Titel	ULTRASOUND STUDIES ON PELVIC FLOOR PHYSIOLOGY AND OBSTETRIC PERINEAL TEARS
Författare	Ann-Kristin Örnö, ann-christin.orno@med.lu.se
Avdelning/ar	Department of Obstetrics and Gynaecology (Lund) Hematopoietic Stem Cell Laboratory
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Repair of obstetric perineal tears is one of the most frequent procedures in surgical practice. Despite repair such tears may result in anal and urinary incontinence and prolapses of the pelvic floor, problems in need of surgical repair later in life. Descriptions of the structures injured during vaginal delivery and their topographic relations in the perineum are missing in most textbooks. Transvaginal ultrasound with a biplane linear probe was used to provide a topographic description of the mid-sagittal perineal anatomy in 45 pregnant women. To estimate the extent of obstetric tears, both semicircular and linear anal and vaginal ultrasound was applied. In 40 sphincter tears investigated before surgery the following structures were intact; the perineal membrane in 10%, the puboperineal muscles in 10%, the central point in 18%, the conjoined longitudinal muscle in 55% and the internal anal sphincter in 78%. To assess urinary incontinence and grade pelvic organ prolapse the Valsalva manoeuvre is used. Biofeedback resulted in an increase in bladder neck descent and in levator hiatal area when the Valsalva manoeuvre was performed during examination by 4D/3D translabial ultrasound. The increase was significantly greater when the levator ani was relaxed. Contraction of the levator ani is a confounder that needs to be taken into consideration when judging results of studies based on the Valsalva manoeuvre. The reduction in intra-anal pressure during the rectoanal inhibitory reflex is accompanied by increased diameter of the internal anal sphincter and reduced distance between the anal rim and the rectal contents, reflecting the transport of bolus into the anal canal. A contraction of the internal anal sphincter, commencing in the distal part of the anal canal, results in an antiperistaltic movement of rectal contents back into the rectum when the reflex ceases. In children with severe constipation and suspected Hirschsprung´s disease the rectoanal reflex was found in 18/28 by ultrasound and in 20/28 by anometry. Neither of the methods missed the 3 children with aganglionosis. The Kappa index was 0.46 for anometry and 0.38 for ultrasound. As ultrasound has no side effects and is readily available, this new concept of visualizing the reflex may well replace anometry. The disappearance of rectal sensations in continent female subjects is related to a contraction in the internal anal sphincter, antiperistalsis in the anal canal and a relaxation in the external anal sphincter. The contraction of the latter may be needed to convert the peristalsis in the anal canal into antiperistalsis.