Efficacy and complications of artificial urinary sphincter implantation

The revision-free rate at our institution was 86.3% at 1 year, 77.3% at 3 years, 63.8% at 5 years, and 53.5% at 10 years, and factors contributing to replacement surgery were urethral stricture and detrusor overactivity.

Gotoh D[1], Tachibana A[1], Tomizawa M[1], Onishi K[1], Morizawa Y[1], Hori S[1], Nakai Y[1], Miyake M[1], Torimoto K[2], Yoneda T[1], Tanaka N[3], Fujimoto K[1]

Department of Urology, Nara Medical University, Kashihara, Japan

Department of Urology, Nara Prefecture General Medical Center, Nara, Japan

Department of Prostate of Brachytherapy, Nara Medical University, Kashihara, Japan

www.ics-eus.org/2025/abstract/530

Background

In 1972, an artificial urinary sphincter (AUS) was developed for severe cases of stress urinary incontinence. Since 1983, the AMS800TM, manufactured by the American Medical System (Minnesota, US), has been used for AUS implantation. In Japan, the AUS has been available since 2012. In this study, we investigated the changes in the number of pads used over time and the results of long-term device use in patients who underwent AUS implantation at Nara Medical University.

Methods

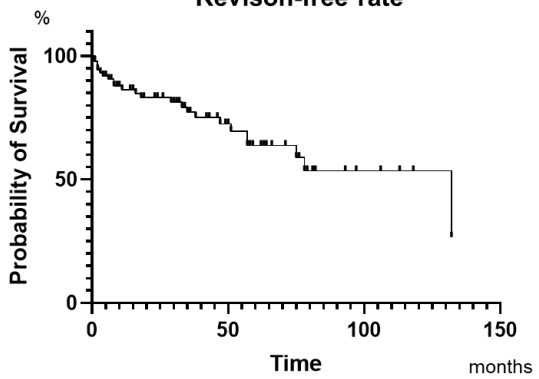
We included patients who underwent AUS implantation for stress urinary incontinence, between January 1, 2012 and March 31, 2024. We extracted the following items from the patients' medical records: age, sex, causes of stress urinary incontinence, comorbidities, date of surgery, date of last follow-up, presurgical video-urodynamics, number of pads before and after surgery, and rate of non-revision of AUS devices. We investigated the risk factors for the replacement of the AUS device.

Results

Patient characteristics

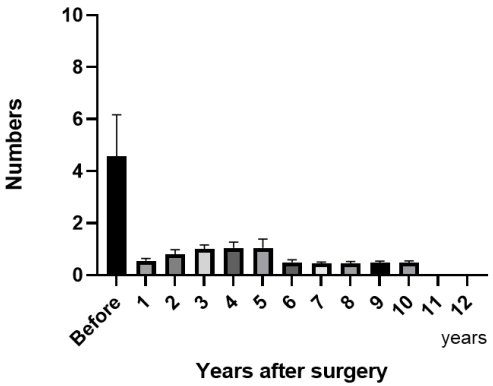
	Median (IQR) or n (%)
Cases	92
Age (years)	73 (68.0-76.3)
BMI (kg/m^2)	24.0 (21.9-26.0)
Number of pads per day	6 (4-10)
History of radiation therapy	20 (21.7)
Androgen deprivation therapy	15 (16.3)
Urethral stricture	19 (20.7)
Detrusor overactivity	16 (17.4)
Bladder compliances (mL/cmH_2O)	12.2 (7.3-21.2)
Surgery time (min)	119 (101.5-134.5)
Size of urethra (cm)	4.0 (3.5-4.0)
Cuff size used (cm)	4.5 (4.0-4.5)

Revison-free rate



86.3% at 1 year, 77.3% at 3 years, 63.8% at 5 years, and 53.5% at 10 years.

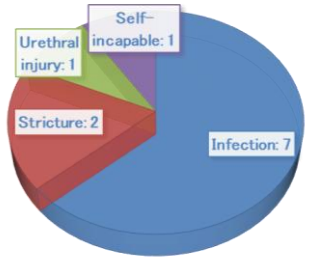
Numbers of pads per day



Revision types

Revision	Cases	All	%
Removal	11	92	12.0
Reimplantation	6	92	6.5
Replacement	10	92	10.9
Pump position adjustment	5	92	5.4

Eleven cases of removal



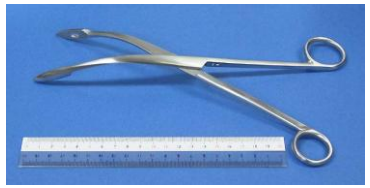
Six cases of reimplantation

Time from initial implantation to pump repositioning (months): 5.2 (1.9-7.7)

Multivariate analysis of the factors associated with the replacement surgery

	Univariate			Murtivariate		
	Hazard ratio	95%CI	P-value	Hazard ratio	95%CI	P-value
Age						
<70	1					
≧70	1.841	0.5284-6.416	0.3649			
Surgery time (min)						
<120	1					
≧120	1.311	0.3605-4.771	0.6879			
Body mass index						
<25	1			1		
≧25	3.572	0.9186-13.89	0.0338	0.922	0.168-5.078	0.926
Urethral stricture						
No	1			1		
Yes	5.875	1.260-27.40	0.0017	3.978	1.017-15.555	0.047
Detrusor overactivity						
No	1			1		
Yes	8.470	1.878-38.20	0.0002	5.603	1.035-30.345	0.046
Bladder compliance						
<13	1					
≧13	0.6996	0.1986-2.465	0.5664			
Radiation therapy history						
No	1			1		
Yes	3.662	0.6576-20.39	0.0297	1.537	0.315-7.507	0.595
Urethral cuff size						
≦4.0						
≧4.5	1.809	0.4745-6.899	0.4438			

Barley forceps



Implications

We summarized the postsurgical course of AUS at our hospital. Although urinary continence was maintained to a certain extent, some cases required device revision. In patients with presurgical urethral stricture or detrusor overactivity, the risk of AUS replacement might be considered.