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Case Report

Experience with Different Surgical Procedures in Recto-Vaginal Fistula Management

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Abstract

Background and Objective: Recto-vaginal fistula (RVF) is the most distressing surgical condition that a woman can experience. Obstetric trauma is the cause of upto 88% of RVFs. The second commonest cause of RVF is Crohn's disease; upto 10% of women with Crohn's disease will develop an RVF. Other causes include radiation, malignancy, iatrogenic injury and infection. The surgical treatment is the standard of care in most females who had persistent fistula with symptoms. However, conservative management is considered in mild cases. The present study designed to search for the optimal surgical management of Recto-vaginal-fistula. **Methodology:** From January, 1995-January, 2015, 118 patients with RVF were referred to the department (Ministry of Health hospitals, Health Insurance hospitals and Al-Azhar University hospital New Damietta. All patients were subjected to full clinical evaluation, laboratory studies, contrast radiography, ultrasound examination and some with computed tomography (CT) and magnetic resonance image (MRI) with contrast studies. All patients underwent clinical interview including wexner incontinence score (WSI) and Female Sexual Functional Index (FSFI) in addition to Anorectal manometry studies. **Results:** Surgical treatments were simple fistulectomy (37 cases), rectal advancement flap (18 cases), single incision trans-perineal repair (24 cases), trans-abdominal approach with primary resection anastomosis (20 cases) and trans-abdominal approach with colostomy (19 cases). Clinical success was achieved in 108 cases (91.5%), 10 cases of recurrence (8.5%), 9 cases with wound infections and edema (7.6%), 4 cases with colostomy complications (3.4%), 3 cases with perineal abscesses (2.5%), 2 cases with hematoma (1.7%) and 1 case (0.8%) with postoperative dysparonia. **Conclusion:** It was concluded that the optimal surgical technique does not exist and treatment should be individualized.

Key words: Recto-vaginal fistula, surgical procedures, rectal advancement flap, wexner incontinence score, Female Sexual Functional Index

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Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Recto-vaginal fistula is a bad pathological condition affecting women in their life necessitating surgical interference to treat it. In addition RVF is considered one of the most challenges facing a surgeon. The most causal issue in its pathogenesis is the obstetric trauma, about 88%¹. A prolonged obstructed labor may produce injuries to multiple organ systems. When obstructed labor is unrelieved; the presenting fetal part is impacted against the soft tissues of the pelvis and a widespread ischemic vascular injury develops that result in tissue necrosis and subsequent fistula formation¹.

Crohn's disease is the second common cause, about 10% of these patients will suffer for RVF². Radcliffe *et al.*³ reported an incidence of 9.8% of RVF in patients with Crohn's disease in a population-based study.

There are many other causes for RVF include radiation, malignancy, iatrogenic injury and infection⁴. In malignant processes, the fistulas can develop as complications of radiation therapy and postsurgical operations including low anterior resection with stapled anastomosis, hysterectomy, rectocele repair and restorative proctocolectomy with ileal pouch anastomosis⁵.

Occasionally, latent anorectal sepsis may result in recto-vaginal fistula after pelvic trauma following road traffic accident^{6,7}. Vaginal trauma at sexual intercourse can occur and are minor injuries. However, Muleta and Williams⁸ reported 91 cases of RVF sustained from coitus within marriage or rape.

Typically, the presenting symptoms of RVF are passage of liquid stool or flatus per vagina, recurrent attacks of UTI, perineal and vulval irritation and difficulty keeping the area clean. For women with small fistula and minimal symptoms which don't interfere with lifestyle, conservative treatment should be considered.

The surgical approaches available to surgeons treating patients with RVF are numerous. It depends on the etiology of the fistula, location, size, quality of the surrounding tissue and previous attempted of repairs. Most surgical approaches can be classified as either local or abdominal. Local repairs are most useful for low to middle RVF and include trans-anal, trans-vaginal and perineal approaches. Abdominal operations are most useful for high RVF and may incorporate laparoscopic approaches. Either approach may require the use of healthy muscle or tissue for transposition⁵.

