Original Article

Outcome of Two-Stage (Bracka) Repair in Adult Hypospadias: Our Experience of Sixty Cases

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ABSTRACT

Objective: To assess the outcome of two-stage (Bracka) repair in adult hypospadias

Study Design: Prospective observational study

Place and Duration of Study: This study was conducted at the Department of Plastic Surgery Lady Reading Hospital Peshawar from January 2021 to March 2023.

Materials and Methods: A total of 60 patients who met the inclusion criteria underwent two-stage (Bracka) repair. In stage 1, chordee correction and a full-thickness skin graft taken from the retro-auricular area was placed. The patient was then followed regularly at 1-week, 1-month, and 3 months intervals. After 6 months, the second stage was performed where tubularization over a silicone catheter was performed. After the removal of the urethral catheter on the 7th post-op day, the patient was then followed at the 1st, 3rd, 6th month, and at one year.

Results: This study includes 60 patients with a mean age of 22.43+2.807 years. By location 43(71.7%) patients had distal penile while 17 (28.3%) patients had mid penile Hypospadias. A mild degree of chordee was recorded in 48(80%) cases. All 60(100%) patients were circumcised without other genitourinary abnormalities. The donor site for all patients was retro auricular.. After two-stage urethroplasty 48 (80%) patients had no complications, while the remaining reported to have fistula formation 5(8.3%), meatal stenosis 4 (6.7%),2 (3.3%) had a urethral stricture and 1 patient (1.7%) had repair dehiscence. Complications reported were managed in our Department. The different types of surgeries performed to overcome these complications were Meatotomy in 4(6.7%), Fistula closure in 2 patients (3.3%) and 3 fistulae closed spontaneously by applying manual occlusion. Redo 2 staged repair done in 2(3.3%) patients of urethral stricture. and Redo second stage in 1(1.7%) patient of dehiscence due to infection. The chi-square test was used to find the correlation between the degree of chordee and complications which was not statistically significant (p-value=0.36).

Conclusion: Two-stage (Bracka) Hypospadias repair in adult life has a comparatively high success rate with excellent cosmetic and functional outcomes as compared to single-stage repair.

Key Words: Hypospadias, Two-Stage (Bracka) Repair, distal penile hypospadias

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INTRODUCTION

Hypospadias is a common congenital anomaly that accounts for 1 in 250 live male births. Hypospadias is found anywhere from the glans penis up to the perineum but the most commonly occurring site is distal penile.

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The aim of Hypospadias repair is to achieve a functionally and cosmetically acceptable penis. More than 200 procedures are in practice for the repair of Hypospadias. Hypospadias repairs can be classified into single-stage procedures and two-stage (Bracka repair). The single-stage procedure consists of incision and tabularization of the urethral plate (Snodgrass repair) or urethral plate augmentation (on lay flap and Snodgraft repair). Single-stage procedures' advantages are decreased anesthesia risks, hospital stay, and cost of the procedure and also reduced time to the ultimate outcome. They are often associated with complications like stricture formation, fistulae, and meatal stenosis needing re-surgery defeating the initial purpose of single-stage surgery.

In case of chordee, urethral substitution procedures are adopted because the urethral plate is scarred for the chordee correction. Flaps and grafts are used for Substitutional urethroplasty but due to the long-term complications of Flaps, Aivor Bracka's two-stage repair with full-thickness skin graft or buccal mucosal graft

has gained tremendous popularity in the last two decades. Since the substitution procedure compartmentalizes the reconstruction, the time interval in between the 2 stages can reveal complications related to graft contracture making it easy to deal with such complications before as compared to after tubularization of the urethra increasing the chances of a successful repair. Most of the complications occur in the first 6-12 months after the 2nd stage including suture line dehiscence, fistula, and diverticulum formation, however, stricture formation is less likely as the linear suture line is given time to contract fully before performing the second phase.[1]

Follow-up protocol after hypospadias repair is designed to institute a balance between its pros (early detection of complications) and cones (psychological concerns by repeatedly reminding the patient of the abnormality). After removal of the catheter at one week postoperatively the patient is followed for 1-, 3- and 6-month intervals and then yearly for two years.[2]

The ideal time for hypospadias surgery is 2-4 years of age as the procedures should be completed before school-going age and the memories of surgery are not ingrained in the minds of the kids. Some of hypospadias patients are left untreated and present late in adulthood. Especially in our setup, where the low socio-economic status and unawareness regarding the severity of hypospadias problems, most of the patients seek medical attention late in adulthood when their marriage ceremony nears. Their main concern again at this time is the suspicion of not having kids after marriage and that's the sole reason for seeking medical attention. The basic principles of surgery in adults are the same as in children. In adulthood, the complication rate of repair ranges from 10–37%.[3,4]

Since a good proportion of adult hypospadias patients seek medical attention because of the above-mentioned reasons, we intend to see the outcome of two-stage (Bracka) repair for hypospadias in our setup in terms of the success of the procedure and complications rate.

MATERIALS AND METHODS

This is a prospective observational study conducted in the Department of Plastic Surgery Lady Reading Hospital Peshawar from January 2021 to March 2023. All sixty patients who met the inclusion criteria were included in the study. Patients with crippled hypospadias, age less than 18 years were excluded from the study. Ethical approval was taken from the hospital's ethical committee.

All patients underwent two-stage bracka repair by the same consultant. In stage 1, chordee correction and a full-thickness skin graft taken from the retro auricular area were placed. The patient was then followed regularly at 1 week, 1 month, and three months intervals to check for the adequacy of the grafted skin and suppleness of the urethral plate for future urethroplasty in the second stage.

