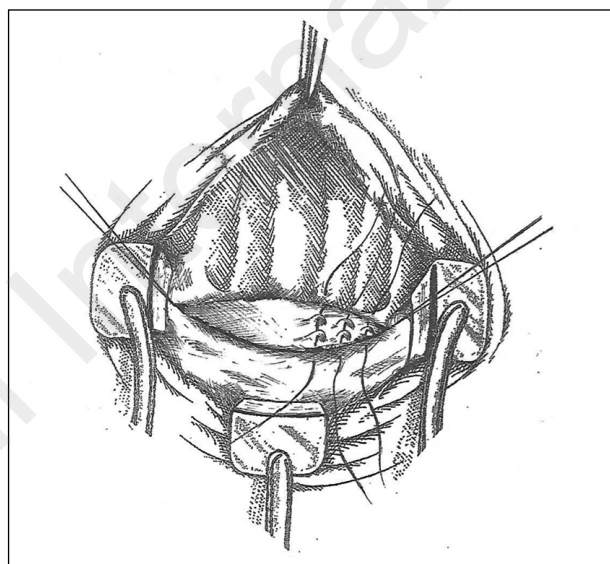


Figure 1 - After the transverse incision at the dentate line and removing a mucosa rectal flap, a vertical plication sutures starting.

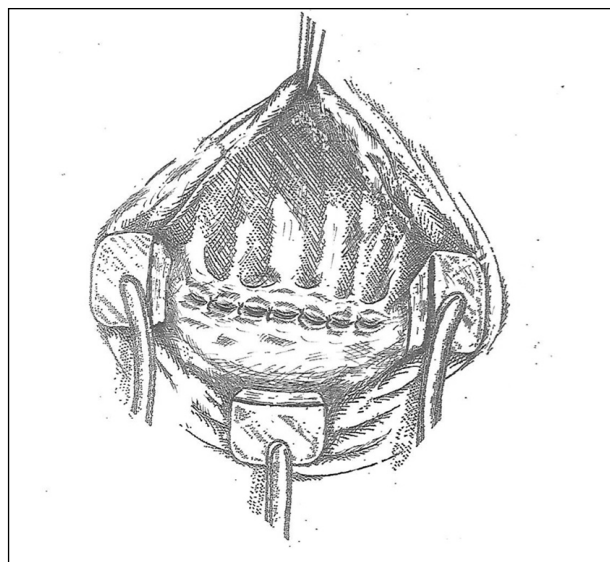


Figure 2 - Final suture vision.

Scalpel (45°-70°) compared to the traditional electro-centric scalpel (300°-600°) (1, 2).

Statistical analysis

The statistical analysis was performed with the Statistical Package for the Social Science Windows version 1.7 (SPSS Inc., Chicago, IL, USA). Descriptive statistics for quantitative variables were the mean and Standard Deviation (mean ± SD). The comparison was performed with the Fisher's exact test for categorical variables and the Student's t-test.

Results

In the period between January 2006 and December 2014, 24 patients with stage 2 rectocele, using Mellgren's classification, were randomized into two groups before surgery. During post-operative follow-up 5 patients from group A and 1 from group B didn't show up so they drop out the study. As a result, group A was composed by 7 patients (mean age 60,3 ± 7,8) and group B by 11 patients (mean age 63,8 ± 7,2).

In Table 1 there is a list of the preoperative symptoms described by patients, lasting for at least 4 years. Six patients from group A and (85,7%) and 9 from group B (81,8%) reported constipation with feces type 1-2 on the Bristol stool scale (7); 6 patients from group A (85,7%) and 9 from group B (81,8%) reported pain during and after defecation and necessity of fingers inserted into the vagina to assist evacuation (group A 42,8% and group B 72,7%). No cases of incontinence have been reported. Defecation in two or more times concerned 6 patients from group A

(85,7%) and 10 patients from group B (90,1%). Four patients from group A (57,1%) and 7 patients from group B (63,6%) needed laxatives at least once a week (Table 2).