The present study designed to search for the optimal surgical management of recto vaginal fistula.

MATERIALS AND METHODS

Classification of RVF: There are many ways to classify recto-vaginal fistula either by anatomical locations as shown in Table 1 or based on etiology as seen below.

Classification system based on etiology:

- Type I : Traumatic (Obstetric trauma: 88%)⁹
- Type II : Inflammatory Bowel Disease (IBD): (Crohn's Disease: 10%)¹⁰
- Type III: Post-Radiation injury¹¹
- Type IV: Postoperative injury (Iatrogenic: 0.9%)¹²
- Others : Infection, Malignancy and Sexual trauma^{13,14,15}

Along the study time since January, 1995-January, 2015, 118 cases received and selected from patients referred from many hospitals (Ministry of Health, Health Insurance and Al-Azhar University-New Damietta). All patients were prepared for surgery after passing full clinical examinations including rectal and vaginal examinations. Methylene blue test (this test involves placing a tampon into the vagina, then injecting blue dye into the rectum. Blue staining on the tampon shows the presence of a fistula. Laboratory studies, contrast radiography (Fig. 1), ultrasound examination (Fig. 2)

Table 1: Operative techniques used for treatment of different types of RVF in this study

Operative techniques	No. of patients
Simple fistulectomy	37
Rectal advancement flap	18
Single incision trans-perineal repair	24
Trans-abdominal approach with primary resection anastomosis	20
Trans-abdominal approach with colostomy	19
Total	118

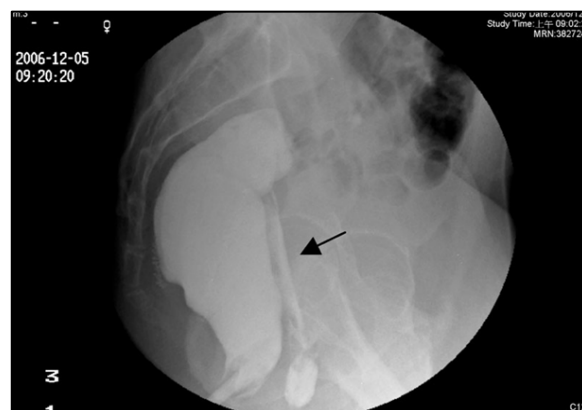


Fig. 1: Single-contrast Barium Enema show fistula tract (arrow) between rectum and the vagina

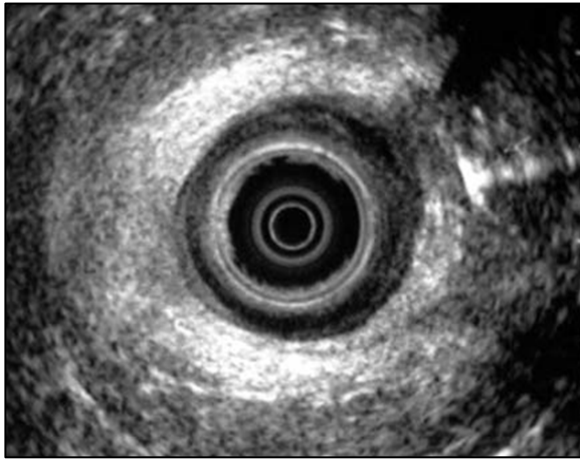


Fig. 2: Rectal Ultrasound examination using hydrogen peroxide solution which leads to a hyper-echoic effect (upper right part of picture) showing site of fistula

