Case Report

Introduction

Recto-urethral Fistula (RUF) is a rare surgical condition requiring complex and precise surgery. Culp and Calhoun classify recto-urethral fistula into five etiological categories: A) congenital abnormality of the rectum and urinary tract, B) iatrogenic after surgeries such as open prostatectomy, radiotherapy, Brachytherapy, urethral instruments, C) Trauma, D) Neoplasm, and E) Inflammatory. Of these, 60% of RUF are iatrogenic [2], and the majority of these are the cause of radical prostatectomy [3-5]. RUF has also been reported after prostate cryosurgery, radiotherapy, chemotherapy, high-intensity focused ultrasound, and transrectal hyperthermia [6-8]. Common symptoms of RUF are watery stools, fecaluria, and pneumaturia [9,10]. RUFs are diagnosed by symptoms such as fecaluria and pneumaturia or leakage of urine from the rectum. Rectal digital examination, proctoscopy, and cystoscopy are some diagnostic methods [11,14]. Spontaneous closure of small RUFs following long-term urethral cauterization has been reported [15]. Currently, the accepted treatment protocol worldwide is surgical restoration [6,19], with more than 40 surgical techniques being described in the literature [17-19], including transperineal,
transrectal, posterior pararectal, transabdominal and transves-
ticle, transsphincteric, or a combination of these [20]. However,
to the best of our knowledge, no research has been conducted
on the bulbo-puginesous muscle flap technique for the recto ure-
thal fistula.

Case report

The patient was a 25-year-old man whose urethra was com-
pletely obstructed after PFUDD (pelvic fracture of urethral dis-
traction disease) due to a car accident and trauma. The patient
did not have any underlining disease and did not use any medi-
cation. After PFUDD, cystostomy was done. From the time of
injury, the patient had erectile dysfunction and did not have
a morning erection. Additionally, the patient reported semen
fluid exiting from the anus during night orgasm. The patient
underwent a flexible cystoscopy in the first attempt to correct
this problem. The urethra was found to be one centimeter after
Verumontanum, was completely obstructed, but no fistula was
observed. The subsequent flexible cystoscopy also found no fis-
tula and complete obstruction was seen (Figure 1).

The patient underwent posterior urethroplasty surgery in
which a perineal incision was made and the urethra was re-
leased and cut from the membranous obstruction site. While
releasing the posterior urethra, a fistula opening measuring 0.3
x 0.3 cm was seen; a guide was passed from it entering the rec-
tum to the distance of 3 cm from the posterior rectum sphinc-
ters. The fistula opening was released from the surrounding tis-
ue and refreshed and repaired with vicryl thread 4-0. Following
that, the hemi bulbo-puginesous muscle was released and cut
at the upper limit border, and a flap with a vascular base was
quilted onto the fistula opening by vicryl 4-0. Finally, an end-to-
end urethroplasty was done using 6 vicryl 3-0 sutures, and an
urestomy was completed for the patient (Figure 2). In the fol-
low-up (3-6 month), the patient had no recurrence of the fistula
and no subsequent problems one month after discharge in his
RUG (Figure 3). The patient was discharged from the hospital
without any problems, although a more detailed examination
of sexual problems and the functioning of the urinary system
are required.

Discussion

RUF is a rare but devastating disease with many different
etiologic origins, such as congenital, inflammatory, neoplastic,
or traumatic [21]. Traumatic RUF is mainly seen in injuries sus-
tained during war [22] and is accompanied by extensive dam-
age to the urinary tract, which causes extensive constrictions.

Traumatic RUF can cause challenging problems for surgical
reconstruction. Because this condition is rare, no method has
been proven more effective, becoming the accepted method of
choice [22]. Closure of the RUF by itself or in a single-step tech-
nique is only possible in a few cases. In most cases, treatment
is done in three steps, double diversion urinary and intestinal,
closure technique, and undiversion. RUF repair includes many
techniques, with the intersphincteric York-meson repair tech-
nique most commonly used [23]. Urologists tend to prefer the
transperineal technique for RUF repair. This allows full exposure
of the bladder neck and prostate and makes it possible for ure-
thal repair after RUF repair. It also helps using different grafts.
Interposition grafts are used as a second layer base after RUF
closure to prevent relapse because of the closeness of the su-
ture lines. Many types of interposition grafts are used in many
different areas: gracilis muscle, dartus muscle, tunica vaginalis
flap, penile skin, levator muscle, and bladder. The use of these
tissue flaps is associated with complications such as hematoma
formation, infections, and wound loss [24].

In this case study, we placed a bulbospongiosus flap on a pa-
tient with RUF, and the flap and fistula repair were successful.
The advantages of using the bulbospongiosus muscle are A) it is
well-vascularized, B) it is superficial and adjacent to the fistula
and compared to other common flaps, its use is associated with
a lower complication rate [25], and C) no functional impairment
or cosmetic deformation at the repair site is seen. The bulbos-
pongiosus muscle works as an erectile contraction muscle [26].
This function can be preserved post-operatively by the opposite
bulbospongiosus and ischiocavernous muscles. Using bulbos-
pongiosus muscles, subcutaneous tissue, and skin is suggested

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Using the perineal approach of the penis to investigate possible fistulas, as previously stated in another study, can be useful [30]. Since it provides a complete examination of the urethra from the junction of the bulbomembrane to the glans, this approach makes it possible to accurately estimate the part of the urethra affected by the disease and facilitates proper removal of penile flap and grafting. Additionally, the allocation of flap and graft becomes technically easier. The second significant difference with previous studies is that the urethra was opened dorsally instead of ventrally after unilateral dissection. This approach has two important advantages. First, the vascular supply of the urethra and the bulbospongiosus muscle is preserved on one side, reducing the risk of ischemia and neurological dysfunction. Second, the ventral aspect of the corpus spongiosum is preserved. The corpus spongiosum is a vital blood supply source and supports the urinary tract. Lastly, after repairing the urethral fistula, the abdominal flap is covered with preserved corpus spongiosum, reducing the risk of diverticulum formation [30].

We acknowledge that our study presents a relatively short follow-up, which limits the number of complications that may occur after complex surgery, including fistula recurrence, diverticulum formation, or urinary dysfunction. Second, we also acknowledge that our study lacks information on sexual dysfunction before and after treatment. Indeed, erectile function scores and penile Doppler findings for our patients were not evaluated. Finally, we acknowledge that no conventional retrograde urethrograph was performed 12 months after surgery, as is now recommended by guidelines for complex cases [31]. In summary, our study joins previous publications on single-stage grafting with posterior ureteroplasty, expanding our knowledge of this challenging reconstructive surgery. Our approach proved that posterior ureteroplasty with single-stage bulbospongiosus muscle grafting is an option for RUF fistula repair.

Conclusion

RUF fistula is a rare but devastating disease that poses a serious challenge to surgery, with no definitive surgical treatment method yet reported. This study found that the use of the posterior ureteroplasty method and repair by bulbospongiosus muscle flap provided acceptable treatment results for patients with RUF due to trauma. However, more research is needed in fistula studies regarding the evaluation of the patient’s sexual and urinary efficiency in order to achieve more accurate results.

Declarations

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Data sharing statement: We confirm that all material methods and data are available.

Declaration of competing interest: The authors have no conflicts of interest.

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References


