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Detubularised isolated ureterosigmoidostomy (Atta pouch): Manometric and radiological studies in a sample of patients

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KEYWORDS

Uretrosigmoidostomy;
Atta pouch;
Ureteric reimplantation;
Mainz II

ABBREVIATIONS

DIUS, detubularised isolated ureterosigmoidostomy;
RC, radical cystectomy

Abstract ***Objectives:*** To assess whether the detubularised isolated ureterosigmoidostomy (DIUS) technique is safe for urinary diversion after radical cystectomy.

Patients and methods: The study included 10 patients (mean age 61.8 years) with invasive bladder tumour, operated at the Alexandria University, Egypt. The diversion in all patients was through a DIUS, with ureteric reimplantation by an antirefluxing procedure, using an embedded-nipple technique. The patients were evaluated before and after surgery using radiological and manometric studies, and the results analysed statistically using Student's *t*-test.

Results: Nine of the 10 patients could differentiate between urinary and stool sensation, and evacuate them separately. The mean (range) daytime frequency was 4.1 (3–5) and the mean night-time frequency was 0.5 (0–1). Before and after surgery, the respective mean resting anal pressure was 71 and 74 cmH_2O ($P = 0.004$), the volume at first desire to defecate was 54 and 72 mL ($P = 0.004$) and the maximum tolerable volume was 140 and 160 mL ($P < 0.001$). The anorectal inhibitory reflex was lost in all patients after surgery. The mean (SD, range) basal pouch pressure was 5 (3.33, 0–10) cmH_2O, and the end pressure was 13.2 (4.42, 9–20) cmH_2O.

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Conclusion: Although the Mainz II pouch has a documented efficacy for urinary diversion after radical cystectomy, the modifications we applied to the DIUS improved that method of diversion, by separating urine and stool evacuation, maintaining continence, and with a low frequency and better protection of the upper urinary tracts, resulting in an improvement in the patients' quality of life.

Introduction

Bladder cancer is the ninth most common cancer throughout the world [1], and recent reports show that its incidence and mortality rates are decreasing in western countries, in contrast to some eastern European and developing countries [2]. According to the Surveillance, Epidemiology and End Results database, ≈2.4% of men and women will be diagnosed with bladder cancer at some point during their lifetime [3]. Bladder cancer is the most prevalent malignancy among Egyptian men (16%), resulting in >7900 deaths annually [4].

Of patients with bladder cancer, 20–40% either present initially with invasive tumour or there is progression from a superficial disease [5]. Radical cystectomy (RC) for recurrent non-muscle-invasive and invasive disease offers the best outcomes to patients, regardless of their age group, with recurrence-free survival rates at 5 and 10 years of 68% and 66%, respectively [6,7].

An assessment of the patient's quality of life after RC is extremely important, as the procedure can affect body image, urinary, sexual, and social functions [8]. Mohamed et al. [9] reported that patients treated by RC and urinary diversion had many unmet psychological needs, in the form of depression and worries about their body image after surgery. European guidelines recommend that patients should be encouraged to actively participate in the decision-making for urinary diversion, and that continent diversion should be offered, unless there are specific contraindications [10].

Singh et al. [11] studied 164 patients managed by either an ileal neobladder or ileal conduit diversion after RC. They showed that an orthotopic neobladder is better in terms of physical, role and social functioning. Although an orthotopic bladder seems to be an ideal method of urinary diversion, studies showed that nocturnal enuresis is troublesome for most patients, for although diurnal continence was almost present in all, nocturnal continence was achieved in 44–66% [12–14]. We reported [15] urodynamic criteria that can help urologists to predict the occurrence of diurnal and nocturnal continence after orthotopic bladder reconstruction.

Recently, many reports [16–20] showed that the Mainz pouch II was a safe and reproducible method of urinary diversion, and serves as a satisfactory method of continent urinary diversion in all age groups. We added a modification to the Mainz pouch II [21], the detubularised isolated ureterosigmoidostomy (DIUS), and reported a novel simple technique for ureteric reimplantation using a nipple technique [22]. In our modification the whole rectosigmoid colon is detubularised to 2.5 cm below the peritoneal reflection of the rectum. This anterior rectotomy aims to abolish the anorectal inhibitory reflex responsible for defecatory sensation and urge, in an attempt to improve bowel function after ureterosigmoidostomy. The improvement of rectal accommodation, and consequently a better bowel evacuation pattern, reduced the frequency, and absence of urgency and nocturnal wetting. The present study provided rectodynamic and radiological evidence for this improved function after DIUS.

Patients and methods

This was a prospective study of 10 patients (seven men and three women, mean age 61.8 years, range 45–72) with invasive bladder cancer, scheduled for RC and urinary diversion by the DIUS. All patients were assessed before and after surgery using anorectal manometric studies with the Andromeda urodynamic machine (Medizinische Systeme GmbH, Taufkirchen/Potzham, Germany) and included the following measurements.

Anal pressure

This was measured using an 8 F Nelaton catheter with four orifices at 90° between them and in the same plane at 5 cm from the catheter tip. The catheter was introduced through the anal canal into the rectum, identified when the pressure decreased to the basal rectal pressure. The catheter was infused with saline at 6 mL/min, with simultaneous pressure measurements while the catheter was gradually and continuously withdrawn to the outside at a near constant rate of 1 mm/s. The pressure was measured at regular points on the resulting curve and the mean was reported as the resting anal-canal pressure. The maximum rise on the curve was also recorded.

Rectal pressure

This was assessed using an 8 F Nelaton catheter with a balloon at one end, which was introduced into the rec-