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Continence and quality of life with the modified Heitz-Boyer-Hovelacque rectal bladder for children with urinary incontinence following bladder exstrophy

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Summary

Background

Bladder exstrophy and epispadias are severe congenital anomalies associated with an open bladder and urinary sphincter. Despite modern reconstruction, there is a significant incidence of residual or recurrent urinary incontinence that impacts on quality of life (QoL) and self-esteem, which in turn limits social interaction (Figure). The present study involved 14 patients, mainly from a Middle Eastern country, and reported the early findings with a modification of the Heitz-Boyer-Hovelacque rectal bladder technique for both urinary and faecal control.

Study design

Fourteen children, with a median age of 8.1 years, with poor quality of life and low self-esteem because of urinary incontinence and small polypoidal open bladders of 5–15 ml volume, mostly after bladder exstrophy surgery, were managed with a modification of the Heitz-Boyer-Hovelacque rectal bladder technique keeping an intact anal sphincter. The retrorectal pulled-through colon was anastomosed to the posterior wall of the rectum just above the external sphincter complex, thereby avoiding any possible injury to the anal sphincter. All patients had a normal colon and a competent anal sphincter without lumbosacral spinal or nerve anomalies.

Results

Ten children had a 5- to 10-year follow-up, one child had a 15-year follow-up, and three others, that were also continent, were excluded because of a <5-year follow-up. There were no postoperative complications, and all were dry and odour-free by day within 2–4 weeks of surgery. Two children still had minor urinary loss at night. There were no UTIs and renal function remained unimpaired. Eleven years after surgery, one child underwent excision of a pedunculated benign inflammatory polyp from the tip of the left ureter because of recurrent torsion and bleeding, there was no recurrence at the 2-year follow-up. None of the rectal or ureteric biopsies from any of the children showed metaplasia or neoplasia; however, in view of the potential long-term risks, all children were placed on a lifelong 'proctoscopy and biopsy' protocol.

Discussion

The ability to be dry and odour-free, and to wear normal clothing had a striking impact on QoL and psychological well-being of the children and their families. This was reflected in their positive overall approach, voluntary school attendance, and enthusiastic participation in communal events. All agreed that their improved genital appearance markedly contributed to their better body image and increased self-esteem.

Conclusion

These significant benefits, at a crucial time in the child's life, outweigh the potential risk of long-term neoplasia. Therefore, the Heitz-Boyer-Hovelacque rectal bladder technique is recommended with long-term proctoscopic follow-up.

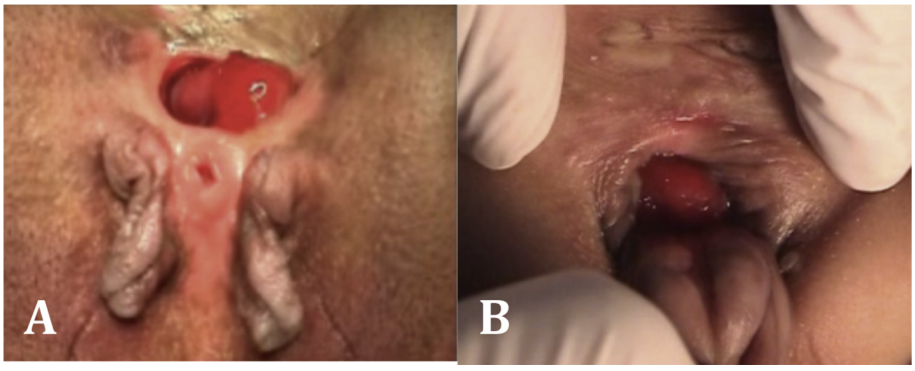

Figure Female (A) and male (B) anatomy after failed reconstruction.

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Introduction

Exstrophy-epispadias is a severe congenital anomaly that presents with major disruption of the infraumbilical abdominal wall, a wide diastasis of the pubic symphysis, a variable-volume open bladder and sphincter, and a short open urethra passing; in the male, this is along the dorsum of a foreshortened epispadiac penis [1—3]. The lumbosacral spine and nerves, the anus and posterior pelvic floor are often anatomically and functionally normal. Despite modern reconstructive techniques, residual or recurrent uncontrollable urinary incontinence and odour, the need for diapers, the inability to wear normal clothing, the poor genital aesthetics, and the limitations to social interaction have a significant impact on quality of life (QoL), body image and self-esteem. To the psychologically vulnerable child/adolescent and family, procedures that offer the possibility of being dry and odour-free rank as highly as genital aesthetics and function. In this, as yet small, study of 14 children, the early impressions with a modification of the Heitz-Boyer-Hovelacque rectal bladder technique [4] for anal control of both urinary and faecal streams, avoiding any risk to the anal sphincter, are reported.

