

LONG TERM FOLLOW UP AFTER UNDIVERSION OF THE URINARY TRACT

Hypothesis / aims of study

Urinary diversion was a routine method of neuropathic bladder management until the late 1970's; this group of patients would now be managed very differently with clean intermittent self catheterisation (CISC) or bladder augmentation with an artificial urinary sphincter if required. We report our series and long term follow up of patients who following initial urinary diversion were "undiverted".

Study design, materials and methods

Between 1977 and 1998 28 patients underwent urinary diversion (17 males and 11 females). The main types of urinary diversion used were ileal conduits, colonic conduits and ureterostomies. The mean age at urinary diversion was 9 age range 1-50. The reason initial diversion is shown below:

Procedure	Number of Patients
Caecocystoplasty	5
Caecocystoplasty + AUS	5
Ileocystoplasty	3
Ileocystoplasty + AUS	10
Sigmoidocystoplasty + AUS	1
Tubularised colocystoplasty + AUS	1
Indiana Pouch + mitrofanoff	2
Neobladder (transverse colon)	1

Results

Follow up data was obtained retrospectively from patient records and analysed. Mean follow up of 12.9 years (range 1-28). Three patients have died of problems unrelated to their urinary diversion

Voiding and Continence

All 28 patients on whom there was complete follow up data were unable to void spontaneously. Eighty-six percent of patients (24/28) were continent, 24 patients were managed on a regimen of clean intermittent self catheterization which kept them dry. 1 patient required suprapubic catheterization, whilst 2 others had long term urethral catheters placed to treat incontinence.

One patient following caecocystoplasty continued with symptoms of bladder overactivity and urge incontinence, she also struggled with CISC and was therefore re-diverted back to an ileal conduit. The cystoplasty segment was sent off for histology at the time of her operation and showed squamous cell cancer in situ. Bladder biopsies performed subsequently also showed squamous cell carcinoma and she underwent cystectomy at a later date. Whilst development of a carcinoma within a bladder augmentation remains a rare but increasing recognized occurrence to our knowledge there has only been one other tumour described in an undiverted neobladder.

Renal Function

After a mean follow up of 12.9 years 20 patients have normal renal function, 3 patients have stable renal function with an elevated creatine and are under regular nephrology review, 4 patients required renal replacement therapy in the form of haemodialysis this was required at 2, 3, 10 and 19 years after undiversion respectively. Three of these patients have proceeded to renal transplant, whilst one is on the waiting list for a transplant. One of the transplanted patients died some 13 years after renal transplant and one patient died, one further patient died 15 years after his undiversion with normal urea and electrolytes up to that time.

Further procedures

Sixteen patients required further surgery, 10 of these procedures were related to the artificial urinary sphincter. Two patients required revision of their augmentation cystoplasty; two further patients underwent reimplantation of their ureters. One patient as noted above underwent re- diversion and cystectomy when it was discovered she had squamous cell carcinoma in-situ of the bladder and bowel patch.

Interpretation of results

Urinary diversion is now generally uncommon in paediatric and adolescent urological practice. This is due to advances in the management of the neuropathic bladder along with improvements in urodynamic studies, the advent of CISC and new surgical techniques, which have obviated the need for urinary diversion.

Our series suggests that undiversion was helpful in preserving renal function and maintaining continence. In this study this appears to come at a price of multiple revision operations usually related to the artificial urinary sphincter.

Concluding message

Urinary undiversion preserved the upper urinary tract function the majority of cases; bladder function is also satisfactory with the majority of patients achieving urinary incontinence.

Specify source of funding or grant	None
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	No
This study did not require ethics committee approval because	this is a retrospective study looking at the longterm outcomes following urinary diversion
Was the Declaration of Helsinki followed?	Yes

Was informed consent obtained from the patients?

No