The quality of life regarding defecation was estimated according to Agachan-Wexner's criteria (8), with a mean value of 19,5 for patients from group A and 19,1 for patients from group B. This score, also known as Cleveland Clinic Constipation Score, includes 8 variables (number of evacuations, time needed to defecate, abdominal pain, attempts of defecation, difficult defecation, incomplete defecation, manual support and constipation duration) with an increasing score from 0 to 4 and a total score from 0 to 30.

No meaningful complications or problems have been reported during surgery and hospitalization. No cases of post-operative hypotonic sphincter were observed. Mean operative time was 51 minutes for group A and 33 minutes for group B ($p < 0.01$). Only 4 patients from group A (57,1%) and 4 patients from group B (36,7%) referred severe pain, successfully treated with Ketorolac 30 mg i.m. All the patients were discharged in the first postoperative day.

Table 2 shows symptoms reported during the follow-up. In both groups pain is particularly evident during the first week. Moreover, the permanence of constipation, which required laxatives, was observed in almost all patients.

All the problems reported before the surgery seems to be significantly improved. No relapse was reported after 12 months and no one required enema. All the patients were satisfied with the results of surgery. All the data recorded were not statistically

TABLE 1 - PREOPERATIVE REPORTED SYMPTOMS FOR AT LEAST 4 YEARS.

| | Group A Standard technique | Group B HF Radio Scalpel |
|--|-------------------------------|-----------------------------|
| Constipation | 6 (85,7%) | 9 (81,8%) |
| Pain during and after defecation | 6 (85,7%) | 9 (81,8%) |
| Defecation in two or more times | 6 (85,7%) | 10 (90,1%) |
| Need to insert fingers inside the vagina | 3 (42,8%) | 8 (72,7%) |
| Incontinence | - | - |
| Need of laxatives at least once a week | 4 (57,1%) | 7 (63,6%) |
| Need of enema at least once a week | 1 (14,3%) | 1 (9,1%) |

TABLE 2 - POST-OPERATIVE RESULTS.

| Group A | | | | | |
|--|---------------------------|----------------------------|----------------------------|-----------------------------|------------------------------|
| Standard technique | | | | | |
| | <i>7th POD</i> | <i>15th POD</i> | <i>45th POD</i> | <i>6th Month</i> | <i>12th Month</i> |
| Post-Operative Pain | 4 (57,1%) | 2 (28,6%) | - | - | - |
| Constipation | 3 (42,1%) | 3 (42,1%) | 3 (42,1%) | 2 (28,6%) | 2 (28,6%) |
| Pain during and after defecation | 1 (14,2%) | 1 (14,2%) | - | - | - |
| Defecation in two or more times | - | - | - | 1 (14,2%) | 1 (14,2%) |
| Need to insert fingers inside the vagina | 1 (14,2%) | 1 (14,2%) | 1 (14,2%) | 1 (14,2%) | 1 (14,2%) |
| Incontinence | - | - | - | - | - |
| Need of laxatives at least once a week | 7 (100%) | 7 (100%) | 6 (86,7%) | 2 (28,6%) | 2 (28,6%) |
| Need of enema at least once a week | - | - | - | - | - |
| Group B | | | | | |
| HF Radio Scalpel | | | | | |
| | <i>7th POD</i> | <i>15th POD</i> | <i>45th POD</i> | <i>6th Month</i> | <i>12th Month</i> |
| Post-Operative Pain | 4 (36,7%) | 2 (18,2%) | - | - | - |
| Constipation | 4 (36,7%) | 4 (36,7%) | 4 (36,7%) | 4 (36,7%) | 4 (36,7%) |
| Pain during and after defecation | 1 (9,1%) | 1 (9,1%) | - | - | - |
| Defecation in two or more times | - | - | - | 2 (28,6%) | 2 (28,6%) |
| Need to insert fingers inside the vagina | - | - | 2 (28,6%) | 2 (28,6%) | 2 (28,6%) |
| Incontinence | - | - | - | - | - |
| Need of laxatives at least once a week | 10 (90,1%) | 10 (90,1%) | 6 (54,2%) | 4 (36,7%) | 4 (36,7%) |
| Need of enema at least once a week | - | - | - | - | - |

significant, exception made for the mean operative time.

