Which skin closure technique better reduces the risk of cesarean wound complications—surgical staples or subcuticular suture?

Suture, according to this randomized, controlled trial of 398 women. At the time of hospital discharge, the rate of the primary outcome of wound disruption or infection was 7.1% for staples and 0.5% for suture (P <.001; relative risk [RR], 14.1; 95% confidence interval [CI], 1.9–106). Among the 350 women who completed follow-up at 4 to 6 weeks, the rate of the primary outcome was 14.5% for staples and 5.9% for suture (P = .008; RR, 2.5; 95% CI, 1.2–5.0). Staples were removed on postoperative day 3 or 4 for low transverse incisions and on days 7 to 10 for vertical incisions.

Figueroa D, Jauk VC, Szychowski JM, et al. Surgical staples compared with subcuticular suture for skin closure after cesarean delivery: a randomized controlled trial. Obstet Gynecol. 2013;121(1):33–38.

EXPERT COMMENTARY
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The two most commonly utilized methods of skin closure after cesarean delivery are nonabsorbable metal staples and absorbable suture.[1] A number of investigators have explored these methods of closure in regard to wound complications, pain perception, patient satisfaction, and physician assessment of cosmesis.[2]

A recent Cochrane meta-analysis of these studies revealed that there were no significant differences between these two methods with respect to wound infection, patient satisfaction, pain perception, or physician assessment of cosmesis.[2] However, there was a significant difference between methods in terms of skin separation: Incisions closed with staples were almost four times as likely to be complicated by skin separation.[2]

WHAT THIS EVIDENCE MEANS FOR PRACTICE

For women undergoing cesarean delivery via low transverse incision, if staples are removed on day 3, the incidence of wound separation is higher—as both this study and earlier studies have demonstrated—so suture may be preferred. If, however, staples are removed later than day 3, data are insufficient to compare wound morbidity on the basis of skin closure techniques. (We recommend staple removal on day 5–10 for women of normal weight, and day 7–10 for women with a body mass index above 30 kg/m^2). An additional randomized clinical trial is needed.

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FAST TRACK

When staples were removed on postoperative day 3 or 4 for low transverse incisions, the rate of wound disruption or infection was higher than the rate associated with suture

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Details of the trial

Participants had a viable pregnancy at 24 weeks' gestation or beyond and were undergoing scheduled or unscheduled cesarean delivery. Of these, 198 women were randomly assigned to staples, and 200 were allocated to suture (Monocryl) for skin closure. Staples were removed 3 to 4 days after delivery for low transverse incisions and 7 to 10 days after delivery for vertical incisions.

Standardized physical examination of the wound was performed at hospital discharge (days 3–4) and 4 to 6 weeks postoperatively. The primary outcome was a composite of wound disruption or infection that occurred 4 to 6 weeks postoperatively; secondary outcomes included operative time, pain, cosmesis, and patient satisfaction with the scar.

Strengths of the trial include sample size

Of the studies that have been published to date, this trial by Figueroa and colleagues is the second largest to compare staples with suture for closure of cesarean skin incisions.

Another strength of this study is its intention-to-treat analysis and the low rate of patients who were lost to follow-up.

This study is similar to the largest study, by Basha and colleagues, that examined skin closure after cesarean, in that women undergoing cesarean delivery via vertical or low transverse incisions were allocated to closure of the skin with staples or absorbable (Monocryl) suture.[3] In both studies, staples were removed 3 or 4 days after delivery, although Figueroa and colleagues specified that staples be removed on days 7 to 10 for women who had vertical incisions.[3]

A few weaknesses may limit generalizability of the findings

Figueroa and colleagues noted that women in their study received prophylactic antibiotics at the time of cord clamping, rather than preoperatively, although the latter approach now is considered more appropriate in terms of reducing wound morbidity.[4]

Another limitation: Enrollment was terminated early, after enrolling only approximately one-third of the intended sample size. Figueroa and colleagues explain that this decision was based on the findings

of Basha and colleagues, which were published during active enrollment of the Figueroa study.[3] Not only did Basha and colleagues report a higher incidence of wound complications than Figueroa and colleagues had used to calculate the required sample size, but the Basha study also concluded that sutures may be more optimal for skin closure with respect to skin separation.[3]

In the study by Figueroa and colleagues, the primary outcome was defined as a composite of wound disruption or infection. However, there was no specification as to length of skin dehiscence that would qualify as disruption—although the investigators did note that the difference in wound disruption remained statistically significant when analyses were limited to wounds involving disruption of more than 1 cm.

As have earlier studies, Figueroa and colleagues found that operative time was longer when sutures were used, compared with staples.

Most earlier studies that assessed cosmesis utilized the Physician Observer Scar Assessment Scale, but this study did not, so it is unclear whether the findings can be compared with prior investigations on this point.

References

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