



Is energy-based vessel sealing safer than suturing for vaginal hysterectomy?

It's too soon to tell. This meta-analysis “suggests” that these devices shorten operating time and hospital stay and decrease blood loss without increasing the rate of complications. Mortality and quality of life were not analyzed.

Kroft J, Selk A. Energy-based vessel sealing in vaginal hysterectomy. A systematic review and meta-analysis. Obstet Gynecol. 2011;118(5):1127-1136.

► EXPERT COMMENTARY

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Although the use of vaginal hysterectomy in the treatment of benign uterine conditions continues to decline, it is associated with better outcomes and fewer complications than the laparoscopic and abdominal approaches. Indeed, a 2009 Committee Opinion from ACOG recommends the vaginal route whenever it is feasible.¹

Any instrumentation that facilitates or enables the vaginal approach would, therefore, be a welcome addition to the surgical armamentarium. The question of whether bipolar electrosurgical devices can significantly improve key outcomes is the subject of this systematic review and meta-analysis. These hand-held devices obviate the need for suturing to achieve hemostasis by providing rapid, sequential tissue and vessel sealing and coagulation, with or without transection.

The challenge of studying surgical devices

This is the first meta-analysis to estimate the effect on surgical outcomes of energy-based vessel sealing, compared with suturing, in women undergoing vaginal hysterectomy. Contemporary value analysis of new surgical instrumentation is a complex process that includes such variables as cost, education,

ergonomics, efficiency, efficacy, and any influence on patient outcomes, including adverse events.

Energy-based surgical devices are more costly than conventional suturing and have a negative impact on the environment. They also carry a potential for harm through thermal injury. These devices are designed to save time and reduce blood loss, but these improvements may come at the cost of complications caused by unintended thermal injury.

Details of the trial

Kroft and Selk reviewed published and unpublished resources to find randomized, controlled trials of women undergoing vaginal hysterectomy. Among the 979 databases and one registered trial so identified, they found only seven studies that met the eligibility criteria: Five studies compared the LigaSure device (Covidien) with suturing, and two compared the Biclamp device (a bipolar electrosurgical device without a cutting blade [ERBE]) with suturing. All seven studies

WHAT THIS EVIDENCE MEANS FOR PRACTICE

Until a large, high-quality, randomized, controlled study is properly conducted to determine whether these novel surgical devices can improve outcomes and reduce costs, there is insufficient evidence to recommend the use of energy-based vessel-sealing devices for vaginal hysterectomy.

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FAST TRACK

Energy-based vessel sealing reduced estimated blood loss by 47.7 mL and shortened hospitalization by 0.25 day. The postoperative pain score decreased by 1.25. However, the quality of the evidence was poor.

(n = 662) reported operative time and complications; six measured blood loss; four recorded pain by visual analog scale; and five listed the length of stay. None of the studies reported on mortality, patient satisfaction, or quality of life.

Allocation concealment, a method used to prevent selection bias by concealing the allocation sequence from the investigators who assigned patients to intervention groups, was unclear or inadequate in all the studies identified.

Although 99% of patients were available for follow-up, none of the studies blinded outcome analysis or assessors.

Pooled analysis demonstrated that the bipolar electrosurgical devices reduced operative time related to suturing by 17.2 minutes (95% confidence interval [CI], 7.5–27.0). However, after subgroup analysis, this effect

was found only for the LigaSure device.

When energy-based vessel sealing was used, estimated blood loss decreased by 47.7 mL (95% CI, 15.5–79.9), the postoperative pain score diminished by 1.25 (95% CI, 0.46–2.05), and the length of stay decreased by 0.25 day (95% CI, 0.13–0.37).

The quality of evidence for all these outcomes was either low or very low.

There were no differences demonstrated in the complication rate between groups. To detect a significant difference in the rate of complications between the two groups, this analysis would have required considerably more subjects in each arm of a prospective study. 

Reference

1. American College of Obstetricians and Gynecologists. ACOG Committee Opinion No. 444: Choosing the route of hysterectomy for benign disease. *Obstet Gynecol.* 2009;114(5):1156–1158.

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