Discussion

Rectocele is a frequent pathological condition characterized by the herniation of the anterior wall of rectum through the rectovaginal septum. So both proctologist and gynecologist are involved. Defecography or Defeco-MR and Anorectal Manometry allow an accurate diagnosis, dimensions of rectocele and the presence of potential dynamic alteration of the pelvic floor.

The Obstructed Defecation Syndrome (ODS) represents the more frequent problem in this disorder.

It consists of an anatomical and functional obstacle to evacuation, despite the stimulus and with a feeling of incomplete emptying. Defecation is particularly laborious. Often to be completed need to push for a long time and use of hands to complete the evacuation. This causes in patients prostration and shame. Abuse of enemas and laxatives is often frequent. In the most severe cases perianal pain may be present, sometimes with difficulty treatment. The symptomatology influences negatively the quality of life of these patients.

The large dimension of rectocele is not an absolute indication for surgical treatment. In fact, the symptoms are not always related to size: the large rectocele can be asymptomatic and often are occasional finds while the small one can be very annoy-

ing. Only symptomatic rectocele justifies surgical treatment.

Over the last years many surgical techniques have been proposed and there is not a gold standard treatment at the moment. The surgical procedures can be divided into trans-vaginal, trans-anal or by abdominal access. Trans-vaginal techniques, preferred by gynaecologists, involve reconstruction of muscle fascial defects using prosthesis. The aim of trans-anal techniques is to eliminate the pathological lesion in the rectum. The most popular techniques are Delorme (the pathological mucosa is removed circumferentially to expose the muscle of the intestinal wall and is sutured with single stitch reabsorbable), Sullivan and Khubchandani procedures (correction of the anterior rectal deformation by plication with single stitches). Recently two techniques have been described: STARR with PPH01 and STARR with Contour Transtar (rectal trans-anal resection and reconstruction using mechanical stapler) (9-12). Trans-anal techniques have the advantage of being less invasive, easier and faster. They maintain normal morphology and physiology of the rectum especially during the evacuation.

When rectocele is associated to a complete prolapse the correct surgical treatment is rectopexy (fixation of the rectal trough the abdomen). The abdominal laparoscopic techniques reconstruct the anatomical planes to sustain pelvic organs in the correct position. There are several techniques for example "suture rectopexy" in which the rectum is directly anchored to the sacrum using sutures or mesh. D'Hoore's anterior rectopexy is the most common, it can be laparoscopic and consists of the anterior mobilization of the rectum accessing the recto-vaginal space. Using mesh, which is fixed between rectum and vagina, the reinforcing of the anterior wall of the rectum is obtained. In the superior part, the mesh is fixed to the sacrum hanging up the rectum and therefore reducing prolapse. With this technique, lateral and posterior mobilization is not necessary with an important reduction of the risk of denervation and postoperative constipation (very common in rectopexy surgeries) (13).

In our opinion, the choice of surgical technique should be based on the clinical and radiological evaluation of the rectocele. Voluminous rectoceles with dimensions over than 4 cm surely have less chances of success, higher probability of relapse and higher incidence of functional complications. To obtain homogeneity in our results with the technique that

we adopted, in this study we limited the indication only to second stage rectocele (Mellgren's classification).

We believe that the surgical treatment of the rectocele should be quick and easy, improving the quality of life of the patients. It is important that the technique is minimally invasive and preserves the morphology, the physiology of the pelvic floor and the functionality of the anal sphincter.

The technique we have adopted is simple and allows you to repair the anterior wall of the rectum resolving the clinical symptomatology. Unlike the Khubchandani technique, we remove excess mucosa to work directly on the sphincter, without changing the normal proportions of the anorectal angle and reducing the possibility of potential damage. The HF Radio Scalpel, thanks to its peculiar characteristics, facilitates the surgical maneuvers of preparation and dissection of the mucosa. The use of 4 MHz Radio Waves produces heat and this allows cutting and coagulating the tissues without any trauma. In the section line, each vessel with a diameter less than 1.5-2 mm is coagulated, reducing bleeding at the capillaries. Thus, operating time has been significantly reduced. This improvement should not be underestimated considering the age of the patients. This also entails a significant reduction in costs and other immediate problems such as postoperative pain and bleeding.

