



Clinical Case of the Month

Recurrent functional and anatomical subvesical obstruction as urological complication in a tetraplegic patient

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Introduction

Late urological complications are a common problem in patients with neurogenic dysfunction of the lower urinary tract due to spinal cord injury. Subvesical obstruction is one of the most common complications in this group of patients and the treatment of such a patient is discussed.

Case history

Andrew Buczynski (Poland)

The patient is a 48-year-old man who in 1973 jumped into shallow water and sustained a fracture of C5 with an incomplete spinal cord lesion. After the accident he was treated surgically by decompression of the cord and fusion. Unfortunately there was no neurological recovery and the patient remained tetraplegic with useless motor power, fully adapted to the wheelchair. At the time of discharge from hospital he had a functionally good bladder which was emptied by self external stimulation every 4 h with a residual below 50 cc. In the second year after the accident the patient started to complain of spasticity and signs of autonomic dysreflexia. He was successfully treated with phenoxybenzamine and baclofen. The patient was under urological control and his status was stable for 20 years. In 1993 he developed autonomic dysreflexia and urodynamics revealed significant subvesical obstruction.

Alpha blockers at this time were not effective and 20 years after the accident a 12 o'clock sphincterotomy, by electric knife, was performed with a good initial result. One year later unfortunately the problem returned with autonomic dysreflexia, and a high residual after provoked micturition. Throughout this time intravenous urography was normal and there was no vesico-ureteric reflux. Repeat urodynamics revealed a hyperreflexic bladder with significant subvesical obstruction. Urethroscopy showed cicatrization at the site of the former sphincterotomy. A 12 o'clock urethrotomy/sphincterotomy was repeated using an electric knife. After that the patient was free of problems for 2 years. Two years later he returned complaining of the same problems. Repeat urodynamic studies and urethrocystoscopy again revealed subvesical obstruction caused by recurrent cicatrization at the site of sphincterotomy producing a urethral stricture. There was also moderate enlargement of the lateral lobes of the prostate.

The question of what should be done to obtain a long term good result was taken into consideration by the fact that he still had good upper urinary tracts and no vesico-ureteric reflux. As we had good, long term experience with implantation of urethral stents, this procedure was performed. After a repeat 12 o'clock incision at the site of stricture and subsequent calibration for 28 F, a UroLume wallstent 3 cm long was inserted in the urethra which totally covered the site of the former stricture and additionally partially covered the prostatic part of the urethra. The patient is under observation, and until now free of problems. It will be interesting to know the opinion of other experts as to whether the performed procedure was a good solution.

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Figure 1 X-ray view of UroLume stent covering the site of the obstruction in the membranous and bulbar part of the urethra

First opinion

Professor Inder Perakash (USA)

This is a classical patient with detrusor-sphincter dyssynergia (DSD). The presence of autonomic dysreflexia goes along with DSD.¹ He developed urethral strictures following diathermy sphincterotomy (TURS). We have about 20% plus patients who do develop strictures in the bulbous urethra following diathermy sphincterotomy. Our use of contact laser^{2,3} has reduced this incidence but long-term results are awaited. On an average we had to repeat TURS two to three times during a period of 10 years. In this patient placement of a stent seems ideal to prevent stricture producing subvesical obstruction.

Second opinion

Professor Helmut Madersbacher (Austria)

This 48-year-old man, suffering from a high tetraplegia since 1973, developed a reflex bladder with detrusor-external sphincter dyssynergia. However, clinically this reflex bladder was obviously balanced for 20 years, taking the alpha-blocker phenoxybenzamine and the antispastic drug baclofen. After 20 years the micturition became unbalanced, and autonomic dysreflexia appeared. Urodynamics revealed a subvesical obstruction, obviously at the level of the striated external sphincter and therefore a 12 o'clock sphincterotomy was performed. A second sphincterotomy was needed due to scarring. However, 2 years later another scar at the site of the sphincterotomy caused again an obstruction. After the scar incision a UroLume wallstent was inserted.

