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## CAN WE PREVENT EROSIONS AFTER TROCAR GUIDED TRANSVAGINAL MESH REPAIR?

### Hypothesis / aims of study

The aim of this study was to prospectively identify potential predictors of erosions after anterior pelvic organ prolapse repair using a standardized trocar guided polypropylene mesh kit.

### Study design, materials and methods

The study combines two prospective multicenter studies assessing the use of a trocar guided mesh kit for anterior vaginal wall prolapse. The trials (a prospective cohort study and a randomised controlled trial) were performed throughout 53 clinics in Sweden, Denmark, Norway and Finland using only the Prolift®-system. Both trials adopted an identical surgical mesh kit procedure for anterior prolapse repair and the study protocol was near identical for both trials with regard to inclusion and exclusion criteria, as well as, pre- and postoperative care. Host-vs.-tissue reactions of the anterior vaginal wall were evaluated at baseline, two months, and one year after surgery using a macroscopic visual inflammatory scale. Stratification and logistic regression analyses were performed in order to determine predictors of erosions at one year.

### Results

353 patients were available for this combined analysis, 154 from the cohort study and 199 from the randomised trial. Mean age at surgery was 65.3 (± 9.6 SD) years. A post hoc power analysis using the observed OR and smoking as the independent variable showed that a sample size of 271 was necessary to achieve 80% power at a 95% significance level.

Vaginal erosions occurred in 30/353 cases (8.5%), of which the majority were mild-moderate. Univariate and multiple logistic regression showed an increased odds ratio (OR) for the occurrence of mesh erosions in women who smoked (OR 4.02, 95% CI 1.22-13.28) and who suffered from somatic inflammatory disease (OR 4.69, 95% CI 1.02-21.65). Age, body mass index, parity and menopausal status showed no significant association with postoperative mesh erosions.

### Interpretation of results

Erosions are a major concern regarding the use of synthetic mesh for vaginal surgery and the escalating global use of mesh for pelvic organ prolapse entails increasing post operative adverse events attributed to the use of mesh. The endeavour to elucidate whether mesh erosions in urogynecological surgery in any way can be avoided is therefore of importance (1). To the best of our knowledge this is the largest prospective study aiming to assess risk factors for mesh erosions in anterior vaginal wall prolapse surgery using a mesh kit. We found in the current study that smoking was strongly associated with mesh erosions at one year postoperatively. This was also the case for somatic inflammatory disease, although at a lower level of significance. Several studies have shown that smoking is associated with postoperative morbidity and defective wound healing in general surgery. In urogynecological surgery, smoking as well as age, BMI, and surgical technique have been implicated as possible risk factors for erosions but the area is poorly investigated (2).

Smoking is an avoidable risk factor and several studies on perioperative smoking cessation have shown favourable results both in the achievement of abstinence and of decreased postoperative morbidity (3). Somatic inflammatory disease, including rheumatism and generalised connective tissue disorders, on the other hand is a non-avoidable risk factor. Clinicians and patients must consider the association between both avoidable and non-avoidable risk factors when planning vaginal mesh surgery and postoperative follow-up. Perioperative smoking cessation has shown beneficial effects in other areas of surgery and should be considered also in vaginal surgery. Further studies on this simple intervention which may reduce postoperative morbidity are now necessary to establish the specific benefits of smoking cessation prior to pelvic organ prolapse surgery using transvaginal mesh.

### Concluding message

Smoking is an avoidable predictor of mesh erosions after anterior compartment trocar guided transvaginal mesh surgery for pelvic organ prolapse. If smoking cessation is achieved in conjunction with transvaginal mesh operations for pelvic organ prolapse it is possible that erosions to some extent can be avoided.

### References

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<i>Is this a clinical trial?</i>	Yes
<i>Is this study registered in a public clinical trials registry?</i>	Yes
<i>Specify Name of Public Registry, Registration Number</i>	www.clinicaltrials.gov, identifier NCT00402844 and NCT00566917
<i>Is this a Randomised Controlled Trial (RCT)?</i>	Yes
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	Regional Ethical Review board in Stockholm
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes