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Research Article

THE OUTCOMES OF BILATERAL PELVIC OSTEOTOMIES FIXATION IN BLADDER EXSTROPHY WITH EXTERNAL FIXATOR

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Abstract:

Objective: To present the initial results of pelvic osteotomies for the correction of bladder exstrophy.

Study Design: A Case Series.

Place and Duration: The study was conducted in the Surgical Unit I of the Bahawal Victoria Hospital, Bahawalpur for a duration of 3 years from January 2013 to January 2016.

Methods: 5 cases with bilateral exstroflexia were presented, and were treated using closed bilateral iliac osteotomy. From amongst, 3 patients were operated on with the employment of pubic symphysis diastasis using one screw and additional cerclage wires, and one patient using Kirschner wires. The external fixators were then duly sutured. During the follow-up period, the Orthopedic surgeon and the Pediatric urologist checked their patients for any potential disruptions and abnormalities, duly noting any anomalies.

Findings: Upon follow-up, it was found that all the patients had entirely closed diastases and any previous gaps had diminished to mesh into continuity. The mean follow-up time was 2 years, but ranged from 4 months to 3 years depending upon the individual patient, the patient's recovery progress and general well-being. Within 2 months, all osteotomies were noted to have been closed with diastases, which was a partial failure that merits rectification and is a 50% loss of correction. There was no rupture of the wound or bladder repair in any of the patients. The mean postoperative diastasis was 5.9 cm (range: 5.0 cm - 6.8 cm) and the mean postoperative diastasis was 2.6 cm to 5 cm at 12 cm. All patients' follow-up divulged complete postoperative urinary continence, as desired, and these findings were reaffirmed by the pediatric urologist, who noted that the patients now possessed satisfactory urinary continence.

Conclusion: The use of external fixators and bilateral iliac osteotomies in our series has proven useful for obtaining a free closure tension and separation, which are ubiquitous postoperative complications that often thwart the desired repair.

Key words: pelvic osteotomies, bladder exstrophy, diastasis.

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INTRODUCTION:

Primary bladder extrusion is a rare defect that occurs congenitally and is treated using total reconstruction and surgical repair procedures. Bladder extrusion categorically afflicts the musculoskeletal system, the complex genitourinary tract and sometimes the GIT, leading to a multitude of complications. In these cases, there is no anterior wall of the mesenchyme, and the posterior bladder center opens to the lower abdomen directly, so that the normal development of the lower abdomen frontal wall and the groin bones is tainted. The bladder mucosa's edges coalesce with the skin and, from the urinary orifices, the urine drains directly to the abdominal wall. Poor bone development causes the external rotation of the pelvis and symphysis pubis to be widely dissected. In surgical repair, the employment of pelvic osteotomies as a treatment procedure is now well-documented. The most imperative objective of bladder dystrophy's primary closure is to restore the functional genitalia that protect the kidney function in order to obtain a closure of the abdominal and pelvic wall tension and to restore the bladder wall tension to enable it to maintain its anatomical structure, improve the continence and render it aesthetically acceptable while simultaneously aiding urinary continence. If the bladder is less voluminous than normal, the employment of the aforesaid surgical procedures is implicated. Prior to a pelvic osteotomy, the bladder and abdominal wall reconstitute the diastase before the closure of the inguinal cavity and describe various techniques aimed at reducing the pelvic floor reuse. With the bony approach of the pelvis, the midline structures and tension in the incision are

reduced and the probability of wound disruption is minimized. Sympathization of the symphysis pubis during primer closure does not seem to afford long term orthopedic benefit in terms of the outlook of these patients. Follow-up of these patients clearly shows that pubic diastasis recovers over time despite the performed osteotomy. In this study, we present the promising results of our first pelvic osteotomies employed for the repair of bladder exophagitis.

MATERIALS AND METHODS:

A total of five children with urinary incontinence and who underwent pelvic osteotomy as parts of the reconstructive surgery for exstrophy bladder complex were studied. Bilateral pelvic osteotomies and bladder exstrophy repairs were performed by a team of orthopedic surgeons and pediatric urologists in these five patients. Before being referred to our hospital, 2 of the 5 patients had failed attempts directed towards the closure of the exstrophy of the bladder. None of the 5 patients had had any previous orthopedic surgical intervention(s). Of these selected patients, all demonstrated a pubic diastasis of approximately 5 cm. or more, and pelvic osteotomy was found to be particularly useful in these patients (Mathews and Sponsellar *et al.*, Orthomax Diastaz *et al.*). With patients in the supine position, the respective pelvic osteotomies were performed. The recipe for Salter osteotomy was employed by separating the periosteum on both sides while preserving the anus, and an inclined groin incision was made in the iliac. The back and lower subperiosteal exposure limits were the pectenial tubercle and the sacroiliac joint respectively.



Figure 2 (B). External fixator supported by cerclage wires and screws. The same patient at 1 year post operative follow up with pubic diastasis of 3.5 cm.

