

DUCKETT VERSUS BRACKA TECHNIQUE FOR PROXIMAL HYPOSPADIAS REPAIR: A SINGLE CENTRE EXPERIENCE

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ABSTRACT

Background: Repair of proximal hypospadias may fall into two categories – free graft as in Bracka’s technique, and vascularised flap as in Duckett’s. The aim of our study was to review the outcome and long-term follow up of proximal hypospadias repair using these two techniques.

Material and methods: Retrospective notes of patients undergoing hypospadias repair were reviewed. Between 1995–2006, 70 patients were identified of which 21 had primary repair of proximal hypospadias. Six patients had penoscrotal hypospadias, 2 proximal penile and 13 mid penile. Six boys had Duckett repair and 15 patients underwent Bracka procedure.

Results: The mean age of the patients was 28.8 months (range 16-52 months), with mean follow up of 33.9 months (range 2-84 months). Chordee was seen in 14 patients, 13 released and 1 corrected by dorsal Nesbit plication. Six of 21 (30%) boys developed meatal stenosis: 4 in Duckett and 2 in Bracka group which resolved by dilatation. All patients with Duckett repair had urethrocutaneous fistula, and none in Bracka group. Two boys with Duckett repair and one Bracka had redo surgery.

Conclusion: Our results suggest that Bracka repair creates a good outcome for proximal hypospadias repair, with significantly lower complication rates and good cosmetic outcomes than Duckett technique.

Key words: proximal hypospadias, two stage repair, fistula

Introduction

Hypospadias is a common male genital abnormality and incidence appears to be on the increase. Techniques for repair of hypospadias depend on the site of hypospadias, personal experience and practice of surgeons’ involved, and development of new techniques. Regardless of the technique, the aim of repair is to achieve excellent function and “normal” cosmetic appearance. Proximal hypospadias repairs in particular are subject to higher rates of complication, such as fistula formation. Although some techniques may be applied regardless of the site of hypospadias, methods for repair of proximal hypospadias generally fall into two categories – free graft such as described in Bracka’s technique [1], and vascularised preputial island flap as in Duckett repair [2]. Various methods have their advantages and drawbacks: whilst a one stage repair using a vascularised graft seems attractive, these tech-

niques suffer from higher degrees of stricturing and fistula formation. Two stage repair not only reduces these complications, but represents a more versatile technique that may be applied to all degrees of hypospadias [1]. As both techniques have been employed in our department over the years, we felt it would be a useful practice to review all these patients, in order to ascertain the relative benefits and drawbacks of the two different techniques.

Materials & Methods

Twenty one boys underwent repair for proximal hypospadias between 1995 and 2006. These procedures were performed by a single surgeon in the paediatric surgery department of the Norfolk and Norwich University Hospital. Data was prospectively recorded and retrospectively analysed. The following variables were recorded: type of repair, level of hypospadias, presence of chordee and re-

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Table I: Type of procedures according to the site of hypospadias

	Penoscrotal	Proximal Penile	Mid Penile
Duckett	2	1	3
Bracka	4	1	10
Total	6	2	13

lease performed, size of catheter and duration of use, duration of dressing, type of analgesia and use of oxybutynin and antibiotics. The following outcomes were recorded: lengths of hospital stay, subsequent meatal stenosis, fistula development and need for re-do operation, cosmetic outcome as judged by parent and surgeon, and length of follow up.

Results

Twenty-one patients were identified having undergone repair of proximal (penoscrotal to mid penile) hypospadias by a single surgeon. The mean age of the patients was 28.8 months (range 16-52 months), with mean follow up of 33.9 months (range 2-84 months). Hypospadias repairs between 1995 and 1998 were carried out in our centre using vascularised preputial island flap technique as described by Duckett, whilst the Bracka repairs were performed more recently: from 1999 onward. Six patients had penoscrotal hypospadias, four treated with Bracka and two with Duckett repair; two patients had proximal penile hypospadias, one was repaired by Bracka and one by Duckett techniques; thirteen patients had mid penile hypospadias and were treated with ten Bracka and three Duckett repairs (Table I).

