Risk Factors for Recurrent Obstetric Anal Sphincter Injury (rOASI): A Systematic Review and Meta-analysis

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ABSTRACT
Recent surveys have shown that the incidence of obstetric anal sphincter injury (OASI) is rising with rates ranging from 0% to 8% across the world. Obstetric anal sphincter injury causes many concerns related to fecal incontinence, perineal pain, dyspareunia, psychological problems such as depression, and has an overall impact on quality of life, at times being a factor that deters women from having another child. The objective of this study was to systematically estimate the risk of recurrent obstetric anal sphincter injury (rOASI) in women who had an anal sphincter injury in a previous pregnancy and to analyze risk factors for recurrence through a systematic review and meta-analysis. Various databases such as Ovid MEDLINE (1996 to May 2015), PubMed, EMBASE, and Google Scholar, including bibliographies and conference proceedings were searched, and a review was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Two reviewers selected observational studies (cohort/case-control) evaluating rOASI and risk factors, and the data were analyzed for their methodological quality. RevMan 5.3 was used to calculate pooled odds ratios (ORs) for rOASI as well as for any other risk factors. On assessment, findings showed that the overall risk of rOASI was 6.3% compared with a 5.7% during the first pregnancy. It also revealed that the risk in parous women with no previous OASI was 1.5%. Some of the factors that increased the risk in a future pregnancy include instrumental delivery with forceps (OR, 3.12; 95% confidence interval [CI], 2.42–4.01) or ventouse (OR, 2.44; 9% CI, 1.83–3.25), previous fourth-degree tear (OR, 1.7; 95% CI, 1.24–2.36), birth weight 4 kg or greater (OR, 2.29; 9% CI, 2.06–2.54) and maternal age of 35 years or older, which marginally increased the risk (OR, 1.16; 95% CI, 1–1.35). The study concludes that the overall rate of rOASI and associated risk factors for recurrence are similar to the rate and risk factors of primary OASI. It proposes that antenatal decisions could be made based on a thorough assessment of fetal weight and intrapartum decisions based on the requirement for an instrumental delivery.

EDITORIAL COMMENT
(A woman with a prior OASI understandably consults with her obstetrical physician regarding decision making about future deliveries and mode of delivery in an effort to minimize the risk of the same event happening again. This review seeks to inform that conversation. The strengths of this systematic review and meta-analysis lie in its rigorous methodology and its focus on studies with relatively large numbers of patients from diverse populations around the world. There were data on nearly 100,000 patients included in this review. The authors searched for observational studies on rOASI and clearly delineated their inclusion criteria based on National Institutes of Health quality indicators for such studies. Only 16 studies met criteria for qualitative analysis, and only 8 studies made the cut for their quantitative meta-analysis out of 245 originally screened. The quality indicators used to assess risk of bias included clear definition of the study population, sample size of at least 100 women, clearly defined outcome variables, and notably, a 10-year follow-up after first delivery. This criterion meant that any association between the first OASI and subsequent rOASI would very likely be detected. Lastly, each study was assessed for inclusion of adjustment for confounding variables in the risk of the outcome. This means that the original study analysis ideally had to identify and adjust for confounders and include ORs and CIs, which are appropriate measures of the relationship of exposure and outcome in observational studies.

So how strong are the data? How well can a physician trying to counsel a woman with a prior OASI in her first delivery estimate her risk of a second injury? Are there weaknesses in this meta-
analysis? For that, we need to look at the data they had to work with. There was significant heterogeneity in the 16 studies in the systematic review, meaning that only 6 of 16 met their criteria for methodological quality, with the others failing in at least one. The most consistent failure was that most of the studies did not analyze and report adjustment for confounding variables related to the risk of rOASI. This is important because most women with rOASI usually have multiple risk factors for injury, and almost half have more than one risk factor (Jango et al. BJOG 119(13):1640–1647). This particular point highlights the main limitation of this study’s finding (and which the authors readily point out): individual studies typically reported risk factors for rOASI in isolation when they are usually strongly associated. For instance, use of forceps and a large birth weight more commonly occur together.

Ultimately, therefore, risk factors for rOASI can only be reported individually in this meta-analysis. In her subsequent delivery, factors that significantly increased a woman’s risk of a rOASI are instrumental delivery via either forceps or ventouse/vacuum, birth weight greater than 4 kg, a prior fourth-degree OASI in the index delivery, and, marginally, maternal age older than 35 years. The most significant risks were associated with instrumental delivery and high birth weight. This unfortunately means that the most significant risks for an OASI happening again are not known early in the pregnancy or even before actual delivery, making it hard to have an informed conversation in the calm of the outpatient setting. A woman and her physician will know about a history of prior fourth degree, and maternal age, but estimates of birth weight are often relatively inaccurate, and they cannot know whether instrumental delivery will occur.

Given this, it may be easier to think about the actual risk of repeat injury rather than the risk factors contributing. It is symptoms of fecal incontinence associated with the injury that likely most matter to a woman. The authors use this large data set to arrive at a risk of OASI in a first pregnancy of 5.7%. A woman’s overall risk of rOASI (when she has already had an injury) is 6.3%, whereas a parous woman with no prior OASI has an OASI risk of only 1.5%. This elevation of risk should be viewed in the context of sequelae after the injury: Richter et al noted a 24-week postdelivery incidence of fecal incontinence in women after only one OASI of 9%, and anal incontinence (which includes flatal) of 24% (Female Pelvic Med Reconstr Surg. 2015; 21(4):182–189). Elective cesarean for subsequent delivery (with attendant increase in maternal and neonatal morbidity) is commonly done in women with OASI, and only 2.3 cesareans are required to prevent one case of anal incontinence (McKenna et al. Am J Obstet Gynecol. 2003;189(5):1251–1256).

Depending on a patient’s perspective and concerns, a physician has to determine how they choose to tackle counseling.—ACW

The Role of Obesity in Success and Complications in Patients Undergoing Retropubic Tension-Free Vaginal Tape Surgery

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