Laparoscopic fistula repair for high-level rectovaginal fistula by combined transabdominal–transvaginal approach: a case report

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Introduction

Rectovaginal fistula (RVF) presents with symptoms of passage of flatus or feces through the vagina, accompanied by severe sexual and psychosocial dysfunction in patients. For high-level RVF, the transabdominal approach represents the standard procedure [1, 2]. The management of RVF poses a considerable challenge for surgeons due to the relatively high recurrence rate.

In a prospective study, laparoscopic fistula excision was performed in 40 patients. Some patients developed complications such as omental necrosis and abscess during the follow-up period [3]. This is mainly because the RVF fistula was opened into the abdominal cavity and resulted in additional abdominal infection. We have previously had success using a stapler to close the fistula [4, 5]. As we did not open the fistula, the incidence of localized infection was significantly reduced. In this instance, we described the effective treatment of a high-level RVF through laparoscopic RVF repair by combined transabdominal–transvaginal approach, incorporating the application of a stapler.

Case report

A 39-year-old woman with seven gravidities and three parities was admitted with vaginal defecation. She had undergone multiple curettage and uterine polypectomy several years ago. Her complaints began with vaginal passage of flatus in 2022, and subsequently progressed to vaginal defecation. There were no indications of alcohol consumption, smoking, or drug abuse in this case. Notably, there were no signs of sphincter dysfunction. In April 2023, an RVF was diagnosed by magnetic resonance imaging (MRI) (Figure 1A).

The patient provided consent for surgery, underwent rectal and vaginal irrigation and catheterization preoperatively. She was placed in a lithotomy position and under general anesthesia. The fistula was identified on the posterior wall of the vagina at a distance of ~9 cm from the vaginal orifice (Figure 1C and D). Following the establishment of pneumoperitoneum, five trocars were positioned. The ileum loops were gently repositioned out of the pelvic cavity and the uterus was suspended. A peritoneal incision was initiated over the sacral promontory, extending laterally and posteriorly along the rectum over the deepest segment of the pouch of Douglas. Frontally, the Denonvilliers’ fascia was incised. The upper segment of the fistula was identified and subsequently dissected (Figure 1E). The vagina was incised transversely ~3 cm below the fistula (Figure 1F). The complete exposure of the fistula was obtained by direct vision following the release of its lower portion (Figure 1G). The fistula was transected through the vaginal incision using an Echelon Flex 60 Endopath stapler (Ethicon Endo-Surgery Inc., Cincinnati, OH, USA) (Figure 1H and I). The fistula stump and the rectal-side anastomosis were secured with an absorbable 3–0 barbed Stratafix suture (Ethicon Endo-Surgery Inc., Cincinnati, OH, USA) (Figure 1J). After the posterior vaginal wall was sutured without tension (Figure 1K), the abdominal operation was reintroduced. The omentum was detached from the colon, mobilized, brought down to the pelvis, and inserted into the rectovaginal septum. Hemostatic clips (Sichuan Guona Technology Co., Ltd, Sichuan, P. R. China) were utilized to secure the omentum to the rectal side (Figure 1L). A drain was inserted through the right flank into the pelvis.

The postoperative MRI did not detect the presence of a fistula (Figure 1B). No complications such as incision bleeding, infection, or dehiscence were observed during the hospitalization period. Over a follow-up of 9 months, the patient exhibited a satisfactory recovery with no recurrence of symptoms or adverse events such as pain or dyspareunia.

Discussion

Various surgical options are available to treat RVF, but there is no consensus on the preferred procedure. Currently, there is a...
notable absence of published reports regarding the utilization of combined transabdominal–transvaginal approach for RVF treatment. In this report, we presented a case of a patient suffering from a high-level RVF using achieved a successful recovery through this innovative surgical technique, demonstrating its promising potential.

Tension-free repair is pivotal in reducing recurrence rates, necessitating the operator to effectively separate the fistula and rectovaginal septum, minimizing tension in the surgical area. This double-entry approach affords a comprehensive visualization with precise separation of the upper aspect of the fistula from the laparoscope and the lower aspect from the vaginal incision under direct observation, which better avoids unnecessary injury. It enhances the protection of critical adjacent tissues, such as the rectum, uterus, and bladder. In this procedure, the vaginal incision compensates for the lack of visualization of the lower part of the fistula provided by laparoscopic surgery. Coupled with the extensive view provided by the double-entry approach, the operator can reduce the difficulty of the procedure and shorten the operative time.

Conventional laparoscopic repair opens the fistula during resection and may also result in a more extensive lesion on the rectal side and additional contamination during routine surgical procedures. We believe that closed RVF repair, rather than opening the tract, will result in more advantages including minimal trauma and reduced infection. What’s more, incision ruptures constitute a significant factor contributing to recurrence. The hand-sewn intermittent sutures pose challenges in delivering consistent mechanical support. A distinguishing characteristic of this procedure is the incorporation of a stapler, providing a continuous and tightly closed arrangement, thereby facilitating the security of the closure.

Laparoscopic repair by combined transabdominal–transvaginal approach may prove particularly advantageous when dealing with patients afflicted by high-level RVF. This refinement in procedure has sufficient mobilization and low tension, enhancing the precision of the treatment. But there is no conclusive evidence of the generalizability of our technique to the population. To assess the long-term clinical outcomes of this procedure, it is imperative to undertake further investigations with larger sample sizes and clinical randomized controlled trials.

Figure 1. Clinical data of a case report of laparoscopic fistula repair for high-level rectovaginal fistula by combined transabdominal–transvaginal approach. (A) Preoperative magnetic resonance imaging (an arrow pointing to the fistula). (B) Postoperative magnetic resonance imaging. (C) Confirm the location of the fistula. (D) Measure the distance between fistula and the vaginal orifice (an arrow pointing to the fistula). (E) Dissect the upper part above the fistula. (F) Transvaginal incision (an arrow pointing to the fistula). (G) Completely dissect the fistula through the transvaginal incision. (H) Utilize a stapler to resect and close the fistula. (I) The stumps of the fistula on both sides after using the stapler. (J) Embed the fistula stump on the rectal side. (K) Tension-free suturing of the vaginal incision. (L) Omental interposition.
Acknowledgements
This study was reviewed and approved by the Ethics Committee of Sun Yat-sen Hospital, Guangzhou, P. R. China (No. 2023ZSLYEC-625).

Authors’ contributions
H.L. performed the surgical procedure and served as the principal investigator. M.L. drafted the manuscript. H.C., G.X., Y.Z., and C.Y. collected the data. All authors read and approved the final version of the manuscript.

Funding
This work was supported by Guangzhou Clinical High-Tech Project [grant number 2023P-GX09], The Sixth Affiliated Hospital, Sun Yat-sen University Clinical Research 1010 Program [grant number 1010PY2020-18], Science and Technology Program of Guangzhou [grant number 20200200081], National Key Clinical Discipline, and Guangdong Provincial Clinical Research Center for Digestive Diseases [grant number 2020B1111170004].

Conflict of interest
None declared.

References