Chordee was seen in 14 patients (3 penoscrotal, 8 proximal penile and 1 mid penile) 13 released and 1 corrected by dorsal Nesbit plication. Four of these patients had Duckett repair and ten Bracka repair, and there was no residual chordee at follow up. All patients had indwelling catheter for average of 9.6 days (range 5 – 28) using a paediatric feeding tube in 10 patients and Foley catheter in 11. Dressings were left in situ for an average of 3.45 days (range 2 – 10). All patients received adjunctive caudal block, the majority combined with per-rectal Diclofenac. 15 patients (Duckett 5, Bracka 10) had post-operative Oxybutynin. All patients had post-operative antibiotics (Trimethoprim or Cephalosporin) for at least 7 days.

Six of 21 (30%) boys developed meatal stenosis: 4 in Duckett and 2 in Bracka group which resolved after dilatation. All patients (100%) with Duckett repair had urethrocutaneous fistula requiring surgical repair, and none in the Bracka group. Two boys with Duckett repair had revision operations for unsuccessful result; including one urethral diverticulum requiring diverticulectomy. One patient in the Bracka group with glandular wound breakdown required glandular advancement procedure (GAP). The hospital stay was longer in Duckett group, with mean stay 8.3 and 4.4 days for Duckett

and Bracka group respectively (Table II).

A subjectively 'excellent' cosmetic result was obtained in only 1 out of 6 Duckett repairs compared with 5 out of 14 Bracka repairs.

Discussion

There is a marked difference in outcomes between the two types of operation. The most significant outcome measures for hypospadias repair are development of fistula, and meatal stenosis. Duckett repairs, performed in our centre between 1995 and 1998, were associated with significantly higher numbers of meatal stenosis and all patients developed a fistula.

Repair of proximal hypospadias remains the greatest challenge, it is technically demanding and the correct technique must be selected in order to minimise complications and optimise the final appearance and functional result. As well as the location of the meatus, the quality and dimensions of the urethral plate determine which surgical approach is appropriate. One-stage approach may be suitable in more distal cases with a good urethral plate, however, substantial number of these children will need to undergo further surgery due to higher complication rate. The two-stage approach offers greater flexibility and remains reliable procedure for proximal hypospadias [3]. Current literature proposes that a two-stage Bracka correction is a very versatile technique and should be employed for repair of all type of hypospadias. It gives a good result achieving normal appearance and normal function with minimal complications [4, 5].

Patients undergoing proximal hypospadias repair are at increased risk of complications compared with distal repairs. In addition to this background risk, review of the literature notes an additionally high rate of fistula formation and meatal stenosis in one-stage preputial island repair compared with two-stage techniques, with fistula rates of 17% quoted for the former [6, 7]. Our small series of Duckett repairs notes 100% fistula rate. A number of modifications have been described, aimed at reducing the complication rate associated with the one stage island flap repair, which in some small series appear to improve outcome [8]. Rather than trial such modifications, however, our operative technique was subsequently altered to favour the two stage Bracka technique. Although our numbers in this sub-series are greater and experience broader, the number of meatal stenosis falls to 2 out of 15 patients, with none developing a fistula. Despite requiring

Table II: Overall results

	Total	Duckett	Bracka
Total number patients	21	6	15
Chordee	14	5	10
Meatal stenosis	6	4	2
Fistula	6	6	0
Re-do	3	2 Urethral diverticulum	1 Glans dehiscence
Mean hospital stay		8.3	4.4

two hospital admissions, the average length of stay was in fact shorter for the Bracka group, due mainly to patients being allowed home with catheters left in situ only a couple of days post-operatively.

Results from this 11-year retrospective study support the decision of the surgeon to change to Bracka's technique in repair of proximal hypospadias. In our experi-

ence this has produced consistently more reliable results and required fewer further procedures such as dilatation of meatal stenosis, repair of fistulae or redo of failed graft, compared with our experience of single step vascularised graft repair. In our centre, therefore, we have continued to develop the use of the two-stage Bracka repair, with consistent success.

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