At the completion of six months, the second stage was performed where tubularization over a silicone catheter was performed. This was accompanied by waterproofing with buck's fascia. After removal of the urethral catheter at 7th post-op day, the patient was then followed at the 1st, 3rd, 6th month, and at one year.

Data analysis: Data were analyzed using SPSS version 22.0. Mean and standard deviation was calculated for age of patients in years. Frequency and percentages were calculated for Meatus location, degree of Chordee, Circumcision status, Other genitourinary anomalies, Graft donor site, Procedure performed, Complications with types, and the types of re-surgery performed to overcome the post-operative complications. The chi-square test was used to calculate the p-value between the degree of chordee and post-operative complications with a statistically significant p-value of <0.05

RESULTS

This study includes 60 patients with a mean age of 22.43+2.807 years. By location 43(71.7%) patients had distal penile while 17 (28.3%) patients had mid penile Hypospadias. A mild degree of chordee was recorded in 48(80%) cases. All 60(100%) patients were circumcised without other genitourinary abnormalities. The donor site for all patients was retro auricular. (Table-1).

After two stage urethroplasty 48 (80%) patients had no complications, while the remaining reported to have fistula formation 5(8.3%), meatal stenosis 4 (6.7%),2 (3.3%) had a urethral stricture and 1 patient (1.7%) had repair dehiscence. (Table-2). Complications reported were managed in our Department. The different types of surgeries performed to overcome these complications were Meatotomy in 4(6.7%), Fistula closure in 2 patients (3.3%), and 3 fistulae closed spontaneously by applying manual occlusion.

Table No. 1: characteristics of patients

		Frequency	%
Meatus location	Distal Penile Mid Penile	43 17	71.7 28.3
Chordee	Mild Moderate	48 12	80.0 20.0
Circumcised	Yes	60	100.0
Other genitourinary anomalies	Nil	60	100.0
Procedure performed	Aiver Bracka	60	100.0
Graft donor site	Retro auricular	60	100.0

Redo 2 staged repair in 2 (3.3%) patients of urethral stricture. and Redo second stage in 1(1.7%) patient of

dehiscence due to infection,(Table-3). The chi-square test was used to find the correlation between the degree of chordee and complications which was not statistically significant (p-value=0.36).

Table No. 2: Complications and types

	Frequency	Percent
Nil	48	80
Fistula	5	8.3
Meatal stenosis	4	6.7
Urethral stricture	2	3.3
Dehiscence	1	1.7
Total	60	100.0

Table No. 3: Re-Surgery (type)

	Frequency	%
Fistula closure	3	5
Fistulae closed spontaneously)	2	3.3
Meatotomy	4	6.7
Redo stage 2 for urethral stricture	2	3.3
Redo stage 2 for repair dehiscence	1	1.7
Total	9	15

DISCUSSION

The timing of hypospadias repair is always a matter of debate. Most of the studies recommend repair in early childhood. The main reasons are the good healing capability in children and to avoid of memory impregnation of such surgeries. Reported average age of hypospadias repair in adults ranges from 16-22 years.[5,6] In our study, as most of the cases of hypospadias were distal penile in 43(71.7%) so the problem was easily overlooked due to low socio-economic status and not noticed until their adulthood when they intend to get married. At this time, their main concern is fertility and not the stream or cosmesis problem itself.

It is always a matter of conflict that increasing age at the time of repair increases the complication rates. The Khan et al[7] repaired majority of hypospadias patients (76.2%) in two stages. The most commonly occurring complication was UCF in 26.6% while in our study UCF was observed in 8.3%, which may be due to restricting our inclusion criteria by including virgin hypospadias cases, and less sample size and most of the cases had distal penile hypospadias. Chung et al[8] reported a higher UCF complication rate in proximal hypospadias as compared to distal hypospadias.

The reported increased rate of complications in adult hypospadias repair in our study which has also been reported by Şenkul T et al and Hensle TW et al[3,4] as compared to repair done in childhood has many attributing factors. In our view, comparatively less healing capability in adults and the problem of hair growth leads to an increased rate of complications. Moreover, the frequent episodes of erection in adults might be a contributing factor as well.

In our study, the reported increased complications can also be attributed to the unavailability of the preputial skin which is the ideal donor site for Full thickness skin graft in stage 1 repair. Instead, we opted for post auricular skin graft as a donor site because of its non-hairy status. We didn't opt for a buccal mucosa graft because of its thick texture and less favorable take on the recipient site.

Bhat et al.[5] found that the outcome of hypospadias surgery is greatly affected by the severity of hypospadias and the type of surgical procedure performed. Altaweel et al[9] had 100% success with two-stage repairs. In secondary hypospadias, 50-57% success rate was achieved after one surgery, while in stage surgery, the success rate was 92-93% depending on the type of technique. They concluded that the overall success rate depended upon whether the patient had primary or secondary hypospadias. Also, stage repair was associated with better outcomes irrespective of primary or secondary hypospadias.[10-15]

CONCLUSION

Two-stage (Bracka) Hypospadias repair in adult life has a comparatively high success rate with excellent cosmetic and functional outcome as compared to single stage repair. However, we propose to educate people to seek medical attention in early childhood which has comparatively less complication rate than adult hypospadias repair. Further randomized controlled trials are needed to strengthen and validate these findings.

Author's Contribution:

Concept & Design of Study:	Riaz Ahmed Khan Afridi
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Data Analysis:	Kausar Anwar, Shahzad-Ur Rehman
Revisiting Critically:	Riaz Ahmed Khan Afridi, Muhammad Asif
Final Approval of version:	Riaz Ahmed Khan Afridi

Conflict of Interest: The study has no conflict of interest to declare by any author.

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