Iatrogenic rectovaginal fistula repair by trans-perineal approach and pubo-coccygeus muscle interposition

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ABSTRACT

INTRODUCTION: Rectovaginal fistula (RVF) is a rare but debilitating complication of a variety of pelvic surgical procedures.

PRESENTATION OF CASE: We report the case of a 45-year-old female who underwent the STARR (Stapled Trans Anal Rectal Resection) procedure, that was complicated by a 30mm rectovaginal fistula (RVF). We successfully repaired the fistula by trans-perineal approach and pubo-coccygeus muscle interposition. Seven months later we can confirm the complete fistula healing and good patient’s quality of life. We carefully describe our technique showing the advantages over alternative suturing, flap reconstruction or resection procedures.

DISCUSSION: This technique is fairly easy to perform and conservative. The pubo-coccygeus muscle is quickly recognizable during the dissection of the recto-vaginal space and the tension-free approximation of this muscle by single sutures represents an easy way of replacement of the recto-vaginal septum.

CONCLUSION: In our experience the use of pubo-coccygeus muscle interposition is an effective technique for rectovaginal space reconstruction and it should be considered as a viable solution for RVF repair.

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1. Introduction

Rectovaginal fistula (RVF) is a rare but debilitating complication of a variety of pelvic surgical procedures. The majority of RVFs (nearly 90%) are caused by obstetric injuries, some as a result of perineal tears. Rectovaginal fistula can also occur in patients with chronic inflammatory bowel disease (particularly Crohn’s disease), and following gynecological and colorectal surgery. Rectovaginal fistula has been also described as possible complication of vaginoplasty in male-to-female transsexuals during androgynoid conversion surgery 1–3.

Fistulas deriving from pelvic procedures can be caused by various postoperative complications, primarily direct trauma (perforation) that is not identified or inadequately treated intraoperatively. Secondary fistulas can arise in case of suture insufficiency following treatment of a defect in the context of infection. They may also arise as a result of secondary infection of a hematoma.

In recent years, RVFs has been an increasingly common complication after hemorrhoid or pelvic floor surgery, particularly in cases where staplers or foreign materials were used. While RVFs are an absolute rarity after conventional hemorrhoid surgery, cases of postoperative fistulas have been increasingly reported since the introduction of stapler procedures, with incidences up to 3% in some cases 4–6. Specifically, the focus is drawn toward the more technically challenging STARR (Stapled Trans Anal Rectal Resection) and TRANSTAR (Transanal Stapled Resection) procedures 7–15. Fistulas are usually caused by errors in surgical technique, when the posterior vaginal wall is also caught in the stapler. No statistics are available since the results have primarily been published as case studies 16.

For affected women, the passing of air and secretions or stool from the rectum through the vagina represents a psychosocial burden that, of course, increases with the diameter of the fistula. RVF can result in recurrent infections of the vagina or lower urinary tract.

We describe the case of a 45-year-old female who underwent STARR that was complicated by a 30mm RVF and required fecal diversion. We repaired the fistula by trans-perineal approach and pubo-coccygeus muscle interposition (levatoroplasty).

2. Presentation of case

A 45 year-old female patient was admitted to our department due to a 30 mm RVF and prolapsing loop colostomy. The patient had undergone STARR procedure for rectal prolapse in a different
hospital 1 month before and she had been primarily treated with loop colostomy for fecal diversion. At the time of admission rectal examination demonstrated a persistent large rectovaginal fistula.

3. Surgical technique

The patient is placed in “perineal” position. Surgery begins with a horizontal perineal skin incision drawn directly above the external rectal sphincter (Fig. 1A). The incision is slightly concave downward and must be large enough to allow adequate surgical exposure. After identification of the fistula with a probe, the rectovaginal septum is carefully dissected. The dissection will be carried on upwards along the back wall of the vagina that is grasped with forceps, stretched on the fingers of the surgeon and progressively raised. The rectum is identified below. The exposure can be facilitated by the use of Farabeuf retractors (Fig. 1B). The procedure may be hindered by the post-inflammatory contraction of the tissue that always surrounds the recto-vaginal communication. The rectal wall must be separated from the vagina, taking care not to damage the external rectal sphincter. To prevent tearing of the rectum a finger can be inserted into the rectum in order to better control the rectal wall. The mobilization must be carried on to a level of at least 3 cm above the fistula site. The anterior wall of the rectum must be perfectly exposed before any attempt to suture. The wound edges of the fistula on the rectal side must be excised and the defect closed by interrupted absorbable stitches (Fig. 2A). The same treatment must be reserved to the vaginal side of the fistula (Fig. 2B). The inner edge of the elevators (pubo-coccygeus muscles) is easily identified with the finger by getting down and tending the external sphincter of the anus. The pubo-coccygeus muscles must be freed upwards and the rectovaginal dissection should be continued laterally. After preparation of the medial aspect of the levator ani muscle, the reconstruction of the rectovaginal space is be performed by approximating on the midline the pubo-coccygeus muscles by 3–4 single absorbable stitches. The levatoroplasty covers the rectal suture and comes between the anterior wall of the rectum and the back wall of the vagina, keeping separate the two suture lines (Fig. 3A). Two Jackson-Pratt drains are then positioned before the closure of the surgical site by absorbable stitches (Fig. 3B).

