

# Does the position of the patient affect the presence and/or degree of reflux in an ileal conduit urinary diversion?

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**Objective** To assess the effect of patient position (supine, sitting or standing) on ileo-ureteric reflux in patients with an ileal conduit urinary diversion, in whom such reflux is normally detected when they are supine during a retrograde loopogram.

**Patients and methods** The study included 10 patients with an ileal conduit as a primary urinary diversion; a loopogram was obtained with the patient upright or supine and a further film taken with the patient supine but at 45° to the ground.

**Results** When supine, free ileo-ureteric reflux occurred into both ureterorenal units in eight patients. The remaining two patients, who had previously undergone unilateral nephrectomy, also had reflux into

their existing renal units. Of the 18 units, 15 had grade III and three had grade IV reflux. In the upright and 45° position, reflux still occurred in all ureterorenal units. The patient's position did not affect the degree of reflux in 16 units, but in one unit with grade IV reflux and another with grade III reflux, the reflux was one grade less severe.

**Conclusions** Ileo-ureteric reflux is common after ileal conduit diversion and may contribute to the likelihood of renal deterioration. The presence and/or degree of reflux is generally not affected by the position of the patient.

**Keywords** Urinary diversion, ileal conduit, complications, reflux

## Introduction

The ileal conduit cutaneous urinary diversion has been the most widely used form of urinary diversion since it was popularized by Bricker in 1950 [1]. The technique is straightforward and reliable, and currently has over 35 years of follow-up. However, long-term studies have shown a distressingly high incidence of upper tract deterioration in patients with ileal conduits, including hydronephrosis, chronic pyelonephritis, stones and uraemia [2]. This is believed to be caused primarily by the inevitable reflux of chronically infected urine that occurs in this system [3,4]. When the patient is supine, ileo-ureteric reflux is generally detected during a retrograde loopogram of an ileal conduit. However, it is not known whether such reflux still occurs or ceases when the patient is upright or sitting. If there is no reflux, e.g. when sitting, then it might be appropriate to advise patients with an ileal conduit urinary diversion to sleep with their back slightly elevated, to decrease the incidence of upper tract deterioration. Therefore, we assessed the affect of patient position on ileo-ureteric reflux in patients with an ileal conduit urinary diversion.

## Patients and methods

The study included 10 patients (one woman and nine men, mean age 67.1 years, range 40–74) with a classical ileal conduit constructed as a primary form of urinary diversion after radical cystectomy for bladder cancer, between January 1993 and June 1997. Of these 10 patients, two had also undergone unilateral nephroureterectomy for ureterohydronephrosis caused by urinary obstruction from bladder tumours. In all patients, complete blood counts, urine analysis with culture, serum multiple biochemical analysis and renal ultrasonography were performed before loopography. Prophylactic antibiotics were not administered routinely before the procedure; all patients provided written informed consent before loopography.

For loopography, a Foley catheter was inserted into the stoma, its balloon inflated and then retracted to the stomal site. The catheter tip was attached to conventional intravenous tubing and under fluoroscopic guidance, 50 mL of diluted contrast medium (iohexol, 65%) was instilled into the conduit by a gravity drip from a container placed 40 cm above the stomal site. Spot films were taken with the patient upright or supine and a further film taken with the patient supine but at 45° to the ground. Before every loopogram the conduit was emptied and the same amount of diluted contrast medium instilled.

Accepted for publication 13 April 1999

## Results

Serum creatinine and blood urea nitrogen levels were within normal limits in all patients. After loopography, none of the patients had a symptomatic UTI. When

supine, free ileo-ureteric reflux occurred in both ureterorenal units in eight patients; the two patients who had undergone previous unilateral nephrectomy also had reflux into their existing renal units. Of the 18 ureterorenal units, 15 had grade III and three had grade IV

