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Hysterectomy: More Harm than Good, or Innocent Bystander?

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***Primum non nocere* (First, do no harm)**

As physicians, and particularly as surgeons, we recognize our responsibility to evaluate the potential harm posed by our interventions. Though “*primum non nocere*” does not actually appear in the Hippocratic oath, its sentiment does: “I will use treatment to help the sick according to my ability and judgment, but never with a view to injury and wrong-doing.”¹ Kocaay et al’s article² asks a critically important question regarding a widely performed operation and a vastly under-recognized potential consequence: does hysterectomy increase a woman’s risk of developing a pelvic floor disorder? Hysterectomy is the second most common surgical procedure performed on adult women.³ The majority of women with pelvic floor disorders do not seek care, so without studies like this one, we are unlikely to uncover potential harms of hysterectomy. This study is particularly valuable because of its focus on symptoms related to bowel dysfunction, which are least likely to be disclosed by patients.

***Post Hoc, Ergo Propter Hoc?* (After this, therefore because of this?)**

This prospective study follows over 300 women for four years following hysterectomy and documents rates of de novo pelvic floor symptoms of 3 to 16%, from which the authors conclude that hysterectomy had a significant negative impact on pelvic floor function.² However, temporal relationship alone does not prove causation: the rooster crows just before sunrise, but the rooster does not cause the sun to rise. In fact, as beautifully demonstrated in a large epidemiologic survey by some of these same authors, increasing age is one of the strongest risk factors for the development of pelvic floor disorders⁴ and women aged four years over the course of this prospective study. Further, the mean parity of this cohort was 3, and more than 90% had a prior vaginal delivery, both of which are known risk factors for pelvic floor disorders.⁴ The authors report only on development of de novo symptoms, but a recent retrospective Swedish study evaluating urinary incontinence one year after hysterectomy in over 16,000 women documented a 13% rate of remission in those who had incontinence prior to hysterectomy, with de novo symptoms developing in 9% and incontinence persisting in 16%.⁵ In the Swedish study, vaginal delivery, obesity, and urgency symptoms prior to surgery were associated with decreased remission rates and increased de

novo incontinence rates. It would be interesting to explore correlates with symptom remission and persistence in this prospective cohort of Turkish women.

Cum Hoc, Ergo Propter Hoc? (With this, therefore because of this?)

As Kocaay and colleagues acknowledge, their study is limited by its lack of a comparison group of women of similar age and parity who did not undergo hysterectomy. However, the association between hysterectomy and pelvic floor disorders has been documented in other studies that include control groups. In a 2007 study using retrospective Swedish Inpatient Registry data from over 165,000 women who underwent hysterectomy and 479,000 matched controls, women after hysterectomy were twice as likely to undergo subsequent surgery for stress urinary incontinence.⁶ There are two major limitations to such retrospective data analyses: 1) lack of randomization to the exposure in question; and 2) use of surgical procedure as proxy for symptom presence. It is possible, and even probable, that women who choose to undergo hysterectomy for a benign indication are different from those who do not, and may also be more likely to choose surgical management for pelvic floor disorders. So perhaps the association is that those who choose surgery for one symptom are more likely to choose it for another, rather than that they have developed a symptom as a result of having undergone hysterectomy. Indeed, in a recent Danish National Patient Registry study of over 150,000 women, those who underwent total abdominal simple hysterectomy were significantly more likely to undergo subsequent operation for pelvic organ prolapse than women who underwent total abdominal radical hysterectomy, suggesting that women with elective indications for hysterectomy may be different from those without.⁷

Excelsior! (Onward and upward!)

The question of whether hysterectomy increases a woman's risk of developing pelvic floor disorders is a critically important one, and the paper by Kocaay et al² contributes to a growing body of literature attempting to answer this question. One of the major strengths of Kocaay et al's article² is their prospective ascertainment of pelvic floor disorder symptoms directly from patients rather than reporting retrospective rates of subsequent surgical treatment. The importance of the question these authors pose cannot be overstated. In a research letter published in JAMA Internal Medicine earlier this year, more than 50% of patients hospitalized with serious illness noted bowel and bladder incontinence as a state worse than death, trumping reliance on a breathing machine or not being able to get out of bed.⁸ And that is saying a lot.

The ideal study design to determine whether hysterectomy causes subsequent pelvic floor disorders is a randomized, controlled trial (RCT) in which women are randomized to hysterectomy or not and followed prospectively, with ascertainment of pelvic floor symptoms via patient report using validated instruments. In an RCT of over 200 women with symptomatic pelvic organ prolapse randomized to hysterectomy versus hysteropexy in the Netherlands, there were no significant differences in prolapse, urinary, or defecatory symptoms one year after surgery. This study suggests hysterectomy may not be the culprit, but longer follow up and larger studies are needed for confirmation.⁹ The Pelvic Floor Disorders Network is currently conducting a similar RCT here in the United States (Study of

Uterine Prolapse Procedures - Randomized Trial (SUPeR), [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT01802281) Identifier: NCT01802281) comparing mesh augmented hysteropexy with vaginal hysterectomy and uterosacral ligament suspension. This study will provide the level 1 evidence necessary to guide our counseling and surgical decision-making regarding this important question within the coming decade.

In the meantime, we must rely on the existing, albeit imperfect, evidence. In the words of Sir Austin Bradford Hill in his 1965 President's Address to the Royal Society of Medicine regarding association versus causation, “All scientific work is incomplete - whether it be observational or experimental. All scientific work is liable to be upset or modified by advancing knowledge. That does not confer upon us a freedom to ignore the knowledge we already have, or to postpone the action that it appears to demand at a given time.”¹⁰ And coming full circle to the modern version of the Hippocratic Oath used by many US medical schools today: “I will not be ashamed to say ‘I know not’.”¹

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