

Obstetric anal sphincter injuries – A population-based study of improvement of care

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Defended PhD thesis: December 2015

Abstract

Background: Obstetric anal sphincter injuries (OASIS) are tears of the anal sphincters, eventually also involving the rectum, sustained during vaginal birth, and 30% to 50% of women experience anal incontinence (AI) after OASIS, which is the main cause of AI in younger women. Furthermore, increasing OASIS rates were observed in Norway and other countries during the last decades. There was a strong need for improved sphincter repairs in order to reduce the morbidity after OASIS and for effective preventive measures. The Norwegian health authorities launched an action plan in 2006 aiming to reduce the OASIS rates. The plan included an interventional study of implementation of “hands-on” manual perineal support during the expulsive phase of labour, in which our department participated.

Aims: We aimed to compare the overlap technique and the traditional end-to-end approximation technique for the primary repair of OASIS with regard to faecal incontinence. Further, to investigate the association of oxytocin augmentation of labour with OASIS in a model of risk factors exerting their effect during the active, second stage of labour. Finally, to assess the impact of changes in clinical management on the prevalence of OASIS, and on risk factors associated with OASIS, from 2001 through 2012 in the unselected obstetric population of Stavanger University Hospital (SUS).

Participants and methods: We included 119 women who sustained OASIS at SUS between 2005 and 2007 in a randomised controlled trial (RCT) comparing the overlap technique with the traditional end-to-end repair for OASIS. After one year the participants were evaluated regarding anal incontinence, and endoanal ultrasonographic (EAUS) and anal manometry findings (*paper one*). We used consecutively registered, departemental data for the population-based studies of the associations between oxytocin augmentation and OASIS and for trends of OASIS and

risk factors (*paper two and three*). The study populations comprised nulliparous women with a single, cephalic, term pregnancy and spontaneous labour, who delivered vaginally. We developed a dynamic, statistical model of risk factors on the causal pathway to OASIS for use in both studies. Based on the presence or absence of oxytocin augmentation, episiotomy, instrumental delivery and birthweight <4000 g/ \geq 4000 g we modelled in logistic regression the best fit for the prediction of OASIS.

Results: The overlap and the end-to-end repair techniques were similar for all outcomes at the twelve month follow-up, which was attended by 101 out of the 119 participants. Overall, two women suffered from faecal incontinence, and 15% had AI as defined by Wexner score (*paper one*). Oxytocin augmentation was associated with aOR 1.8 (95%CI 1.5 – 2.2) for OASIS in spontaneous births of normal-sized infants among 15 476 nulliparous women between 1999 and 2012 (*paper two*). Episiotomy was associated with lower OASIS rates in instrumental, but not in spontaneous births. We found important effect modification between the predictors of OASIS. In the population of 14 479 nulliparous women of the overall OASIS rate declined from 9.8% to 2.9% between 2001 and 2012; from 6.5% to 2.2% in normal deliveries, and from 15.1% to 3.0% in instrumental deliveries when episiotomy was applied (*paper three*). The change was mainly explained by the implementation of the "hands-on" perineal support concept, and the recommendation of a routine, lateral episiotomy for instrumental deliveries from 2007. The distribution of the study population changed in line with our revised guidelines, which also included implementation of the WHO partogram and a restricted use of oxytocin augmentation.

Conclusions: The randomised study of repair techniques for OASIS did not support a recommendation of one repair method over the other. Better outcomes after OASIS than previously reported seem possible following training in anatomical sphincter repairs. We found an association of oxytocin augmentation with higher OASIS rates in the large population of nulliparous women having normal births. The "hands-on" management, and the routine use of a lateral episiotomy for instrumental births were

associated with significantly lower OASIS rates. It is important to consider the interaction of factors associated with OASIS.

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