Does elimination of the bladder flap from cesarean delivery increase the risk of complications?

**No.** This randomized, controlled trial of 258 women undergoing primary or repeat cesarean delivery at ≥32 weeks of gestation found that elimination of the bladder flap did not increase intraoperative or postoperative complications. It also significantly shortened the interval from skin incision to delivery (median of 9 minutes [range, 1–43 minutes] versus 10 minutes [range, 2–70 minutes]; \( P = .04 \)). There was no difference in total operating time, however (51 minutes in both groups; \( P = .1 \)).

**Details of the trial**

This study by Tuuli and colleagues is a single-center, unblinded, randomized, controlled trial designed to explore the risks and benefits of creating a bladder flap versus those of omitting the flap at the time of cesarean delivery. Of the 258 women enrolled in the trial, 131 were allocated to creation of a bladder flap and 127 to omission of the flap.

The primary outcome was total operative time. Secondary outcomes were:
- bladder injury
- incision-to-delivery time
- incision-to-fascial closure time
- estimated blood loss
- postoperative pain
- hospital stay
- endometritis
- urinary tract infection.

Unlike an earlier trial that included only women undergoing primary cesarean, this
In the absence of a bladder flap, bladder injury may be more likely when the second stage of labor is prolonged. Of the 131 women allocated to the bladder-flap creation group, only 108 (82%) actually had a bladder flap; 23 (18%) did not. Conversely, among the 127 women allocated to the no-flap group, 14 (11%) had a bladder flap created, most commonly because of the presence of scar tissue (n = 9).

Neither group had any bladder injuries nor were there statistical differences in any of the other secondary outcomes studied.

The authors concluded that omission of the bladder flap from primary and repeat cesarean delivery does not increase intraoperative or postoperative complications.

**Strengths and limitations**

As I mentioned, the rationale for creating a bladder flap is to reduce the rate of bladder injury. Therefore, bladder injury should have been the primary outcome of this trial. However, because the expected rate of bladder injury during cesarean delivery is so low (0.14%–0.35%), a sample size of 40,000 women would have been needed to address this outcome.

Among women who do not have a bladder flap created during cesarean delivery, bladder injury may be more likely when the second stage of labor is prolonged (i.e., when the vertex is wedged low in the pelvis) and when the woman has a history of multiple cesarean deliveries. This study did not include information about the number of women meeting these criteria.

Another limitation of this trial: Adherence to the protocol was inadequate, as 18% of the women assigned to receive a bladder flap did not have one, and 11% of those assigned to receive no flap had a flap created. This failure to adhere to the protocol may explain the lack of significant differences in total delivery time between the two groups, as well as the clinically insignificant difference in the incision-to-delivery interval between groups.

The rationale for omitting a bladder flap is to shorten total operating and incision-to-delivery time and/or to reduce the rate of future adhesions. Regrettably, this trial provided no conclusive evidence regarding any of these benefits. We still need a randomized trial of adequate sample size to address some of the questions raised by this trial.

**References**


**What is the optimal interval of bone-density assessment in menopausal women?**

Steven R. Goldstein, MD, addresses this question in the July 2012 issue of OBG MANAGEMENT.