In male patients with a high tetraplegia detrusor-external sphincter-dyssynergia is still best treated by a transurethral sphincterotomy. However, we do know that depending on the extent and the depth of the initial sphincterotomy re-sphincterotomies are neces-

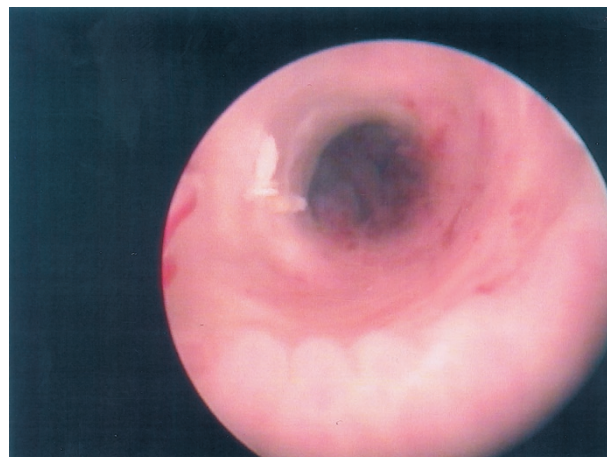


Figure 2 Endoscopic view 10 months after implantation. The stent is completely covered by urethral mucosa

sary in between 30% and 50% of the patients. Also a stricture at the sphincterotomy may result in the need for re-sphincterotomy. According to M Stoehrer the need for re-sphincterotomy may be lower, when using a laser-knife instead of the electrical knife, however, also with the laser re-sphincterotomies cannot be avoided. The insertion of a stent to the area of the external sphincter has caused many problems and should not be done as the first or second procedure, however, after two failed sphincterotomies the stent procedure must be seriously considered, as it was in this case and it is in my opinion the method of choice, if two sphincterotomies have failed.

There are not many other options for these patients: intermittent catheterization combined with drug treatment to relax the spastic detrusor needs a carer who can perform intermittent catheterization. The patient will then become totally dependent on this person. The same is true with sacral deafferentation, which of course is an excellent procedure to eliminate detrusor spasticity and autonomic dysreflexia. However, bladder emptying must be achieved either by an anterior sacral root stimulator, which normally is implanted at the time of sacral deafferentation, or by intermittent catheterization. However, for both, again a carer is needed to catheterize or to activate the stimulator. If the stent fails in the long run, one or the other of those treatment options must be considered, provided that a suitable carer is available. Indwelling catheterization, either transurethrally or suprapubically, should be avoided whenever possible and is only the last resort, when all other therapeutic options fail or are not practicable.

Third opinion

Eiji Iwatsubo MD (Japan)

This 48 year-old male, sustaining incomplete tetraplegia for 20 years is now under UroLume wallstent

management for recurrent voiding dysfunction with autonomic dysreflexia due to urethral obstruction. This obstruction may be a urethral stricture of organic origin, though it is functional most of the time. It is not rare that neurogenic bladder dysfunction in patients with spinal cord injury deteriorates in time and requires sphincterotomy. I usually perform anterior sphincterotomy with transurethral resection of the bladder neck and prostate in one stage for those with dependent tetraplegia who have already been requiring an external condom for their urinary incontinence. If voiding dysfunction recurs in the future, I would perform another transurethral resection of the external sphincter at 3 and 9 o'clock. If his obstruction is from an organic stricture, I prefer to insert a permanent suprapubic cystostomy catheter. I am afraid that UroLume instillation might cause a foreign body reaction, ulceration and abscess formation of the urethra in a long follow-up period. A UroLume or indwelling catheter will be allowed for patients with non-neurogenic obstruction but not for paralyzed patients since paralyzed tissue is quite different from non-paralyzed. We know that the pressure sores seldom heal by themselves.

Fourth opinion

Manfred Stohrer MD PhD (Germany)

Proposition: Urological therapy in tetraplegic patients has to take into account that these patients' quality of life is severely impaired by the underlying condition. Therapeutic measures aimed at improvement of life expectancy should not be performed without considering the outcome for the quality of life. This implies that the patient's views on this aspect of his disorder must be recognized by the physician and a medically acceptable compromise that follows the patient's concepts might be chosen. Because I do not know the patient, the treatment options that I propose represent my subjective view of this patient's condition and are summarized here.