Ultimately the prolapsing loop colostomy was revised and replaced by terminal colostomy.

The postoperative course was uneventful and the patient was discharged on the fifth postoperative day. Three months later, the patient underwent a Gastrografin enema prior to loop colostomy closure. The study showed no rectovaginal fistula. As such the patient underwent colostomy closure and the postoperative course...
was uneventful. Four months later (7 months after RVF repair) we can confirm the complete fistula healing and good patient’s quality of life (included satisfying sexual activity).

4. Discussion

The treatment of RVFs represents a special surgical challenge. In case of RVF following a STARR procedure the repair is further complicated by the high position of the fistula and the presence of a consistent fibrosis in the rectovaginal septum associated to metallic staples. No randomized trials, relevant reviews or guidelines are available on the surgical treatment. Simple fistula suturing, flap reconstruction or resection procedures are all associated with high recurrence rates. All of these procedures share the exclusion of the fistula without reconstruction of the rectovaginal space.

Direct local repair, even with an advancement flap is usually unsuccessful due to inadequate tissue bulk as the anovaginal septum is a thin poorly vascularized structure. Also fecal content is continuously forced to escape through the fistula due to the inherently high pressures of the anorectal region. Hence the interposition of well-vascularized tissue must be considered to separate and protect the vaginal from the rectal sutures, especially in recurrence or large RVFs. This goal can be achieved with an omental flap in combination with fistula closure 17, as well as through the trans-perineal approach. In the latter the reconstruction of the rectovaginal space is performed by a pedicled flap of adipose tissue from the labia majora (Martius procedure) 18, the bulbocavernous muscle 19, or the gracilis muscle 20,21.

There are very few reports on reconstruction of the anovaginal septum by the interposition of the pubo-coccygeus part of levator ani muscle 22,23. We chose this technique because it is fairly easy to perform and conservative. Moreover our long lasting experience in colo-proctology field prompted us to choose the perineal approach. The pubo-coccygeus muscle is quickly recognizable during the dissection of the recto-vaginal space, as its fibers run longitudinally aside the left and the right side of the vagina and the anal canal. The tension-free approximation of this muscle by single sutures represents an easy way of replacement of the recto-vaginal septum (Fig. 3B). A protective colostomy ultimately provides several advantages within this setting. The reduction in the orthostatic pressure of the stool column as well as a reduction in the local bacterial burden lower the risk of fistula recurrence and promote primary...
wound healing. We recognize that the time point 1 month after the trauma is questionably early. However, we were prompted to early close the recto-vaginal fistula by the physical and psychological sufferance of the patient and the prolapsing loop colostomy.

In conclusion, the use of pubo-coccygeus muscle interposition is an effective technique for recto-vaginal space reconstruction and it should be considered as a viable solution for RVF repair.

Conflict of interest

The authors declare that there are no conflict of interests.

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Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author Contributions

Giacomo Pata, Mario Pasini, Stefano Roncali, Daniela Tognali, Fulvio Ragni have equally contributed to study design and data collection. Giacomo Pata and Fulvio Ragni have contributed to data analysis and interpretation, and to write the paper.

Key learning points

- Postoperative rectovaginal fistulas (RVFs) have been increasingly reported following several surgical procedures.
- For affected women, it represents a psychosocial burden that can result in recurrent infections of the vagina or lower urinary tract.
- The treatment of RVFs represents a special surgical challenge.
- Trans-perineal approach and pubo-coccygeus muscle interposition is an effective technique for rectovaginal space reconstruction.
- It is fairly easy to perform and conservative.
It should be considered as a viable solution for iatrogenic rectovaginal fistula repair.

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