

Altman D, Granath F, Cnattingius S, Falconer C. Hysterectomy and risk of stress-urinary incontinence surgery: nationwide cohort study. *Lancet*. 2007;370:1494-1499.

Does hysterectomy raise the risk of stress-incontinence surgery?

Yes. This population-based cohort study from Sweden found that hysterectomy for benign indications by itself doubles the risk of future surgery for urinary stress incontinence, regardless of hysterectomy technique. The risk of stress-incontinence surgery varied with the length of follow-up, with the highest overall risk observed within 5 years of hysterectomy and the lowest risk after 10 years or more (2.7 versus 2.1).

EXPERT COMMENTARY

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Urologists, among others, have long suspected that hysterectomy is somehow implicated in the development of stress incontinence, a point of view that has met with considerable resistance from gynecologists. Now comes this carefully designed study by Altman and colleagues, which lends considerable support to this belief.

Strengths of the study include use of Swedish health registry

The study design used by the authors is impressive. Because Sweden (unlike the United States) has a national health-care system with an integrated national database, the authors were able to select more than 165,000 women from the Swedish health registry who had undergone hysterectomy (the “exposed” cohort) and compare them with almost 480,000 women who had not had a hysterectomy (three controls for every exposed case), matching them by year of birth and county of residence. Because of the integrated nature of the Swedish health registry, they were able to follow these women for 30

years and link their medical records to subsequent surgical procedures for urinary stress incontinence.

The authors eliminated from consideration any patient whose surgery had been done for malignancy. Because patients undergoing hysterectomy for pelvic organ prolapse might well be predisposed to develop stress incontinence in later life, the authors considered as a separate subset those women whose hysterectomy was done for prolapse or who had an associated procedure performed for prolapse at the same time.

As might be expected, women who underwent hysterectomy for prolapse had the highest risk of undergoing stress-incontinence surgery within 5 years of the removal of their uterus.

Vaginal delivery magnified the impact of hysterectomy

Altman and colleagues also considered the impact of vaginal delivery on subsequent surgery for stress incontinence, finding an additive effect. There was a “dose-response” increase in risk related to the number of vaginal births. Women who had four vaginal deliveries had a sixfold increase in the risk of stress incontinence surgery, and women who had four vaginal deliveries plus a hysterectomy had a 16-fold increase in the risk of stress-incontinence surgery.

Were some women predisposed to elective surgery?

Because surgery for urinary stress incontinence is an elective procedure to improve quality of life, the argument could be made that the women who chose this form of therapy had a lower threshold

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EXAMINING THE EVIDENCE

for elective surgery. The authors attempted to control for this by analyzing the likelihood of undergoing osteotomy of the great toe (hallux valgus surgery) and varicose vein stripping. They found no meaningful association between these elective operations and hysterectomy or stress-incontinence surgery.

“Escalator effect” may be involved

An important question that this study is unable to answer concerns the “escalator effect.” Because urinary stress incontinence is highly prevalent, it affects many women who also have other, more pressing gynecologic complaints. We do not know how many women had stress incontinence that was much less troubling than, say, leiomyomata or dysfunctional uterine bleeding and who, after these problems were solved by hysterectomy, then had their attention increasingly focused on this new complaint, which then moved higher up their list of concerns as other problems were treated.

The authors also acknowledge that other behavioral and lifestyle factors that are probably associated with stress incontinence, such as smoking, strenuous work, and elevated body mass index, were not accounted for in their study.

Should this study alter clinical practice?

Women undergoing hysterectomy should probably be informed that the operation may increase the likelihood of their undergoing surgery for stress incontinence later in life. In some cases, this information may lead women to reconsider the need for elective hysterectomy, but a possible future risk of undergoing a generally safe and effective operation for stress incontinence is unlikely to be determinative for most women who are contemplating surgery for other debilitating gynecologic conditions that can be treated permanently and effectively by hysterectomy.

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Cahill AG, Stamilio DM, Odibo AO, Peipert JE, Stevens EJ, Macones GA. Does a maximum dose of oxytocin affect risk for uterine rupture in candidates for vaginal birth after cesarean delivery? *Am J Obstet Gynecol.* 2007;197:495.e1-495.e5.

Does a higher dosage of oxytocin raise the risk of rupture in VBAC candidates?

Yes. A progressive increase in the rate of uterine rupture with increasing oxytocin dosage was observed in this retrospective study in women attempting vaginal birth after cesarean delivery (VBAC), beginning at maximum dosages of 6–10 mU/min (adjusted odds ratio, 1.97) and greatest at the highest range studied, 21–30 mU/min (adjusted odds ratio, 2.98). However, the overall rate of rupture in this study—even at the highest oxytocin dosages studied—was, at 2%, relatively low.

EXPERT COMMENTARY

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Numerous studies support the safety of a trial of labor after one low-transverse cesarean as an alternative to elective repeat cesarean delivery, with favorable maternal and perinatal outcomes expected for the vast majority of carefully selected patients. Although ACOG acknowledges that oxytocin appears to be relatively safe in patients attempting VBAC, some studies have shown an increased rate of uterine rupture with labor induction and augmentation than with spontaneous labor, suggesting that use of oxytocin may be a risk factor for rupture.¹

A focus on maximum dosages

This retrospective study is one of several derived from a large cohort of women with at least one previous low-transverse cesarean delivery performed at one of 17 centers in the United States. Earlier studies from this cohort found that oxytocin alone was not associated with uterine rupture and that no single factor was sufficient to predict rupture.^{2,3} The major objective of this subanalysis was to determine whether higher maximum dosages of oxytocin increase the rate of rupture.

Findings are probably not useful

Despite the strengths of this large study, with observations adjusted for significant confounders, it is limited by its retrospective design, potential bias introduced by nonrandomization, and use of maximum dosage of oxytocin as the primary variable. Many factors are weighed by practitioners when they consider a patient for VBAC and for oxytocin administration, and not all of them could be accounted for in this study: Timing of oxytocin administration, dosing intervals, duration of oxytocin exposure, and total cumulative dosage of oxytocin were not assessed.

Maximum oxytocin dosage was only a fair predictor of uterine rupture, and the authors acknowledge that the maximum dosage of oxytocin is not sufficiently predictive to be clinically useful. Maximum oxytocin dosage is likely only one of the variables affecting the rate of rupture.

Counsel women about greater risk

Although this study contributes to our understanding of uterine rupture in VBAC, its findings do not warrant a change in current clinical practice. The absolute increase of uterine rupture with higher maximum oxytocin dosages was about 1%. Patients should be informed about the possible increased risk of rupture with higher dosages of oxytocin. However, ACOG's existing recommendations on VBAC should still guide practitioners, and oxytocin should remain an option for properly selected patients in adequately staffed and monitored hospitals.¹ ■

References

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3. Macones GA, Cahill AG, Stamilio DM, Odibo A, Peipert J, Stevens EJ. Can uterine rupture in patients attempting vaginal birth after cesarean delivery be predicted? *Am J Obstet Gynecol.* 2006;195:1148-1152.

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The risk of uterine rupture increased with the oxytocin dosage in women attempting VBAC