

Extended dartos fascial flaps in distal Snodgrass TIP urethroplasties

R Singh, S Dalal

Citation

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Abstract

Purpose: To evaluate the role of extended dartos fascial flaps in prevention of urethro-cutaneous fistulas (UCFs) in distal Snodgrass TIP urethroplasties.

Patients and methods: Between 2004-2006, 18 distal hypospadiacs without chordee, aged 10-14 years with well-developed phallus and urethral plate, underwent distal Snodgrass TIP urethroplasties. Extended dartos fascial flaps were harvested by de-epithelialization of 5 mm strip of penile skin pedicled on one side of the urethral plate. The pedicled dartos fascial flaps were turned over to the other side across the mid line of the seam of the re-constructed neo-urethral tubes (tubularization of the median incised and grafted urethral plate) to provide them an in continuity re-enforcement against fistulization.

Results: Two of the 18 distal hypospadiacs had developed eccentrically placed micro UCFs, which healed spontaneously within 3 weeks of follow up due to their oblique fistulous tracts which were unfavorable for epithelialization.

Conclusions: The extended dartos fascial flaps provide mechanical and biological support to the under lying neo-urethral tubes, and prevent fistula-associated morbidities by avoiding suture line superimpositions.

INTRODUCTION

Urethro-cutaneous fistulization is the commonest post-operative complication of all types of hypospadiac urethroplasties. Numbers of soft tissue re-enforcement interposition flaps have been described in literature for strengthening the re-constructed neo-urethras against urethro cutaneous fistulas (UCFs) formations.^{1,2,3,4,5}

PATIENTS AND METHODS

Between 2004-2006, 18 distal hypospadiacs without chordee, aged between 10-14 years with well developed

phallus and wide urethral plate, underwent distal Snodgrass TIP urethroplasties. Neo-urethral tube (re constructed neo-urethra) was re-enforced by using extended dartos fascial flap pedicled on one side of the urethral plate. After anaesthesia and glans traction suture, an 8 mm wide urethral plate was defined in an U-shaped fashion. A 5 mm wide strip of penile skin was also marked on the right side of the right vertical limb of the urethral plate (Fig.1), which was de epithelialized (Fig.2), incised and lifted up from the under lying Buck's fascia, and thereafter rest of the U-incision was completed to design the urethral plate and glans wings were raised (Fig.3).

Figure 1

Figure 1: A 5 mm strip of penile skin marked on right side of right vertical limb of urethral plate.



Figure 2

Figure 2: De-epithelisation of 5 mm strip of penile skin.



Figure 3

Figure 3: Urethral plate defined, glans wings raised and extended dartos fascial flap harvested.



Urethral plate was widened by mid line urethrotomy, grafted and then it was tubularized in single layer by sub-cuticular continuous 6-0 chromic cat gut sutures on round body needle (Fig.4).

Figure 4

Figure 4: Tubularization of incised and grafted urethral plate.



The right sided pedicled extended dartos fascial flap was turned over to the left side across the mid line of the seam of the tubularized urethral plate (re-constructed neo-urethras) and sutured with few 6-0 chromic cat gut interrupted sutures to provide it an in continuity re-enforcement, especially near native meatus and corona, against fistulization. Glans wings were closed in two layers and the eccentric skin cover was completed either by using one flap or both flaps, Byar's technique or the circum-coronal closure of the degloved penile skin (Fig. 5).

Figure 5

Figure 5: Circumcoronal closure – on 7 postoperative day.



It took approximately 10 minutes to de epithelialize and harvest the extended dartos fascial flap. After surgery all patients were catheterised with No. 10 infant feeding tube for 15 days. All were given preoperative and postoperative antibiotics – intravenous Cefotaxime and Amikacin for initial 2 days followed by Oral Cefexime (dispersible tablets) till removal of catheter.

RESULTS

All patients had a regular follow-up, as per schedule i.e. weekly \times 1 month; monthly \times 3 months and thereafter every yearly till their marriage. Two hypospadiacs developed micro-UCFs, that healed spontaneously within 3 weeks of the follow up. Fistulas in both cases were located eccentrically in the region of corona. No fistula developed in any of the 10 cases during subsequent follow-up. Cosmetic and functional results were excellent in all the 18 cases.

DISCUSSION

In this modern era of hypospadiology, simple hypospadiac

urethroplasties, i.e., without providing re-enforcement to the newly re constructed neo-urethral tubes (neo-urethras) by interposition of additional soft tissue flaps between the neo-urethras and the covering skin, are neither scientifically advisable nor practically acceptable for fear of high incidence of partial or near total disruption of the repair (re-constructed neo-urethral tubes). Such repairs can result in macro UCFs, that are superimposed on thin walled neo-urethras and pose difficulties in their subsequent closures. In the classical Snodgrass TIP urethroplasty, the re-constructed neo-urethra is protected by a separately pedicled dartos fascial flap, which is harvested by dissecting the soft tissues from underneath the prepuce or the penile skin. The dartos fascial flap is sutured on both sides of the midline of the seam of the neo-urethra (two suture line closures).⁵ The flap designed by the authors i.e. the extended dartos fascial flap is pedicled, in continuity, on one side of the urethral plate. It is turned over and sutured on the other side (one suture line closure) of the mid line of the seam of the tubularized urethral plate to provide a more secured protection against fistulization of native external meatus and coronal sutures. A similar de-epithelialised flap has also been tried by Ross and Kay with good results, but the main difference between the two is that the flap described by Ross and Kay is not in continuity with the urethral plate whereas de-epithelialised flap used by authors is in continuity with the urethral plate.⁶ The vascularity of the peno-preputial complex, used for providing cover to the penile shaft, remains absolutely undisturbed. The region of native external meatus, penile neo-urethra and the corona require re-enforcement, where as the glandular part of the neo-urethra does not need additional strengthening because of the multilayered closure of thick and highly vascular glans wings.

These soft tissue flaps, which are interposed between the neo urethral tube and the covering penile skin, are called as soft tissue re enforcement interposition flaps (STRIFs) and are classified as axial or random flaps, local or distant flaps, and de-novo or de-epithelialized flaps. The STRIFs act as mechanical and biological barriers, and make suture lines more eccentric to produce oblique tracts of UCFs, which tend to close spontaneously as these are unfavorable for epithelialization. The real benefit of flaps is not the big difference in incidence of fistula but is in the morbidity caused by fistula, as the fistulae without flaps are of macrosized, placed in midline with thin perifistular tissue which never close spontaneously and will require complex surgical procedures to close them. Interposition flaps of any kind will not absolutely prevent fistulisation but decreases

the morbidity in terms of single fistula, microsized, eccentrically placed with thick perifistular tissue to facilitate their spontaneous closure or subsequent multilayered surgical closure if required.

CONCLUSIONS

Re-enforcement of neo-urethras by in continuity-pedicled extended dartos fascial flaps prevents fistula-associated morbidities in distal Snodgrass TIP urethroplasties and is the ideal technique for virgin cases of distal hypospadias.

CORRESPONDENCE TO

Dr. Satish Dalal, MS, FAIS House No. 9J - 54, Medical Campus, Rohtak - 124001, Haryana, INDIA. Tel.No. +91-1262-213549 Email: drsatishdalal@rediffmail.com

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Author Information

R. B. Singh, MS, MCh

Professor, Department of Plastic Surgery and Hypospadias & VVFs Clinic, Pt. B.D. Sharma Postgraduate Institute of Medical Sciences (PGIMS)

S. Dalal, MS

Associate Professor, Department of General Surgery, Pt. B.D. Sharma Postgraduate Institute of Medical Sciences (PGIMS)