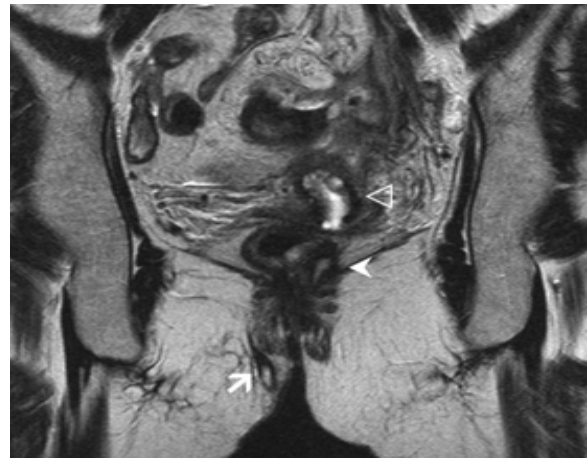


Fig. 4: Preoperative coronal MR image of the perianal region It revealed the fistula track (arrow) filled with pus within the perianal fat tissue on the right side and on the left side, its supra-levator component (arrowhead) is near the inflamed sigmoid colon (hollow triangle)



Fig. 3: Abdomen and pelvic CT shows air in vagina (arrow) and indicates the fistula between rectum and vagina

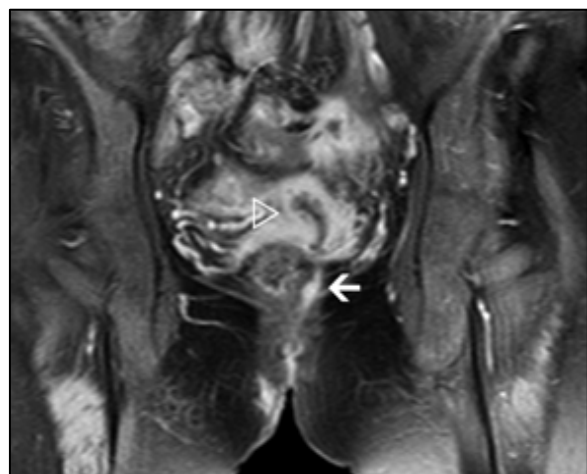


Fig. 5: Contrast enhanced coronal MRI image It indicates the enhanced, inflamed bowel segment (hollow triangle) and the supra-levator component of the fistula (arrow). No abscess was detected

and some with CT (Fig. 3) and MRI with contrast studies (Fig. 4 and 5). All patients were submitted to pre-operative clinical interview including wexner incontinence score (WSI) Wexner *et al.*¹⁶ and Female Sexual Functional Index (FSFI) and Ano-rectal manometry studies. It was done with evaluation of mean anal resting pressure (MARP), mean anal squeezing pressure (MASP) and recto-anal inhibitory reflex (RAIR).

After full investigations and reaching the correct diagnosis, it were classified the cases according their anatomical location as shown in Table 1 and Fig. 6.

Classification according to anatomical locations¹⁷:

- Low fistula (simple fistula): Rectal opening is at the dentate line and vaginal opening just inside the vaginal fourchette
- High fistula (complex fistula): Vaginal opening near the cervix
- Middle fistula: Between high and low fistula

There were 30 patients with low RVF, 69 patients with intermediate (med-zonal) RVF and 19 with high RVF. The

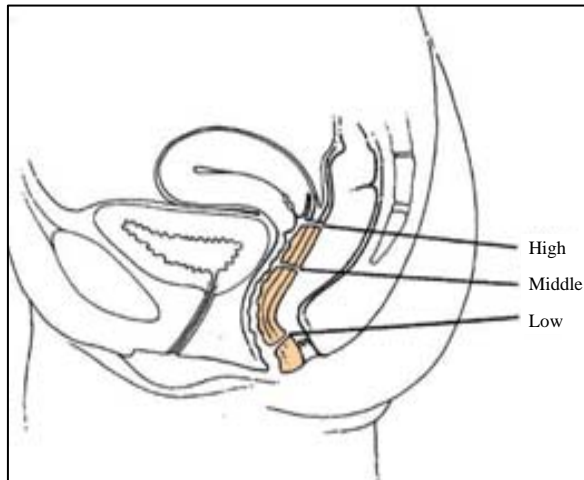


Fig. 6: Anatomical-Location-classification of RVF¹⁷: (High, Middle and Low types)

pathological diagnoses were 50 cases of non-specific inflammatory processes, 25 cases were Crohn's disease, 17 cases were tuberculosis, 15 patients were post-irradiation and lastly 11 patients were iatrogenic.

