

Case Report

Buccal mucosa graft combined with Gracilis muscle flap interposition to repair recurrent rectourethral fistula: Case report and the literature review

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Abstract:

Purpose: Rectourethral fistula (RUF) is a rare occurrence and its management is a surgical challenge. We presented a case of recurrent rectourethral fistula treatment with buccal mucosa graft combined with gracilis muscle flap interposition.

Methods and Materials: A 25-year-old male laborer had anal pain with high fever for one week and rectourethral fistula was diagnosed. We performed the buccal mucosa graft and gracilis muscle flap interposition to repair the recurrent rectourethral fistula.

Result: The following urethrography and cystoscopy revealed well healed of fistula for 2 years.

Conclusion: Buccal mucosa flap could be a choice of simple rectourethral fistula but not satisfied to repeat rectourethral fistula. As our experience, the choice of buccal mucosa graft combined with gracilis muscle flap interposition repair of recurrence of rectourethral fistula is successful.

1. Introduction

Rectourethral fistula (RUF) is a rare occurrence but a challenge of surgery. According to Culp and Calhoun's study, it's etiology was divided to five category: congenital, iatrogenic, traumatic, neoplastic and inflammatory.¹ It also showed that anorectal malformations constitute about 20% cause in all case. Iatrogenic fistulas can follow pelvic surgery, such as radical prostatectomy, restorative proctectomy.² In addition to that, there was some iatrogenic RUF occurred after radiation therapy, brachytherapy, cryotherapy and high-intensity focused ultrasound therapy (HIFU). Radiation induced RUFs accounted for only 3.8% of all reported RUFs before 1997, while the incidence of those appearing after 1998 increased to 49.6% of all published series.⁷ Rectourethral fistula (RUF) is a rare, but severe, complication that occurs in

$\leq 3\%$ of patients after 1 HIFU session for localized PCa^{3,4} and $\leq 6.45\%$ after salvage HIFU, respectively.^{5,6} Both conservative and surgical approaches have been described for its management. With a conservative approach using bladder and bowel diversion, the observation time is uncertain.⁸ Surgical approach using various sites and flaps to separate urethra to rectum. Several types of tissue flaps may be used such as free flap or graft and vascularized flap. The treatment of RUF was controversial and various. So we presented a case of recurrent rectourethral fistula and our experience of treatment with buccal mucosa graft combined with gracilis muscle flap interposition.

2. Case Report

This 25 years-old male laborer had history of imperforate anus, intermediate type and received reconstruction with pull-through procedure at age 2.5 years old. After operation, the urination was normal but stool incontinence was noted especially at night. The stool incontinence was improved gradually and the problem was absent while 20 years-old. The patient had anal pain and high fever for one week on February, 2009. He visited to other hospital on February 13th, 2009 and prostatic abscess with rectoprostatic fistula was diagnosed. The colostomy and suprapubic cystostomy was performed in the hospital. He visited to China Medical University Hospital on May, 2009 and the cystoscopy showed a hole in ventral aspect of proximal bulbourethra which communicated to rectum. (Figure. 1) Antibiotics treatment and diversion were suggested first. The urethrocytography was done on July, 14th, 2009 and bulbourethro-rectal fistula was noted. (Figure. 2) He received transacrococcygeal operation of fistula repair by CRS doctor on August 13th, 2009 but failed. We performed transperineal buccal mucosa graft repair of the rectourethral fistula on January 19th, 2010 but still failed. After discussion, use of vascularized flap was considered. He received transperineal operation of buccal mucosa graft combined with gracilis muscle flap interposition to repair the rectourethral fistula on January 4th, 2011. (Figure 3.4) The urethral Foley catheter removed 1 month later after operation. On April, 2011, the urethrocytography and urethrocytography showed well healed of the fistula. (Figure 5) On July, 2011, the colostomy was taken down and wound was healed well. (Figure 6) There was no recurrence of fistula and well-healed of the previous rectourethral fistula until August, 2013.

