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FIRST TIME USE OF INTEGRA DERMAL GRAFT AS AN ALTERNATIVE FOR BUCCAL MUCOSAL GRAFT URETHROPLASTY: A RARE CASE REPORT

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ABSTRACT

The use of buccal mucosa grafts in urethral reconstruction for complex anterior urethral strictures has gained popularity over the years with very good outcomes reported in literature. Simultaneously newly launched integra dermal graft is been used as Onlay flap for postoperative hypospadias urethro-cutaneous fistula closure as reported in world wide literature. The aim of this case report is to compare pros and cons of use of Integra Dermal Graft as an alternative to staged Buccal mucosal graft urethroplasty in case of 13 years old boy with multiple postoperative hypospadias fistulae.

Introduction

Hypospadias is the most common congenital urethral disorder affecting 1 in 300 live births (1). Urethrocutaneous fistula (UCF) is one of the most common complication following hypospadias repair surgery with reported range of incidence 0-45% (2,3). Various factors increases the risk of complication following surgeries which are severity of hypospadias, material used during the procedure, surgical technique performed and surgeons expertise (2-4). Testicular tunica vaginalis (TTV) and dartos pouch (DP) are most effective urethral coverage options for recurrent urethrocutaneous fistulas (5). However, in recurrent cases due to use of these flaps dissection and fibrosis remains one of the most challenging things for a surgeon. Due to durable long term results more than 85% ,since the 1990s, the use of the buccal mucosal grafts to repair complex anterior strictures has gained enormous attention (22-24).

Integra dermal sheet can be an alternative in patients with recurrent urethrocutaneous fistula which is safe and effective in many aspects. However, to date, few studies have described the use of biomaterials in urologic reconstructive surgery, and its use in paediatric patients is exceptional [6-9]. The aim of this study is to evaluate safety, applicability and initial results in paediatric population using dermal integra graft.

Case Report

A 13-year-old male child operated case of hypospadias repair with penile chordae correction presented to the surgery OPD with the complaints of passage of urine from 3 different urethro-cutaneous fistulae. The patient was previously operated two times for the same complaints. Upon clinical examination it was found that there were three fistula openings at coronal, distal penile and midshaft region. On oral examination lower lip buccal mucosal graft was infected due to dental caries. After pre anaesthesia fitness the patient was planned for two staged procedures. In first stage, after catheterising with infant feeding tube number 8, penis degloved completely. The scarred tissue on dorsal aspect at previously done unhealthy urethral plate along with all three fistulous tracts excised in toto till normal urethra. Scarred tissue from unhealthy urethra site was also excised completely(Fig.2). An Integra Dermal Graft (Fig.1) was placed over dorsal aspect and secured in place with fine 6-0 PDS sutures along the margins. Penile skin was approximated all around to cover the rest of penis. Catheter was kept in situ and compression closed dressing was given. Check dressing was done on postoperative day 5(Fig.3). Graft was very well taken up with no signs of local infection. On post operative day 10, complete dressing along with catheter was removed and wound kept open with local application of Mupirocin ointment (Fig.4). Closed follow up of patient for 6 months duration was uneventful. During 6 months, graft was very well taken up with no any signs of inflammatory reaction along the borders. After complete haematological re-evaluation and pre anaesthetic fitness, patient was planned for second stage of operation of urethroplasty(Fig.5). Urethra was Tubularised over indwelling infant feeding tube number 8 with PDS 6 0 in second stage and skin approximated all around by conventional method(Fig.6&7). Compression dressing given and patient was discharged on postoperative day 5. After two weeks dressing along with indwelling catheter was removed. There was no evidence of fistula formation or straining micturition with a good urine stream.

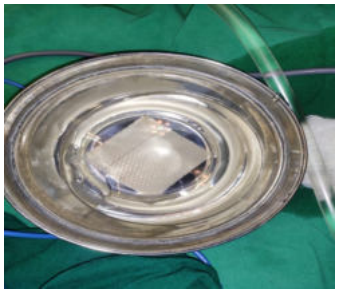

Fig.1:- Integra Dermal Graft plate

Fig.2:- After excising unhealthy urethral

Fig.3:- On post op day 5

Fig.4:- Acceptance of Graft on Day 10

Fig.5:- After 6 months Second stage

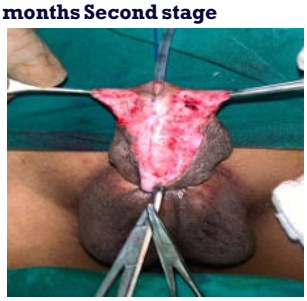

Fig.6:- Tubularisation over tube

Fig.7:- Final Repair

DISCUSSION:-

Urethrocutaneous fistula remains one of the commonest surgical complications following hypospadias repair despite of good peri operative evaluation and meticulous surgery with reported incidence rate from 0-45% (2,3). Multiple techniques have been described to overcome this problem but there is no ideal surgery at this time. Various surgeries like testicular tunica vaginalis (TTV)flap, dartos pouch (DP)flap, simple closure or buccal mucosal flap (5). Flaps are done but the success rate of these surgeries varies according to different reports. (5, 10 -14). Among the existing technique TTV and DP have the success rate of 88-94% (5). However, in previously operated cases, tissue quality decreases as a result of fibrosis which increases the complexity and recurrence rates (15). Also previously operated cases lack preputial skin or scrotal tissue for its use as urethral coverage in this cases dermal grafts as a substitute can be a reasonable option. Biomaterials are very frequently used with good results in paediatric urological surgeries (16,17). An ideal biomaterial should be biocompatible and should encourage the regeneration of structurally strong tissue. Furthermore, it should be easy to handle and affordable (22) . Reduced morbidity at the donor site and reduced surgical time are two of its main advantages. However, postsurgical fibrosis has traditionally been one of the main drawbacks with the use of biomaterials (18,19). Excessive scarring after surgery could cause serious sequelae, mainly reducing the mobility of the operated region. In most reconstructive surgeries, this reduced mobility combined with excessive fibrosis would be an esthetic and functional problem for the patient and therefore a surgical failure. Integra sheet consists of a monolayer membrane created using a matrix of type I bovine collagen and glycosaminoglycans (16). It forms a three-dimensional structure which acts like a flexible covering to the urethral wall and initiates local dermal regeneration by neovascularization and cell generation. A local anatomopathological studies were carried out 1 month post application which revealed existence of new dermis with lymphocytes, macrophages and fibroblast without any signs of fibrosis (20,21). Looking at all this reasons integra sheet is a good alternative in all the patients with not only urethrocutaneous fistula but also is a good alternative for Buccal mucosal graft urethroplasty as it prevents another wound in oral cavity and can be used as an option in cases of infected oral buccal mucosa. When biomaterials are used, to reduce the chances of an infection at surgical site prophylactic antibiotics should be given as per protocol (8).

CONCLUSION-

- Integra dermal graft can be safely used as an alternative to Buccal mucosal graft urethroplasty patients without the risk of fibrosis.
- It is an effective tissue covering in multi-operated patients with less complications.
- However larger randomized trials and a long term follow up needs to be conducted to confirm these results.

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