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Journal of
**Pediatric
urology**



Recto sigmoid bladder reservoir for patients with exstrophy: Three dimensional evaluation for outcome analysis

Ravi Prakash Kanojia, K.L.N. Rao*, Prema Menon, Sumit Agarwal, Monika Bawa, Jai K. Mahajan, Ram Samujh

Department of Pediatric Surgery, Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, India

Received 13 September 2013; accepted 24 April 2014
Available online 20 June 2014

KEYWORDS

Bladder exstrophy;
Ureterosigmoidostomy;
Urinary diversion;
Health related;
Quality of life

Abstract *Objective:* To report the results of recto sigmoid bladder reservoir (RSBR), a variant of ureterosigmoidostomy (US) in patients with bladder exstrophy (BE) using a three dimensional evaluation system.

Patients and methods: This was a predominantly retrospective evaluation for all patients of BE undergoing RSBR who had completed minimum of 1 year follow-up. The patients were evaluated using a three dimensional system which included evaluation of urinary continence per rectally, status of upper tracts and health related quality of life (HRQOL).

Results: A total of 19 patients (four females) were evaluated. Mean age was 8.4 years, and mean duration of follow-up was 3.4 years. Mean age at RSBR was 5.1 years. Ten patients had good rectal continence. There was occasional minimal urine leak while passing flatus or on straining in nine. All patients had preserved renal function except one. The mean HRQOL score was 129.7 out of maximum of 150..

Conclusions: RSBR gives marked improvement in quality of life in patients of BE. In the literature there is a non-uniformity in the results reporting outcome of US. The presented three dimensional assessment provides a comprehensive way to report the results in the short/long term. If used by other surgeons it would make comparison across centers feasible.

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* Corresponding author. Block 3A Room No 3103, Advanced Pediatric Center, Post Graduate Institute of Medical Education and Research (PGIMER), Sector 12, Chandigarh 160012, India. Tel.: +91 9914208320.

E-mail address: klrao@hotmail.com (K.L.N. Rao).

Introduction

In the modern era of bladder exstrophy (BE) repair, surgeons have achieved considerable success in BE patients with various types of bladder preserving repairs. However, even with the best of efforts, continence is variable in these patients and is dependent on the condition of the native bladder and the success of the surgical procedure done. As quoted in several large series, the continence rate varies between 50% and 90% [1], this is with or without catheterization. There is a subgroup of patients in BE in whom continence is not achieved even after multiple attempts at repairs [2]. A few patients from developing countries have presented very late, with the bladder almost destroyed by fibrosis [3].

Urinary diversion in the form of ureterosigmoidostomy (US) has been accepted as a successful alternative for the treatment of these patients [4]. We present our experience with a variant of US in the form of recto sigmoid bladder reservoir (RSBR). The outcome evaluation during follow-up is done using a three dimensional system. The following discussion also stresses the need for a common assessment protocol to make results comparable across various series.

Patients and methods

This was a bidirectional study (5-year retrospective study conducted from July 2004 to June 2009 and 1-year prospective study from July 2009 to June 2010). The study was approved by the institution review board. Most patients with BE are managed at our center using conventional staged reconstructive bladder salvage surgery, except for the cohort considered in this report. All patients of BE undergoing RSBR procedure who had completed a minimum 1 year of post procedure follow-up were included irrespective of age and sex. Patients who were operated on outside our institute were excluded. Indications for RSBR were (i) small fibrosed bladder and (ii) incontinence even after multiple attempts at repair and bladder dehiscence with incontinence. Low socio-economic status of the patients particularly lowered the surgeon’s threshold for offering RSBR to the patient. The technique involved creation of a recto sigmoid reservoir as shown in Fig. 1. Fecal continence was an absolute prerequisite.