Surgical treatment: Patients were prepared pre-operatively by different ways along the 20 years study duration (chemical and mechanical) bowel preparation. Antibiotics in the form of third generation cephalosporin (1 g IM injections) and 500 mg-1 g of metronidazole either oral or rectal suppositories plus IV fluids with watery foods were given for three successive pre-operative days.

The patient was placed either in modified lithotomy or prone jack-knife position depending on the type of surgery. The abdomen was prepared with alcohol or water-based antiseptic solution or 10% povidone iodine surgical antiseptic solution (Betadine®), while the rectal and vaginal lumen were cleansed with water-based antiseptic solution (Cholorohexadine: Savlon®). A Foley's catheter was inserted in all patients.

Simple fistulectomy: Simple fistulectomy was done in all cases of low RVF (30 patients) and 7 cases of intermediate (mid-zonal cases) types (more low).

Rectal advancement flap: Figure 7a-e was used in the treatment of 18 patients. Successful repair in 11 patients was obtained. Seven patients had recurrent fistula and underwent another trial of rectal advancement flap with a net result of failure of 2 cases needed trans-abdominal approach with protective colostomy.

Single incision trans-perineal repair: With bulbo-cavernosus muscle flap was used in the treatment of other 24 patients.

Sub-mucosal injection of adrenalized saline 1:300,000 injected around the fistula at the vaginal and rectal sides. Surgical excision of the fistula using the scalpel was achieved.

Transverse perineal incision with elevation of the posterior vaginal wall was done. Then, proceed for dissection of the internal sphincter fibers away from the external sphincter fibers allowing tension-free closure at the fistulous site. Closure of the fistulous opening at the rectal side was done using Vicryl® 3/0 sutures. This is followed by suturing RVS (recto-vaginal septum) to the internal sphincter fibers (Fig. 8a-b) using Vicryl® 3/0 sutures.

The bulbo-cavernosus muscle flap from the left side is harvested through the same incision and suture it across the rectum to its fellow on the other side (Fig. 9a-b) using 2/0 Vicryl® sutures. Advancement of the vaginal flap (Fig. 9c) at the fistula site and suture it to perineal skin using 3/0 Vicryl® sutures.

No suction drain was used. No covering stoma has been done. Oral intake is delayed for 5 days post-operative. Start with clear oral fluids for next 5 days and gradual return to food intake. Patients were abstained from vaginal intercourse for 3 months.

Patients with Tuberculosis and Crohn's Disease were treated trans-abdominally by excision of fistulous tracts, repair of vaginal vault with primary resection and anastomosis in 20 cases and resection anastomosis with protective colostomy in 19 cases.

All cases with colostomies were closed in a period from 3 to 6 months except 3 cases (two with Tuberculosis and one with recurrent carcinoma), had colostomies closed one year later.

All patients with post-radiation proctitis and fistulae formation treated trans-abdominally with excision of the affected segment of the rectum and anastomosis that protected with colostomy except one ended with terminal colostomy.

RESULTS

Clinical success was achieved in 89 cases (75.4%), 10 cases of recurrence (8.5%), 9 cases with wound infections and edema (7.6%), 4 cases with colostomy complications (3.4%), 3 cases with perineal abscesses (2.5%), 2 cases with hematoma (1.7%) and one case with postoperative dysparonia.

