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Treatment and Repair of Recto-Urethral Fistulas with Tunica Vaginalis Flap

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Abstract: Recto-Urethral fistula is an uncommon complication of pelvic surgery or trauma. Most of these patients require definitive operative repair. The techniques used for repairing these fistulas very much vary in techniques and success rates. Because of the rarity of this condition and variability in techniques used, in this report of small number of patients using vascularised tunica vaginalis flap interposition was undertaken. This is a report of 2 children who had developed recto-urethral fistulae following ano-rectal anomaly correction surgeries. The fistula repair was done through perineal approach and interposition of vascularised tunica vaginalis flap in between rectum and urethra. Following the recto-urethra fistula repair there was no recurrence in the follow-up period of 3 years.
Keywords: Rectum, Urethra, Fistula, Tunica Vaginalis

INTRODUCTION

Recto-urethral fistula is a rare complication of pelvic surgery, trauma and inflammation. This is a rare and devastating complication of prostate or rectal surgeries [1], pelvic trauma [2], inflammation [1] and radiation [3]. No single and standard operative management is available with good success rate [1, 4]. The rarity of the disease and multiplicity of techniques adopted resulted in limited success rates and recurrences.

Mainly two primary techniques include local repair and tissue interposition. Local repair procedure has the advantage of low morbidity and low mortality. The latter technique has a well vascularised tissue flap into the area of compromised tissues to encourage healing. Using trans-perineal approach and vascularised tunica vaginalis flap interposition in the management of recto-urethral fistula repair is being reported.

MATERIAL AND METHODS

This report includes two children with acquired recto-urethral fistula since 2009 till date. The children were assessed for the initial cause of the fistula, symptomatology and any previous attempts of repair. Both the children underwent vascularised tunica vaginalis flap interposition repair through perineal approach during this 5 year period.

Using extended lithotomy position a trans-perineal incision was made extending up to scrotum in an inverted 'u' shape. The incision was carried down through the dermis and subcutaneous tissue and flap was dissected free of the underlying tissues, carrying dissection to the trans-perineal area outside the sphincter complex. Dissection was carried out between the sphincter complex and the urethra until the fistula was identified. To allow a tension free repair of the rectum and urethra the tissue surrounding the urethra was mobilized. The rectal fistula opening was repaired with 3-0 interrupted Vicryl sutures. The urethral fistula opening was repaired with 4-0 interrupted mono-filament PDS sutures. Next one of the testes along with its coverings was delivered into the wound from the scrotum. A tunica vaginalis flap was created so as to interpose preferably epithelial side facing the urethra between the sutured urethra and rectum. 2-0 absorbable sutures were placed into the tunica vaginalis flap and this flap was tied down interposing into the plane that was created between the rectum and the urethra. The skin and subcutaneous tissue were closed in layers keeping a small suction drain.

RESULTS

Both the children were male with an age of 7 and 10 years and underwent vascularised tunica vaginalis flap repair. Both the children had undergone surgery for ano-rectal anomaly in the neonatal period. Passing urine through rectum was the main symptom and one child had fecaluria and pneumaturia. Postoperative period was 3 and 4 years. Two of them had previous unsuccessful attempts of repair through the abdominal route. Both of them had fecal diversion at presentation. Children were properly evaluated and had retrograde urethrogram. Both had less than 1 cm recto-urethral fistula within 4 cm from the anal verge. No active infection was seen. A pre repair fecal diversion via a colostomy was done 6 weeks prior to the repair.

As described above both the patients under went repair. Post operatively children did well, except one developing perineal wound infection. With daily wound dressing and secondary suturing the wound healed well. Three weeks after the repair per -catheter urethrogram was done. Six weeks after no leak was found in any of these patients and voided well after removal of the catheter. The follow-up period was 3 and 4 years. There was no recurrence of fistula or rectal or urethral strictures were noticed.

DISCUSSION

Acquired recto- Urethral fistula can result from infection, trauma, cancer, Injuries during prostatic, rectal, anal and bladder surgeries. Injuries detected intra-operatively can be repaired immediately, where as unrecognized can result in recto-urethral fistulas. Spontaneous closure of these fistulas is not that uncommon (3 out of 8 patients) [5]. Persistence of symptoms for more than 6 months may require surgical repair. The complexity and inherent problems in repair of recto-urethral fistulas resulted in the adoption of different surgical techniques.

A trans-sphincteric approach (The York-Masson repair) [6, 7] is the most popular and common technique used. The reported largest series from Renschler and Middleton [8] showed a success rate of 95%. Trans- perineal repairs provide excellent access to the urethra and bladder neck and allow for interposition of vascularised tissue. Fistula healing can be enhanced by proper placement of well vascularized tissue into the area of repair. Transposition of the gracillis muscle has been described for reconstruction of large defects [9].

The use of a dartos muscle interposition flap for repair of a recto- urethral fistula was described by Varma *et al*. [10]. Adopting perineal route using gracilis muscle interposition in the repair of recto-urethral fistula repair Gupta *et al*. [11] reported their experience with 15 cases and good results (all cases). Initiated by the use of tunica vaginalis as a second layer of neourethral coverage in hypospadias repair [12], urethral reconstruction and use of a pedicled tunica vaginalis flap to cover anastomotic urethroplasty, in both cases vascularized tunica vaginalis flap interposition was used in repair of recto-urethral fistula [13, 14]. Having only two cases the superiority of this procedure over other techniques cannot be claimed. However like dartos muscle tunica vaginalis can be easily obtained, well vascularised flap that can be easily interposed in between the rectum and urethra. This flap does not require an additional incision and incurs minimal morbidity.

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