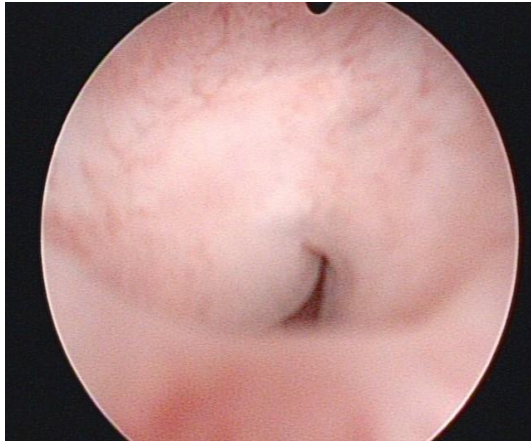


Figure 1



Figure 2

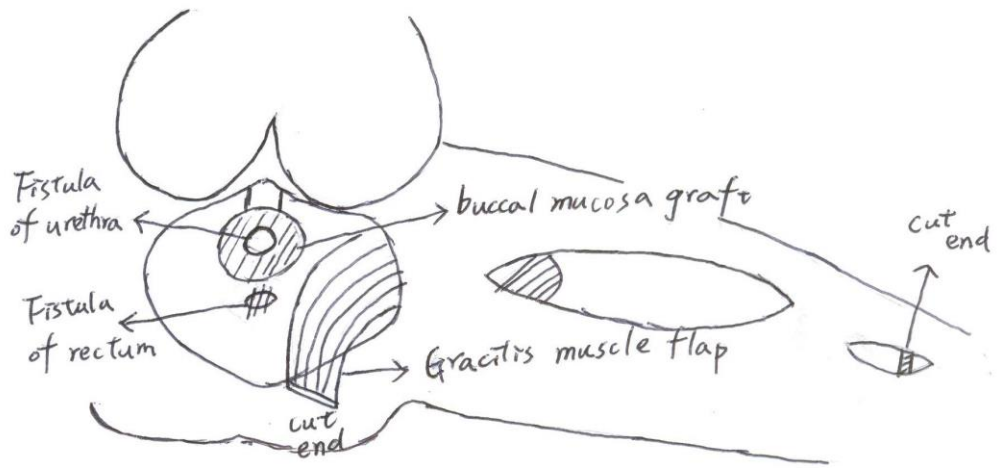


Figure 3

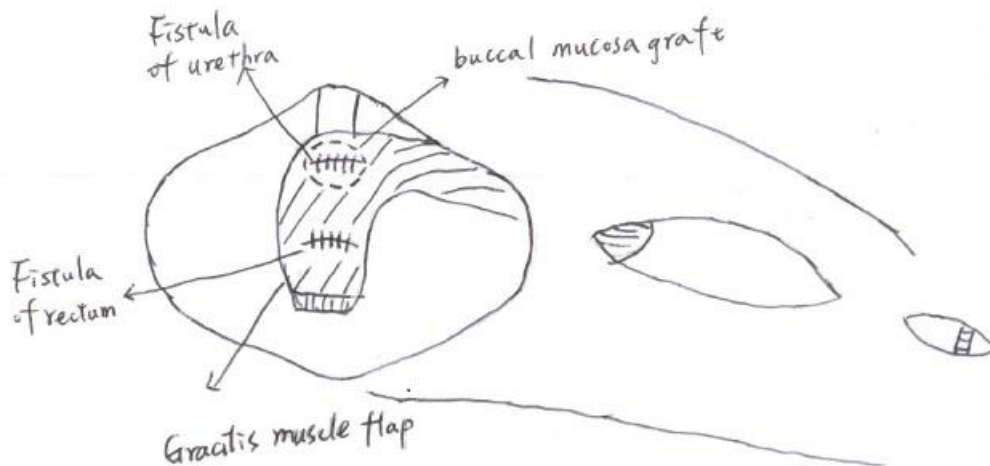


Figure 4

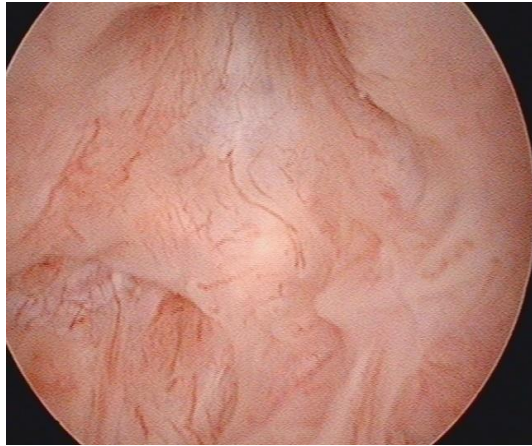


Figure 5



Figure 6

3. Discussion

Congenital fistula between the rectum and urethra in association with an imperforate anus occurs as a result of inappropriate perineal surgery performed at the time of birth.⁹ **Culp and Calhoon et. al.** showed that anorectal malformations constitute about 20% cause in all case. **Alex J. Vanni et. al** routinely wait 3 months before surgical repair using urinary and fecal diversion to allow a trial of spontaneous resolution and to allow the acute inflammatory phase to resolve in the non-radiated surgical fistula group.⁷ **Gaurav Gupta et. al** also performed diversion colostomy in all patient who had rectourethral fistula before repair.⁸ Our patient also received urinary and fecal diversion before operation and antibiotics treatment. As our experience, even the fistula didn't resolve spontaneously but the diversion improved local tissue inflammatory status and reduction of infection. The operation of fistula repair was various in the approach sites, such as trans-abdominal, posterior approach (Kraske's or York Mason), perineal approach (Young and Stone), perianal or intra-anal (Park). We performed the operation with perineal approach because the method was familiar to our urologist. **Martin Spahn et al.** used perineal repair and buccal mucosa interposition for successful fistula closure. Four of the five RUF were repaired successfully using the perineal approach and buccal mucosa graft interposition. Failure occurred in one patient who had developed a RUF after laparoscopic radical prostatectomy followed by two unsuccessful attempts at closure. The failure was most probably due to a previously undetected postoperative perineal hematoma with infection. **Martin Spahn et al.** considered that perineal approach for repair RUF combined with buccal mucosa graft interposition is successful fistula closure, especially in repeat surgery.¹⁰ Our patient ever received transacrococcygeal operation of fistula repair but failure. After that, we performed perineal approach operation of fistula repair with buccal mucosal graft but failure. As our experience, we

