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; $P = .1$).

FAST TRACK

Elimination of the bladder flap shortened the median interval from incision to delivery by 1 minute

Tuuli MG, Odibo AO, Fogertey P, Roehl K, Stamilio D, Macones GA. Utility of the bladder flap at cesarean delivery. A randomized controlled trial. Obstet Gynecol. 2012;119(4):815–821.

EXPERT COMMENTARY
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Cesarean delivery is the most common major surgical procedure performed during pregnancy. In the United States, the rate of cesarean delivery approaches 30%. As this rate rises, it is likely to be accompanied by an increase in the rate of surgical complications, such as pelvic hematoma, infection, and bladder injury, and in the rate of long-term complications, such as adhesion formation.

Several studies have assessed technical aspects of cesarean delivery, but debate continues over whether a bladder flap is a necessary part of the standard procedure.

The bladder flap is developed by incising the peritoneal lining and dissecting the urinary bladder away from the lower uterine segment. Suggested benefits of the bladder flap are easy access to the lower uterine segment and avoidance of bladder injury—but these claims have not been confirmed in retrospective or randomized trials.[1,2] On the contrary, some studies suggest that creation of a bladder flap prolongs the duration of surgery and may increase the risk of postoperative infection and adhesion formation, as well as bladder injury at the time of repeat cesarean.[3]

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

study included both primary and repeat cesarean deliveries. Sample size for each group was calculated assuming a 5-minute difference in total operating time.

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.

WHAT THIS EVIDENCE MEANS FOR PRACTICE

I agree with the authors of this trial that their findings—along with those of other studies—argue against routine creation of a bladder flap at cesarean delivery.

Consider clinical findings at the time of surgery when deciding whether or not to create a bladder flap. For example, a flap may ease delivery of the fetal head when pushing has been prolonged during the second stage of labor or when operative vaginal delivery has failed. A flap also may help the surgeon avoid injury to the bladder in cases involving accidental extension of the lower-segment incision.

Among women who have a history of cesarean delivery and in whom the bladder flap is attached high above the lower segment, the bladder should be dissected carefully away from the uterus to avoid injury during delivery.

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References

1. Malvasi A, Tinelli A, Gustapane S, et al. Surgical technique to avoid bladder flap formation during cesarean section. G Chir. 2011;32(11–12):498–403.
2. Hohlagschwandtner M, Ruecklinger E, Husslein P, Joura EA. Is the formation of a bladder flap at cesarean necessary? A randomized trial. Obstet Gynecol. 2011;98(6):1089–1092.
3. Malvasi A, Tinelli A, Guido M, et al. Effect of avoiding bladder flap formation in cesarean section on repeat cesarean delivery. Eur J Obstet Gynecol Reprod Biol. 2011;159(2):300–304.

›› 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.

FAST TRACK

In the absence of a bladder flap, bladder injury may be more likely when the second stage of labor is prolonged