It is very important explain to the patients that surgery can solve symptoms related to rectocele but not other disorders associated like constipation, irritable bowel syndrome or perineal descent. The permanence of constipations might be related to the pain during the first two weeks, as showed in our results, and to psychological reasons. Constipation may be treated with high-fiber diet to reduce the incidence of relapses.

Conclusions

The surgical treatment, modified respect to the Khubchandani's using the HF Radio Scalpel, is easier and with a good results. The reduction of operative time is particularly significant, especially considering the patient's age, as well as the postoperative problems like pain and bleeding. In conclusion, this technique seems to be a good choice for the treatment of uncomplicated grade 2 rectocele, according to Mellgren's classification.

References

1. Filingeri V, Gravante G, Cassisa D. Physics of radiofrequency in proctology. *Eur Rev Med Pharmacol Sci.* 2005;9:349-354.
2. Filingeri V, Gravante G, Cassisa D. Clinical applications of radiofrequency in proctology: a review. *Eur Rev Med Pharmacol Sci.* 2006;10:79-85.
3. Khubchandani It, Clancy JP, Rosen L, Riether RD, Stasik JJ Jr. Endorectal repair of rectocele revisited. *Br J Surg.* 1997;84:89-91.
4. Moher D, Schulz KF, Altman DG. The CONSORT statement: revised commentaries for improving the quality of reports of parallel-group randomized trials. *Lancet.* 2001;357:1191-1194.
5. Mellgren A, Anzén B, Nilsson BY, Johansson C, Dolk A, Gillgren P, Bremner S, Holmström B. Results of rectocele repair. A prospective study. *Dis Colon Rectum.* 1995;38:7-13.
6. Filingeri V, Buonomo O, Sforza D. Use of Flavonoids for the treatment of symptoms after hemorrhoidectomy with radiofrequency scalpel. *Eur Rev Med Pharmacol Sci.* 2014;18:612-616.
7. Lewis SJ, Heaton KW. Stool form scale as a useful guide to intestinal transit time. *Scandinavian Journal of Gastroenterology.* 1997;32:920-924.
8. Agachan F, Chen T, Pfeifer J, Reissman P, Wexner SD. A constipation scoring system to simplify evaluation and management of constipated patients. *Dis Colon Rectum.* 1996;39:681-685.
9. A.Gaj F, Trecca A, Andreucetti j, Crispino P. Trattamento del rettocele e del prolasso mucoso del retto con escissione a lembi della mucosa con sutura manuale. *Clin Ter.* 2011;162:e7-11.
10. Gagliardi G, Pescatori M, Altomare DF, Binda GA, Bottini C, Dodi G, Filingeri V, Milito G, Rinaldi M, Romano G, Spazzafumo L, Trompetto M. Results, outcome predictors, and complications after stapled transanal rectal resection for obstructed defecation. *Dis Colon Rectum.* 2008;51:186-195.
11. Gentile M, De Rosa M, Cestaro G, Vitiello C, Sivero L. Internal Delorme vs. STARR procedure for correction of obstructed defecation from rectocele and rectal intussusception. *Ann Ital Chir;*85:177-183.
12. L Lenisa, O Schwandner, A Stuto, D Jayne, F Pigot, JJ Tuech, R Scherer, K Nugent, F Corbisier, E Espin-Basany, FH Hetzer. STARR with Contour® Transtar™: prospective multicentre European study. *Colorectal Dis.* 2009;11:821-827.
13. D'Hoore A, Cadoni R, Penninckx F. Long-term outcome of laparoscopic ventral rectopexy for total rectal prolapse. *Br J Surg.* 2004;91:1500-1505.