After preoperative total gut irrigation, the colon was transected at the level of the proximal sigmoid, with the upper end mobilized further and anastomosed to the side of the rectum at the peritoneal reflection level. About 10–12 cm of sigmoid colon was detubularized and folded on itself to form a reservoir. The ureters were reimplanted into this reservoir/rectal bladder after creating a submucosal tunnel. The terminal end of the implanted ureter was everted out to form a small nipple, which contributes to the anti reflux mechanism. The genital reconstructions were performed in stages as in any other BE patient.

All the patients were evaluated using a three dimensional system which included evaluation of urinary continence per rectally, status of upper tracts and health related quality of life HRQOL (Fig. 2). Rectal continence for urine was assessed by 4-point questionnaire with yes or no answers (Table 1). Renal function was evaluated via the

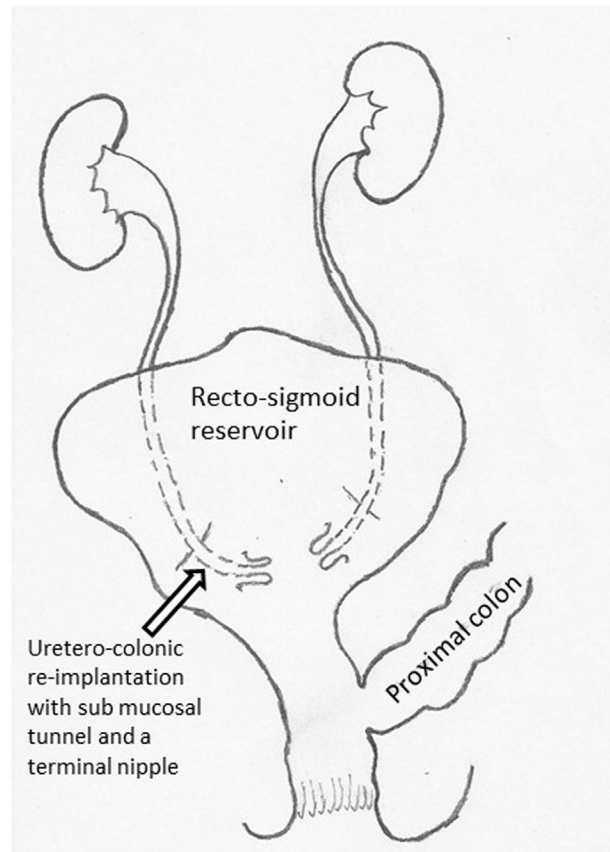


Figure 1 Schematic representation of recto sigmoid bladder reservoir. The method of reimplantation is also shown.

presence of renal scars on dimercaptosuccinic acid (DMSA) renal scan, serum creatinine, and dilatation of upper tracts on ultrasound. HRQOL was measured by means of a structured questionnaire adapted from Kidscreen 52 [5]. The questionnaire was completed while the patient was seen in person during follow-up, and was modified to suit the study population. The questions covered six dimensions representing various aspects of physical and psychosocial

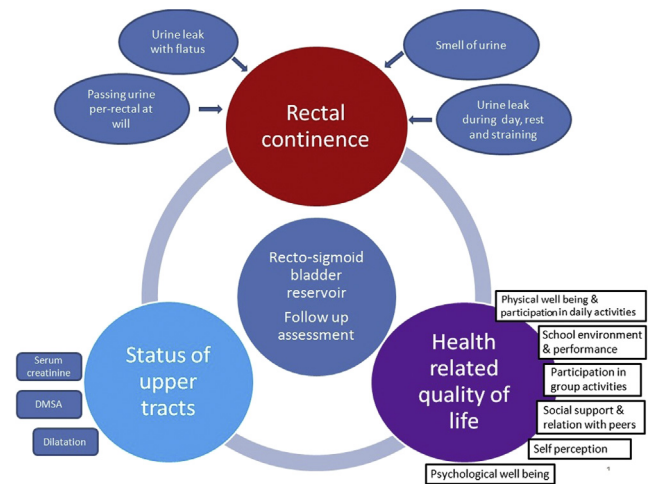


Figure 2 Scheme of three dimensional evaluation system for outcome analysis.

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