In the Figure 2(B) above, a clearly defined sciatic notch and a larger sciatic apex are observed that employ a coarse osteotomy, a saw in the iliac crest, while avoiding the sacroiliac joint. To release tension from the appropriate bone, Oblique osteotomy was performed to facilitate the insertion of external fixators in the distal pelvic segment, thereby preventing it from protruding into the sacroiliac joint. Shanz's 2mm two parallel screws were then placed in

the pelvic segment distally. On the other side, a similar procedure was performed. Later, the pediatric surgical team performed the repair of the bladder and soft abdominal tissue. After reconstruction and complete repair of the mesentery, the pins of the fixation area were tied to a small front rectangle frame of the AO rectangle and compacted to reduce diastasis. An intraoperative X-ray was then taken to confirm this (Fig. 2A).



Figure 1. Pelvic radiograph of a 4 year old boy with classic bladder extrophy.

This technique (cerclage screw) was also used to support the external fixator in one of the patients (Figure 2B).

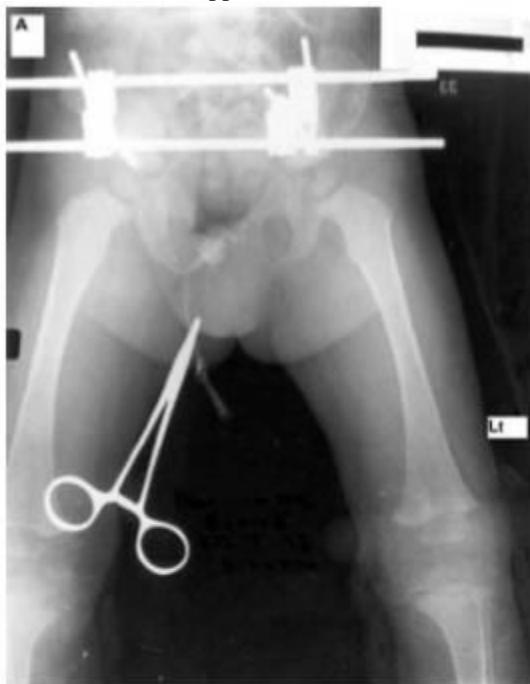


Figure 2 (A) Intra-operative radiograph of a 2 month old boy after the technique of pelvic osteotomy used.

In another case, only one proline No. One stitch was used only with K-strokes to correct osteotomies. These two patients needed double hip spikes for six weeks. The pediatric urologist team then performed urological reconstruction procedures for epispadias repair at the appropriate time intervals.

RESULTS:

There were 4 male patients and 1 female patient that partook in the study. At the time of the surgery, the mean age was 7.6 months (4.0+3.6). The mean, postoperative follow-up period was 7.407 months (4.30 + 3.107), and had a range of 4 months to 72 months. All patients were born with congenital urinary incontinence without any potent urinary control and epispadias in the males, and congenitally absent urethra in the female. Patients were selected for endotracheal repair where the pelvic osteotomies and diastasis were closed in all patients, and all tension-free repairs elicited myriad postoperative complications. The mean preoperative diastasis of the pubic symphysis was 6 ± 0.935 cm (range: 4.5 to 7 cm) and the mean follow-up period was 12 months and 3.5 ± 0.651 cm and 2.5 cm, respectively. 4 cm respectively (Figure 2B). Urinary continence is a commonly noted complication in patients postoperatively. In our series, two complications were noted. 1 patient had a (external fixator) needle infection, and 6 weeks after administration, debridement was required. Infection was dealt with using debridement, and after 16 weeks, the fixator was removed. Another patient with osteotomy fixation using Kirschner needles had diastase recurrence during the first week of repair, but he was promptly treated since he had remained admitted to the hospital.

DISCUSSION:

Many studies appreciate the role of pelvic osteotomies in lid closure in patients with bladder exstrophy. Pelvic osteotomies help reduce the likelihood of re-approach of the pelvic floor muscle system, contributing to soft tissue tension, dislocation, intra-urethral reconstruction and prolonged continence. A recent review has shown that osteotomy is an important factor in achieving endoscopic osteotomy (2, 6). Writer 17 and Watt have identified earlier osteotomies. 18. Bilateral puberty has been reported in concomitant cloacal exstrophy patients. Rami osteotomies cause reduction in tension during repair. 11,19 From a urological point of view, osteotomy allows an approach closer to the anterior lobe tension and to the normality of the pelvic floor muscles. Andrew Stec et al. Three-dimensional tomography showed that the mean intersomedic distance was 4.2 cm (mean 7 months) in

children with exstrophy and 0.6 cm in controls. In another study, Mathews et al., the mean of the interphysiological diastasis over the mesane was noted to be 5.78 cm (range 3.8-9 cm). Aadalen et al. It has been shown that 100 patients with a Sempiz approach equal to 2 cm possess better prosthetic workmanship and better results at 20 significant degrees. The results of our cases, while not entirely definitive, are quite satisfactory according to the existent international data. Although further studies are required to truly understand the anatomy, physiology and the functionality of this particular genre of reconstructive surgery, we have found that the external fixator is indeed an effective device that allows the pelvic osteotomes to be firmly fixed, and that their employment in hip joints is safe and distinctive; it does not prevent abdominal bandage, affords regular control of the wound and helps the patient in recovery. These findings yield a treatment experience that is at once both relatively prompt and surgically efficacious for the patient.

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