

Sphincterotomy and reflex bladder triggering in SCI-patients - oldie but goldie

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Aims of study

Spinal cord injury (SCI) results in neurogenic dysfunction of the lower urinary tract. Depending on the degree and level of paralysis, individuals may develop detrusor overactivity and detrusor sphincter dyssynergia or detrusor acontractility. Bladder management in persons with tetraplegia can be challenging as intermittent catheterisation may not be feasible due to limited hand function. Reflex voiding is an option that avoids long-term indwelling catheters, which carry risks such as recurrent infection, occlusion, stone formation, and tumour development. However, some centres do not perform reflex voiding because of the high pressure associated with it, which has been discussed as a risk factor for renal function. However, long-term data are lacking. The aim of this study was to demonstrate that triggered reflex voiding with sphincterotomy is a feasible long-term technique for bladder management in tetraplegic patients and does not pose a risk to the upper urinary tract.

Results

We identified 176 patients with a minimum follow-up of 10 years. The clinical and demographic characteristics of the participants are shown in Table 1.

At 10-year follow-up:

- Mean cystatin C in mg/dl $\pm$ SD, range: 0.91 ± 0.20 , 0.80-1.49
- Sonography: grade I reflux in 6 participants (3.4%; 4 unilateral and 2 bilateral)
- Urodynamics: no change in bladder capacity (326.9 ml $\pm$ 167.9 ml before sphincterotomy vs. 390.6 ml $\pm$ 170.8 ml at 10-year follow-up)
- Residual urine volume remained stable (185.8 ml $\pm$ 134.2 ml before sphincterotomy vs. 144.8 ml $\pm$ 178.7 ml at 10-year follow-up)

Study design, materials and methods

In a retrospective analysis of medical records, we analysed the data sets of men who underwent sphincterotomy. The minimum follow-up was 10 years. Renal function (cystatin C), sonography and the presence of reflux were analysed as outcome parameters. In addition, video urodynamic data and postvoid residual urine were analysed over the long-term. Descriptive statistics were used to analyse the data (SPSS).

Table 1. Clinical and demographic characteristics of the participants

Variables (n=176)	
Age in years, mean $\pm$ SD, range	54.1 $\pm$ 13.5, 28 - 89
Disease, n (%)	
SCI	148 (84.1)
Meningomyelocele	4 (2.3)
Multiple sclerosis	2 (1.1)
A. spinalis anterior syndrome	1 (0.6)
Other	4 (2.3)
Duration in years, median, quartiles	23.0, 19.0 / 33.3
Level of lesion, n (%)	
Cervical	91 (51.7)
Thoracic	60 (34.1)
Lumbar	7 (4.0)
Not reported	18 (10.2)
AIS score, n (%)	
A	97 (55.1)
B	25 (14.2)
C	17 (9.7)
D	1 (0.6)
Not reported	23 (13.1)

SD = Standard deviation; SCI = spinal cord injury

Interpretation and conclusions

Renal function and urodynamic parameters remained stable during long-term follow-up. The increase in patients with suprapubic catheters can be explained by aging and the development of comorbidities. As this is a retrospective study, there are some methodological drawbacks. Nevertheless, we were able to demonstrate that sphincterotomy in men with tetraplegia is a safe procedure, which, as with all bladder management in people with spinal cord injury, should be followed by video-urodynamic controls.

Sphincterotomy remains an important part of the neuro-urologist's toolbox. With regular video urodynamic monitoring, this procedure preserves upper urinary tract function and independence for tetraplegics, by eliminating the need for caregivers to catheterise and long-term indwelling catheters.