UROLOGYPRACTICE

urologypracticejournal.com

Repeat Surgical Intervention for Stress Urinary Incontinence after a Failed Mid Urethral Sling

Blayne Welk*,† and Jennifer Winick-Ng

From the Department of Surgery and Epidemiology and Biostatistics, Western University (BW) and Institute for Clinical Evaluative Sciences (BW, JW-N), London, Ontario, Canada

Abstract

Introduction: We determined the incidence of stress urinary incontinence surgery performed after mid urethral sling procedures and the impact of physician volume on mid urethral sling failure.

Methods: Administrative data were used to identify all women who underwent a mid urethral sling procedure in Ontario, Canada between 2002 and 2013. The primary outcome was subsequent stress urinary incontinence surgery. The primary exposure was surgeon mid urethral sling case volume with high volume defined as greater than the 75th percentile.

Results: A total of 59,556 women with a median age of 52 years (IQR 45−63) received a mid urethral sling, of whom 3.3% underwent additional stress urinary incontinence operations. The most common secondary surgery was a repeat mid urethral sling in 78.3% of cases and a pubovaginal sling in 5.8%. The cumulative incidence of repeat stress urinary incontinence surgery at 10 years of followup was 5.2% (95% CI 4.9−5.5). On multivariable survival analysis the effect of surgeon mid urethral sling volume on subsequent stress urinary incontinence surgery was nonsignificant (HR 0.89, 95% CI 0.76−1.03). Younger patient age, lower comorbidity and simultaneous hysterectomy decreased the hazard of future stress urinary incontinence surgery. In this cohort 1,425 women (2.4%) required surgical revision or removal of the initial mid urethral sling, of whom 215 (15%) underwent a simultaneous or subsequent incontinence procedure. The most common procedure was still a mesh sling, which was placed in 159 women (74.0%).

Abbreviations and Acronyms

CIHI = Canadian Institutes for Health Information

CIHI-DAD/SDS = CIHI Discharge Abstract Database and Same Day Surgeries

ICES = Institute for Clinical Evaluative Sciences

SD = standardized difference

SUI = stress urinary incontinence

Submitted for publication August 5, 2015.

No direct or indirect commercial incentive associated with publishing this article.

The corresponding author certifies that, when applicable, a statement(s) has been included in the manuscript documenting institutional review board, ethics committee or ethical review board study approval; principles of Helsinki Declaration were followed in lieu of formal ethics committee approval; institutional animal care and use committee approval; all human subjects provided written informed consent with guarantees of confidentiality; IRB approved protocol number; animal approved project number.

Supported by an Ontario Ministry of Health and Long-Term Care annual grant (ICES) and an Academic Medical Organization of Southwestern Ontario operating grant (ICES Western).

The opinions, results and conclusions are those of the authors and no endorsement by ICES, Ontario Ministry of Health and Long-Term Care or Academic Medical Organization of Southwestern Ontario is intended or should be inferred. Parts of this material are based on data and information compiled and provided by CIHI. However, the analyses, conclusions, opinions and statements expressed herein are those of the authors and not necessarily those of CIHI.

* Correspondence: Division of Urology, Western University, Room B4-667, St Joseph's Health Care, 268 Grosvenor St., London, Ontario N6A 4V2, Canada (telephone: 519 646-6367; FAX: 519 646-6037; *e-mail address:* bkwelk@gmail.com).

† Financial interest and/or other relationship with Astellas.

2352-0779/16/36-475/0
UROLOGY PRACTICE

http://dx.doi.org/10.1016/j.urpr.2015.10.004
Vol. 3, 475-480, November 2016
Published by Elsevier

Conclusions: Secondary stress urinary incontinence surgery after mid urethral sling placement was observed in 3.3% of women. The majority of women with recurrent incontinence were treated with a repeat mid urethral sling. There is a nonsignificant trend toward higher mid urethral sling provider volume being correlated with a reduced risk of future stress urinary incontinence surgery.

Key Words: urethra; suburethral slings; urinary incontinence, stress; reoperation; Canada

Large cross-sectional surveys have estimated that more than 40% of women experience at least occasional SUI.[1] There has been a general increase in operative interventions for female SUI in the last 30 years.[2] A claims based study using data from 2007 to 2011 estimated that by age 80 years 14% of women will have undergone SUI surgery.[3] There are several different options for surgical intervention but the dominant procedure is the mid urethral sling.[4]

While initial mid urethral sling case series and a Cochrane meta-analysis demonstrated excellent objective cure rates of 80% to 90%,[5] randomized trials with strict definitions of success suggest a more modest success rate of 55% to 60%.[6] There is a recognized failure rate of mid urethral slings with time. Data from randomized, controlled trials suggest that noticeable SUI develops in at least 10% of women after 5 years.[7,8] In addition, a small subset of women will have complications from the mid urethral sling, such as mesh erosion into the urethra or vagina, chronic pain, urethral fistula or voiding dysfunction.[9] These patients often require surgical removal of the mid urethral sling and they may then have recurrent incontinence.[9]

A patient with a failed mid urethral sling represents a new and growing subset of patients with SUI. There are few guidelines available on the management of stress incontinence in these women and no randomized clinical trials to provide an objective assessment of different interventions.[10] Groups have advocated several approaches, including colposuspension,[11] a repeat mid urethral sling,[12] autologous fascial slings[13] and bulking agents.[14] Surveys of surgeons have shown significant practice variability.[11]

The primary objective of this study was to use administrative data to assess the incidence and type of SUI procedures performed after an index mid urethral sling procedure and examine the effect of mid urethral sling provider volume on the probability of future SUI surgery. The secondary objective was to assess the incidence and type of SUI procedures performed in the subset of women in whom a mid urethral sling complication required removal or revision.

Methods

Study Design and Setting

We performed a population based, retrospective cohort study of all women who received a mid urethral sling between April 1, 2002 and December 31, 2013 in Ontario, Canada. The entire population of approximately 13 million people has access to a universal health care system, allowing us to consider this a population based sample. This study was done according to a prespecified protocol. The research ethics board at Sunnybrook Hospital, Toronto, Ontario, approved this study.

Data Sources

We used 3 linked databases for our study, including 1) CIHI-DAD/SDS databases for hospital based diagnostic and procedural information, 2) OHIP (Ontario Health Insurance Plan) for physician claims and 3) RPDB (Registered Persons Database) for demographic information.

These data sets were linked using unique encoded identifiers and analyzed at the ICES Western site. The databases are essentially complete for all study variables. The accuracy of these databases has been previously described and they are valid and reliable.[15]

Patient Cohort

CCI (Canadian Classification of Health Intervention) codes from CIHI-DAD/SDS were used to identify the cohort of women who underwent a mid urethral sling procedure (supplementary Appendix 1, http://urologypracticejournal.com/). The date of this procedure was considered the index date. Patients were censored at death, emigration from the province (no health care contact for 12 months), end of study (March 31, 2014) or at the occurrence of the primary outcome. Our study exclusion criteria were age younger than 18 years (8 women), not residing in Ontario (40 women), previously operated on for SUI in the 5 years prior to the index date (1,057 women) and missing institutional identity number (491 women).

To address the question of management of SUI after a mid urethral sling complication we created a subcohort of patients who underwent surgical revision or removal of the mid urethral sling.[15] We measured the frequency of our primary outcome in this subgroup.

Primary Outcome

We used CIHI-DAD/SDS CCI codes to identify subsequent SUI surgery in our cohort (supplementary Appendix 2,