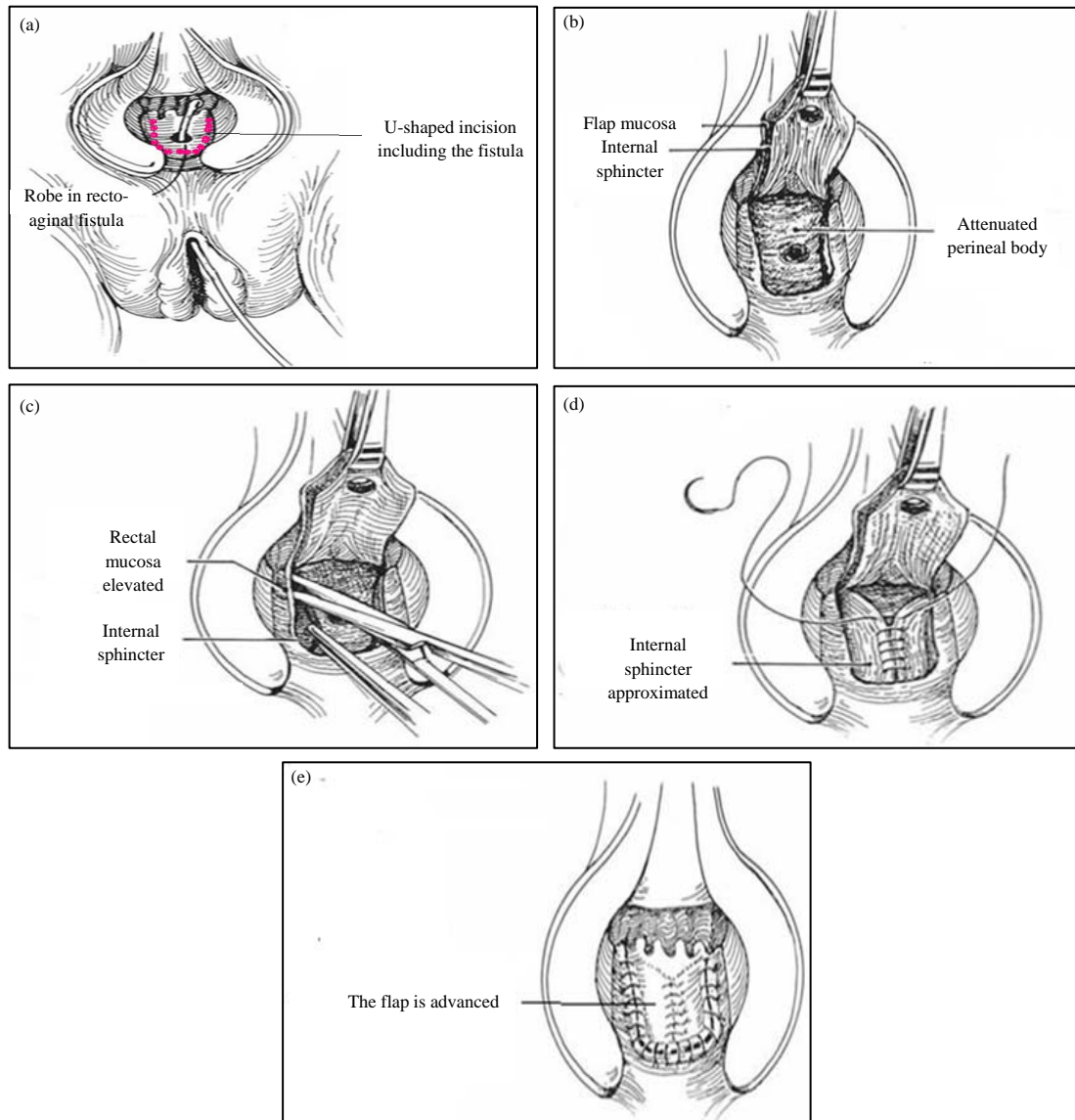


Fig. 7a-e: Rectal advancement flap, (a) Probing the fistula and U-shaped incision including the fistula¹⁸, (b-c) Flap is raised by dissection of the rectal mucosa¹⁸ and (d-e) Repair is done by approximation of internal sphincter¹⁸