Material and methods

Thirteen patients (six males, seven females) with a median age of 8.1 years (range: 6—13 years) from a Middle Eastern country, and one European male child with a 15-year follow-up who had a rectal bladder at 7 years of age at another institution, were referred because of residual or recurrent urinary incontinence following unoperated or failed bladder exstrophy surgery (seven patients had two failed attempts). Three children with a follow-up of <5 years, but presently doing well, were excluded. The remaining 10 patients (four males, six females) with a 5- to 10-year follow-up were managed between 2004 and 2009. There had not been any pelvic osteotomies and all children had a wide pubic symphyseal diastasis, averaging 7.3 cm (range: 5—10 cm). All had a normal lumbosacral spine and a competent anal sphincter. All male patients had epispadias, two had bilateral undescended testes, and one had a unilateral indirect inguinal hernia. Females had a wide mons pubis, divergent labia, a bifid clitoris, and a short vagina; two also had vaginal stenosis. All patients were originally assessed in their own country and informed consent was obtained with the help of an acceptable interpreter, even prior to travel to the present institution. On admission, a detailed review, a full clinical examination, and a pre-operative work-up were undertaken. These included: a blood film, blood group, serum urea, serum electrolytes and creatinine, electrocardiogram, abdominal and renal ultrasound, chest X-ray, lumbosacral spine and pelvic X-ray, and magnetic resonance imaging of the pelvis; a barium enema and anorectal manometry confirmed normal anatomy and function.

An independent psychologist undertook a pre-operative psychological and quality of life review using the Short Form Health Survey 12 (SF-12) [5,6] that measures eight concepts of health status (i.e. physical functioning, role limitations due to physical health problems, bodily pain, general health, vitality (energy/fatigue), social functioning, role limitations due to emotional problems, and mental health (psychological distress and psychological well-being). The first four health concepts indicate physical health status and the others are an index of mental health. The assessment was repeated postoperatively just prior to discharge and again 1 year after surgery.

The mean age for rectal bladder reconstruction was 9.1 years (range: 7—14 years). No pelvic osteotomies were performed. All had significant lower abdominal and perivesical scarring from previous surgery. The open bladders were of 5—15 ml volume and filled with mucosal polyps. Six patients had excision of the polyps and closure of the native bladder, and four patients had resection of their rigid and small-volume bladder, retaining the bladder neck and prostatic urethra for the three males, in continuity with the tubularized urethral plate. At the same procedure, girls also had a single-stage genital reconstruction (not the subject of this paper). Boys had the first of a two-stage reconstruction consisting of penile lengthening by corpora cavernosa release from the pubic rami, Ransley corporal rotation [7] and glanulo-meatoplasty, and an intercorporal transfer of the urethra to a midline penoscrotal meatus. The second-stage urethroplasty with transfer of the urethral meatus to the glans was undertaken 12 months later.

Prior to discharge from hospital, all patients had a renal ultrasound, a DTPA-Tc99 scan, and a proctoscopy under general anaesthesia. Baseline biopsies for neoplasia were taken

Table 1 Postoperative management.

Exam	When
Blood pressure	Daily during hospitalisation, every 15 days during the first two months, every 3 months during the first year and then every 6 months
Blood sample evaluation with renal function and blood gases	Every 15 days during the first two months, every 3 months during the first year and then every 6 months
Teaching and learning of sphincter control	According to the needs of the individual patient
Ultrasound	Every 15 days during the first two months, every 3 months during the first year and then every 6 months
Endoscopy with URETERORECTAL ANASTOMOSIS evaluation and	At 15—21 day after surgery and then every year
Colorectal anastomosis evaluation and dilatation	At 15—21 day after surgery and then according to the condition of anastomosis
Renal scintigraphy with DTPA TC^{99}	At 6—12 months after surgery, to be repeated in case of stenosis
Histological examination of the rectal bladder biopsies	Every year