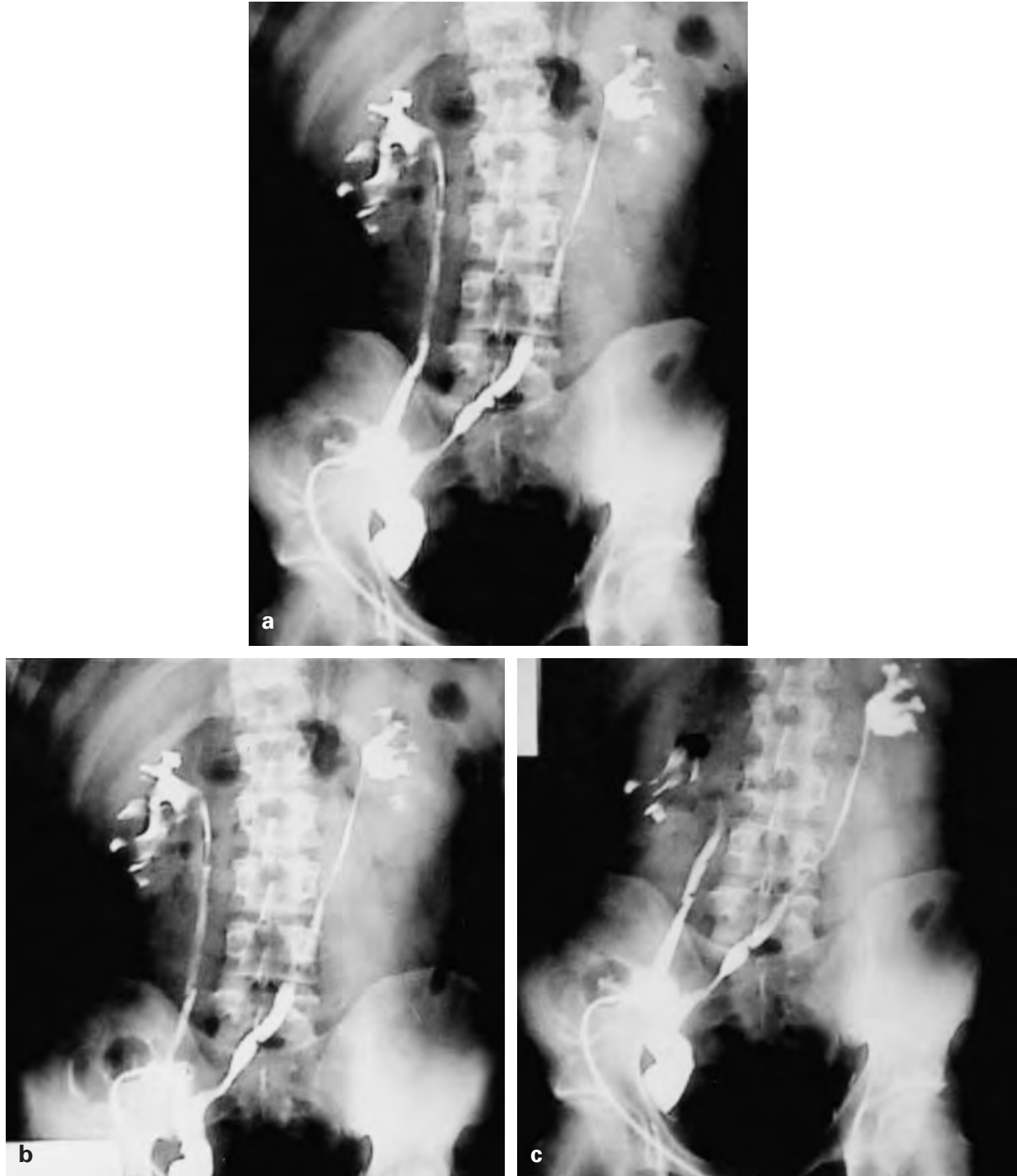


Fig. 1. Loopograms taken with the patient in three different positions showing bilateral ileo-ureteric reflux in a patient a, supine, b, at 45° and c, upright.

reflux. When upright and at 45°, reflux still occurred in all units, but in one with grade IV reflux and in another with grade III reflux, the reflux was one grade less severe when the patients were upright. The position of the patient did not affect the degree of reflux in the other ureterorenal units (Fig. 1).

## Discussion

The ileal conduit has been the 'time-honoured' procedure of choice for urinary diversion in treating patients with bladder cancer. It can be constructed relatively quickly, provides good drainage and the patient is continent, albeit with a bag. However, many long-term studies of ileal conduit urinary diversion have shown that there is a high incidence of late complications, with progressive deterioration of the upper renal tracts, pyelonephritis and calculus formation [4–6]. Although currently in many centres the ileal loop remains the mainstay for managing the urinary tract after surgery for bladder disease, especially in the elderly and in those where the spread of tumour obviates longevity, it was abandoned in most centres in the 1970s as the preferred drainage for the urinary tract in children and in younger patients with a long life expectancy [4,7].

The major problems of the ileal loop are reflux and obstruction [4,5,7]; in general, ileo-ureteric anastomosis is undertaken with no antirefluxing valvular mechanism. However, the ability of a nonrefluxing uretero-enteric anastomosis to prevent the deterioration of renal function has been debated for two decades. Although some authors have stipulated that an antireflux mechanism is essential in the maintenance of upper urinary tract integrity, others have found no difference between a refluxing and antirefluxing uretero-intestinal anastomosis [8–10].

Ileo-ureteric reflux is generally detected during a retrograde loopogram of an ileal conduit when the patient is supine, but the effect of patient position on this reflux has not been reported previously. In the present study, although 50 mL of diluted contrast medium was used for the loopogram (only about a third of the theoretical capacity of the ileal conduit) reflux was detected in all three positions in all patients. Urine in the loop freely refluxed to the kidneys during loop peristalsis and the position of the patient did not affect the degree of reflux

in 16 of 18 ureterorenal units. Thus, although the ileal segment is used in the isoperistaltic direction, ileo-ureteric reflux is common in ileal conduit diversion and the position of the patient does not affect the presence and/or degree of reflux, which may contribute to the likelihood of renal deterioration in the long term.

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