Clinical success was achieved in 108 cases (74.6%):

- Thirty-three of thirty-seven cases (89.2%) treated with simple fistulectomy (3 failed cases (8.1%): One of them repaired with rectal advancement flap while the other two need trans-abdominal approach and protective colostomy)
- Sixteen of eighteen cases (88.9%) treated with trans-rectal advancement flaps (2 failed cases (11.1%) need trans-abdominal approach resection-anastomoses and protective colostomy)
- Twenty-one from twenty-four cases (87.5%) treated with single incision trans-perineal repairs (4 failed cases (16.7%), 3 of them need trans-abdominal approach with covering colostomy while the 4th one passed by re-doing the approach)
- Twenty from twenty cases (100%) treated with trans-abdominal approach with primary resection-anastomosis passed smoothly without a case of failure
- Eighteen from nineteen cases (94.7%) treated with trans-abdominal approach and colostomy (the only case of failure (5.3%) needs abdomino-perineal resection and terminal colostomy)



Fig. 8a-b: (a) Dissection of internal sphincter fibers and suture it to recto-vaginal septum (RVS) and (b) Bulbo-cavernosus muscle flap preparing

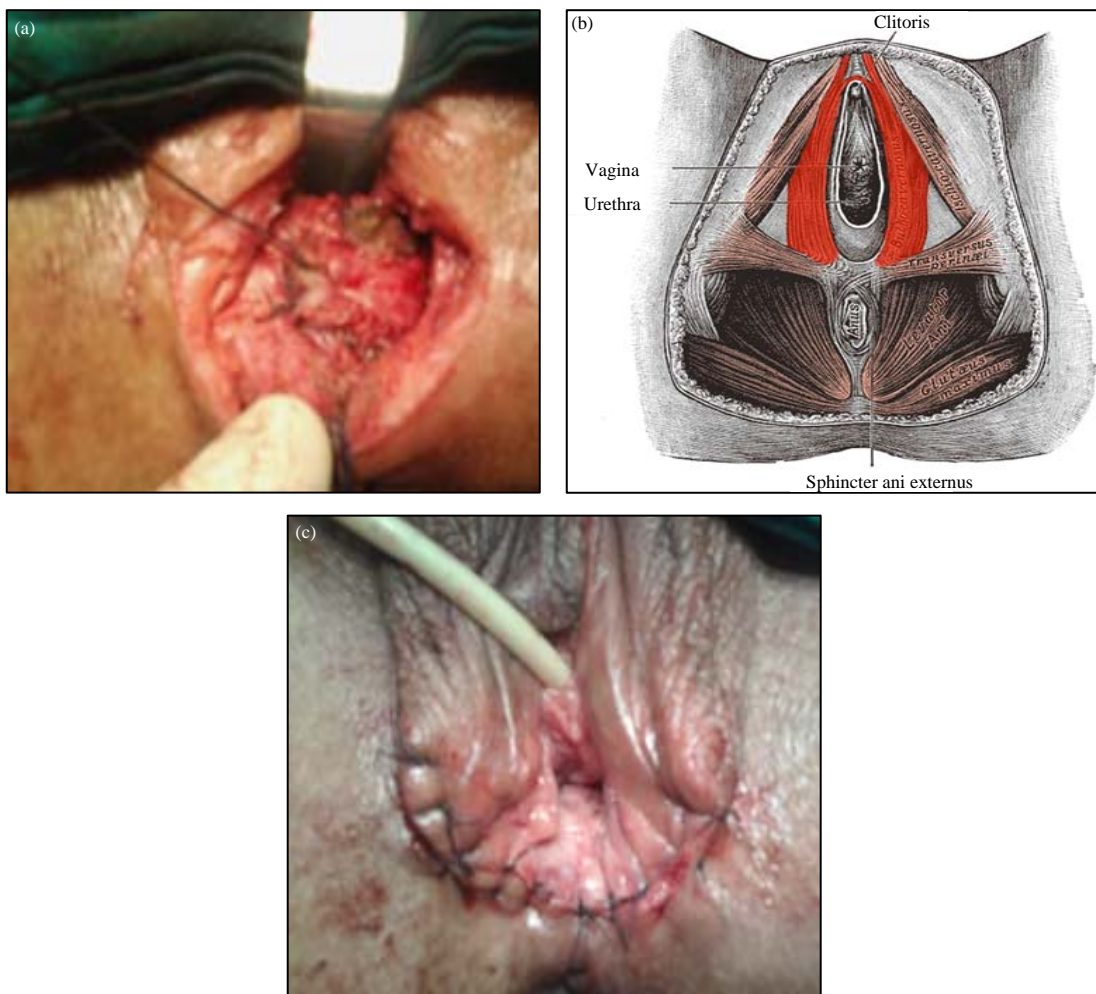


Fig. 9a-c: (a-b) Bulbo-cavernosus muscle flap suturing to its fellow and (c) Repair completed with vaginal advancement flap and Folly's catheter in-situ

COMPLICATIONS

The overall complication rate in 118 cases was 29 cases (24.6%):

- Ten cases (8.5%) of recurrence (7 of them need trans-abdominal approach with protective colostomy while the last one need abdomino-perineal resection and terminal colostomy)
- Nine cases (7.6%) with wound infections and edema (treated with broad-spectrum antibiotic: Ciproflexacine 500mg infusion\12 h for 7days plus clindamycin (Dalacin-C®) 600 mg injection\12 h for 7days too)
- Four cases (3.4%) with colostomy complications
- Three cases (2.5%) with perineal abscesses
- Two cases (1.7%) with hematoma and
- One case (0.8%) with post-operative dysparonia

DISCUSSION

As regard to this study, the reported healing rate was 89.2% in cases with simple RVFs, this is nearly equal to the results reported (88% success rate) by Lowry *et al.*¹⁹.