thought that repairing RUF with buccal mucosa graft only without vascularized flap was not appropriated to repeat surgery of RUF repair. Various vascularized tissue flaps has been described for repairing RUF, including the omentum, island groin flap, scrotal myocutaneous flap and dartos pedicle flap. The use of gracilis muscle for the treatment of RUF was first described by **Ryan et al.** in 1979.⁸ **Gamal Ghoniem et al.** showed that the advantages of using gracilis muscle include it's consistent vascular anatomy and relative ease of dissection. The gracilis muscle has been used as a rotation flap without a significant effect on lower limb strength and range of motion.¹¹ **Gaurav Gupta et al.** showed 15 RUF (7 iatrogenic, 5 congenital and 3 traumatic) were all received the perineal approach and gracilis muscle flap interposition. RUF closure was successful in all the patients. The results showed that RUF closure using the perineal approach with pedicled gracilis muscle interposition is associated with low morbidity and a high success rate (100%).⁸ The article revealed that gracilis muscle interposition was a excellent choice for repairing of RUF. **Alex J. Vanni et al.** was a retrospective review of patients under going RUF repair. The article divided to two groups by etiology with non-radiate and radiated/ablation. The total 74 patients with RUF (35 non-radiated and 39 radiated/ablation) with standard anterior perineal approach with an interposition muscle flap and selective use of buccal mucosal graft. The successful rate of RUF closure is up to 100% in non-radiated group. The successful rate of RUP closure is also up to 84% in radiated/ablation group.⁷ It revealed that either radiated related RUF is still high successful rate by gracilis muscle flap interposition method. In this article, urethral catheter is for 2 weeks and suprapubic catheter is for 4 weeks in non-radiated group. In radiated/ablation group, the urethral catheter is for 6 weeks and suprapubic catheter is for 8 weeks. As our experience, we removed urethral catheter about 4 weeks later to operation because the patient ever had infection and repeat two times operation.

4. Conclusion:

Fecal diversion is an important part of this reconstruction. Buccal mucosa graft could be a choice of simple rectourethral fistula but not satisfied to repeat rectourethral fistula. As our experience, the choice of buccal mucosa graft combined with gracilis muscle flap interposition repair of recurrence of rectourethral fistula is successful and should be a good choice.

5. Reference:

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