

## **PILOT STUDY OF OBSTETRICAL TEARS IN THE PELVIC FLOOR TO DESCRIBE THE INJURIES IN ANATOMICAL STRUCTURES THAT GIVE INSTABILITY IN THE DORSAL COMPARTMENT**

### Hypothesis / aims of study

Injuries in defined anatomical structures in large obstetrical tears give instability in the dorsal compartment of the pelvic floor.

### Study design, materials and methods

Midwives were instructed to call when they identified a tear engaging more than 50% of the perineum and/or a vaginal tear in women without prior vaginal deliveries. 25 women were included, medium age 27 (22-40), medium birth weight 3616g. Women were investigated directly postpartum in a dorsal lithotomic position. To describe the defect the left index finger was inserted in the rectum and lifted the tear into the vagina. If the injured part could be lifted above the hymen the tear was described as instable and graded into levels according to the lack of support as has been previously described(1). Level I included the bladder, cervix, and cranial vagina, level II represented mid vagina, and III in which distal vagina and the perineum were affected. The size of the defect and the injured anatomical structures were described. The pelvic floor was considered stable if the weakest part of the tear not could be lifted outside of the hymen. Textbooks and articles were read to find recommendations on how to repair the vaginal fibrous support after delivery.

### Results

20 women had an instable pelvic floor with defects in level II (3) and level III (11), combined defects in level I and II (1), and level II and III (5). In 5 women with stable pelvic floor at least one layer of the endopelvic fascia was intact. In an instable level III tear the vaginal epithelium, the lamina propria, the perineal membrane, the round ligament, the endopelvic fascia and often the internal anal sphincter and the longitudinal anal muscle were torn. The transversii perinei muscles (puboperinealis) and the bulbospongiosus muscle were torn when the perineal membrane and the round ligament was injured respectively. As fibers from the transverse perineal muscle mix with those from the anterior, cranial part of the external anal sphincter, a tear in the perineal muscles often penetrated in to the sphincter complex. In an instable level II tears both layers of the endopelvic fascia were torn. In one case a right side sulci vaginal tear penetrated in to the midline under the bladder leaving the vaginal epithelium covering the bladder intact (figure 1). No other defects predisposing for cystocele were found. The length of the tear was above 90 mm in 6 cases, 9 were between 40-60 mm. Perineum was intact in 3 women. 18 had a sphincter tear. The only recommendation found in literature on how to repair vaginal tear was to put stitches above the cranial end of the tear in order to stop bleeding. Only the muscles were mentioned in descriptions on how to repair perineal tears.

### Interpretation of results

In obstetrical tears we found that defects in the endopelvic fascia could result in pronounced instability in the dorsal vaginal compartment directly post partum as has been shown before in women with rectocele. Textbooks lack information both on the anatomy of the vaginal walls and recommendations for how to define and repair involved anatomical structures. If any anatomy is mentioned it is the muscles not the fibrous support. This is in contrast with most other parts of the body where the fibrous tissues are in focus when injuries are repaired. The stability and extent of vaginal tears can be investigated by rectal palpation at the same time as the anal sphincter is examined. It is known that tears in the anal sphincter can exist despite an intact perineum, it is now clear that deep penetrating vaginal tears exists despite an intact perineum making the examination of the pelvic floor post partum even more important (2).

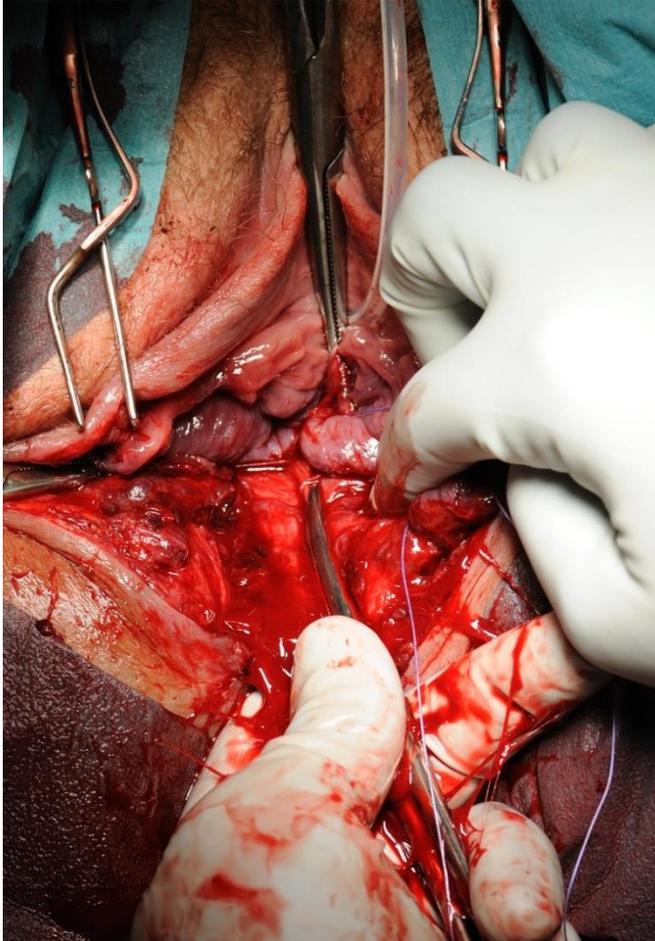
### Concluding message

This is a small study and it need to be confirmed in much larger scale. Since about 50% of vaginally delivered primiparas develop symptoms of incontinence or prolapses of the pelvic floor 20 years after their delivery better diagnostic methods may help to prevent some of the surgical inventions needed in the future. To restore the fibrous skeleton thus mimicking surgical interventions in the pelvic floor later in life may be one way forward as repair of acute tears in the levator muscle has been deemed as impossible (3).

Figure 1.

Right side instable deep vaginal tear.

The left index finger is inserted in the rectum lifting the tear. The hymen is held back by a vaginal hook placed in the small labia. Below the torn hymen the double layered endopelvic fascia is exposed laterally in the right vaginal sulci. When it is torn most tears lose their stability and resemble a rectocele when lifted from below.



#### References

1. DeLancey JO. Structural anatomy of the posterior pelvic compartment as it relates to rectocele. Am J Obstet Gynecol. 1999;180:815-23.
2. Sultan AH, Stanton SL. Occult obstetric trauma and anal incontinence. Eur J Gastroenterol Hepatol 1997;9:423-7
3. Dietz HP, Shek KL, Daly O, Korda A. Can levator avulsion be repaired surgically? A prospective surgical pilot study. Int Urogynecol J. 2012;Epub ahead of print.

#### Disclosures

**Funding:** ALF, Region Skane, Lund, Sweden **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** Regional Ethical Review Board, Lund, Sweden **Helsinki:** Yes **Informed Consent:** Yes