

Best in Category Prize – Continence Care Products / Devices / Technologies

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A COST-EFFECTIVENESS ANALYSIS OF ARTIFICIAL URINARY SPHINCTER VERSUS ADVANCE MALE SLING IN POST PROSTATECTOMY STRESS URINARY INCONTINENCE: A CANADIAN PERSPECTIVE

Hypothesis / aims of study

The artificial urinary sphincter (AUS) remains the 'gold standard' for the treatment of post prostatectomy stress urinary incontinence (PPSUI). However, in recent years, minimally invasive, less expensive sling device (AdVance) are offered as potential alternative treatments. We sought to investigate the long-term cost-utility of the AUS compared with Transobturator Retroluminal Repositioning Sling (AdVance) in the treatment of severe PPSUI.

Study design, materials and methods

A Markov model with Monte-Carlo simulation was developed to estimate the incremental cost-effectiveness ratio (ICER) of AUS vs. AdVance sling from a provincial payer perspective over a 10-year period. Probability estimates, success rates, healthcare resources and utilities were obtained from published literature when available or by expert opinion. Cost data included in this model were obtained from provincial health care insurance system and hospital data in 2016-Canadian Dollars.

Results

AUS Implantation had a 10-year mean total cost of \$12299 (SD±3509) for 8.53 quality-adjusted life years (QALYs). On the other hand, AdVance sling had a mean total cost of \$20675 (SD±12435) for 7.98 QALYs. The cost-utility analysis over a 10-year period showed that AUS becomes cost-effective when compared to AdVance sling starting the 4th year in the treatment period. The incremental cost savings of AUS over 10-year period was \$8376 with an added effectiveness of 0.55 QALYs. Consequently, the AUS implementation is the dominant strategy over the AdVance sling over a 5- and 10-year time-horizon.

Interpretation of results

We modeled a hypothetical population of men with presumed uncomplicated symptomatic severe PPSUI (defined as using more than 4 pads per day). All patients have equal access to both therapeutic options. Based on literature evidence, we choose a success rate of 90% for AUS treatment strategy, while our base-case success rate for AdVance sling was 67%. Additionally, patients with recurrent SUI after sling release were offered an AUS placement rather than repeat sling procedure.

Similarly, reported AUS 5-years durability rate as high as 80% in comparison to 62.5% for sling strategy at 2-years. Based on our model, it is likely that AUS would become even more cost effective for the management of PPSUI as time goes on. Moreover, AdVance sling is mainly applied for management of mild to moderate PPSUI with insufficient evidence to support its long-term efficacy for severe SUI.

Concluding message

Although the initial cost of sling is attractive, superior long-term outcomes are demonstrated with durable high success rate of AUS in men with severe PPSUI. Hence, the AUS implementation strategy over a 10-year period time is estimated to be more economical to our health care system. More studies are needed to define utility values for health states experienced by males with PPSUI. This will enhance our ability to develop more accurate cost-utility models.

Table 1: Initial Cost components and unit costs related to management of post prostatectomy stress urinary incontinence (2016 Canadian dollars)^a

Cost components	Cost per unit, \$	Total cost, \$	Source
PRE-SURGERY			
Initial Urologist consultation (1 visit)			
• Physician fees	\$ 59.30	\$99.5	RAMQ‡ list ⁽¹⁾ Quebec MSSS ⁽²⁾
• Hospital fees	\$40.20		
Cystoscopies			
• Physician fees	\$ 50.90	\$122.9	RAMQ‡ list ⁽¹⁾ Quebec MSSS ⁽²⁾
• Procedure fees	\$ 72		
Urodynamic Study			
• Physician fees	\$ 55.90	\$114.38	RAMQ‡ list ⁽¹⁾ Quebec MSSS ⁽²⁾
• Procedure fees	\$58.48		
Strategy 1 (AUS)			
• Urologist fees	\$ 631	\$10,582	RAMQ‡ list ⁽¹⁾ JGH: unpublished data 2016 Quebec MSSS ⁽²⁾ RAMQ‡ list ⁽¹⁾
• Device fees	\$ 8500		
• Hospitalization fees (1day) *	\$1290		
• Anesthesia physician fees	\$160.78		
Strategy 2 (Advance Sling)			
• Urologist fees	\$ 220	\$4,918	RAMQ‡ list ⁽¹⁾ JGH: unpublished data 2016 Quebec MSSS ⁽²⁾ RAMQ‡ list ⁽¹⁾
• Device fees	\$ 3290		
• Hospitalization fees (1day) *	\$1290		
• Anesthesia physician fees	\$117.46		
POST-SURGERY			
Urologist consultations fees (4times 1st year)			
• Physician fees	\$ 59.30	\$398	RAMQ‡ list ⁽¹⁾ Quebec MSSS ⁽²⁾
• Hospital fees	\$40.20		

Abbreviation: RAMQ, Régie de l'assurance maladie du Québec; MSSS, Ministère de la Santé et des Services Sociaux; AUS, Artificial Urinary Sphincter; JGH, Jewish General Hospital

^a Time frame: from 3 months prior to surgery until 1 year of follow-up.

*This amount includes Medications cost, nursing care, and therapeutic services.

‡The administrator of the public and universal health care insurance program in Quebec. The costs of medical procedures related to treatments and medical visit costs were based on the RAMQ's billing manual.(1)

References

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