Trans-perineal approach and pubo-coccygeus muscle interposition is an effective technique for recto-vaginal space reconstruction^{20,21,22}. They also reported same results as follow; 88.9% success rate in 18 cases treated with rectal advancement flap and 87.5% in 24 cases treated with single incision trans-perineal repair.

High recto-vaginal fistulas or those associated with previous surgery or radiation therapy generally require an abdominal approach²³. A success rate was achieved in 20 cases (100%) with high recto-vaginal fistulas treated by trans-abdominal with primary resection-anastomosis. In addition, the authors achieved 94% success rate in 19 cases with high recto-vaginal fistulas treated by trans-abdominal approach with protective colostomy. Excellent results have been reported in several series e.g. Mazier *et al.*²⁴ reported a success rate of 100% in 38 patients treated by trans-abdominal approach with primary resection-anastomosis and a rate of 97% in 19 patients treated with trans-abdominal approach with protective colostomy.

The main value of the present study is the confirmation of the surgical intervention in treatment of recto-vaginal fistula as the main curative treatment. In addition to the confirmation of individualization of treatment according to preoperative anatomical findings. One limiting step of the present study is the small number of included subjects. Thus, future studies with a large number of patients are recommended.

CONCLUSION

The curative treatment of recto-vaginal fistula is the surgical treatment. The study revealed that success rate was comparable between different available surgical techniques. Thus, the optimal surgical technique does not exist and treatment should be individualized.

SIGNIFICANCE STATEMENT

This study discovers that the surgical treatment of recto-vaginal fistula is the only curable treatment. There are many surgical procedures for treatment and usually surgical procedure is based on anatomical site and type of fistula. Thus, this study will help in individualization of treatment for each patient.

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