A conservative approach might have been successful. Third-party intermittent catheterization, supported by anticholinergic treatment, could provide an acceptable solution from the urological point of view. This conservative treatment however, requires a high amount of care and will even further reduce the patient's mobility and consequently reduce his quality of life. Therefore this approach is mentioned just for the sake of completeness of therapeutic possibilities.

As this patient could empty his bladder in a satisfactory way by regular triggering and used a condom urinal to cope with his incontinence, the external sphincter incision was the right treatment. Since 1988 this procedure is performed in our department with the prism laser.⁴ Because of less thermal scattering, the incidence of scarring- caused strictures with this technique, which was the problem

with this patient, is extremely low. The procedure would be repeated after 6–12 months if the effect subsided within this period. Alternatively, the possibility of botulinum toxin injection therapy⁵ could be considered because this patient had a satisfactory voiding condition on triggering without signs of upper tract stasis. The history does not mention which segments are still intact in this incomplete spinal cord lesion. I suppose that deafferentation and implantation of a neurostimulator were not practicable. In case of a complete lesion this would have been another treatment possibility.

The implantation of a urethral stent may be the right treatment for this case and its effect should be waited for. Based on our experience we have refrained from the implantation of stents. Too often we encountered tissue growing into the stent or scarring on the end sides of it. The implantation of multiple stents to ensure an open conduit also in the sitting position also did not meet our expectations. Moreover, it appears to me that the permanent drainage through an open urethra might increase the risk of urinary tract infection. Bacteria in the urethra will no longer be flushed out by a powerful urinary flow, that endures after sphincterotomy.

In summary, I favour in this case an indirect laser sphincterotomy by prism laser that might need to be repeated once or twice. Alternatively, I would have considered an injection with botulinum toxin.

Fifth opinion

Griffith J Fellows FRCS (UK)

Although about 30% of patients who have had sphincterotomies need a second procedure at some time it is rare for a urethral stricture to form at that site. Repeat stricturing after two urethrotomies certainly requires a new approach. The insertion of a UroLume stent is a reasonable one.

Following the first urethrotomy for stricture I might have arranged for a relative or carer to carry out a programme of repeated urethral catheterizations to try and prevent recurrent stricturing. Once the subprostatic stricture had developed and it was clear that repeat urethrotomies, with or without catheterizations, would be futile, I would seriously consider excision of the stricture. Retrograde and antegrade urethrograms together with urethroscopy would determine the length of the stricture. If relatively short, 2 cm or less, then excision and spatulated anastomosis via a perineal approach should be possible. I would prefer this to stent insertion because of the risk of granulation tissue growing through the stent and obstructing the urethra again. I must say though, that I have little experience of UroLume stents in this situation and you have found them to be satisfactory in practice. I hope your patient has long term benefit from this procedure.

Discussion

Andrew Buczynski (Poland)

Almost all the experts agree, that instillation of a UroLume wallstent in this particular case was a reasonable solution. Of course to be sure there must be a long follow-up.

I must agree with the opinion that sphincterotomy performed by laser gives less complications compared to sphincterotomy made with the electric knife. Unfortunately I still do not have at my disposal a laser knife and this is the only reason that I still use an electric knife. However, in my clinical material, serious cicatrization at the site of sphincterotomy causing anatomical obstruction happens extremely rarely.⁶

I cannot agree with the fear that UroLume wallstent may cause a foreign body reaction, ulceration or abscess formation because of the fact that the patient is neurologically impaired. This kind of stent which in 6 months is practically completely covered by urethral mucosa growing through the eyes of the stent is very safe for humans. However, I must agree with the fact, well known for users of these stents, that sometimes we have complications such as granulation tissue growing into the stent or scarring on the ends of the stents. I found such situations in my clinical material as well.⁷

However, the above mentioned complications happened almost only with the patients in whom the UroLume stents were applied after urethrotomy for recurrent stricture, due to traumatic disruption of the urethra.

I agree of course with the fact that the urological management of the SCI patient depends on the expectancy of the quality of life of the particular patient and all our proposals must be discussed in detail with the patient and his carer or relatives. The patient's choice of urological management was by using an external catheter for his incontinence and emptying his bladder by triggering without unpleasant autonomic reactions, and hopefully this situation will continue.

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