

The Optimal Uterine Closure Technique During Cesarean

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Cesarean is one of the most commonly performed surgery surgeries around the world and the rate at which it is performed per delivery is constantly increasing. A scarred uterus may carry long-term consequences: most notably, it can increase the risk of placenta accreta and uterine rupture in subsequent pregnancies, two life-threatening conditions for both mother and fetus. Moreover, the fear of uterine rupture and the resulting consequences is likely the most important cause for the very low rate of vaginal birth after cesarean in North America, which in turn contributes to the ever increasing rate of cesarean. Although there is a growing body of evidence that the technique for uterine closure can be crucial for uterine scar healing, strong evidence regarding optimal techniques is scarce and there currently exist no national or international guidelines on which obstetricians-gynecologists and surgeons can rely. Most randomized trials that have evaluated the uterine closure technique during cesarean have focused on the short-term operative complications without evaluating the impact on future pregnancies. Facing such scarcity of literature in such an important field of medicine, every effort should be made: to identify the optimal ways to close the uterus at the time of cesarean; to evaluate the healing of the scar; and to establish the relationship between uterine closure and long-term complications, such as placenta accreta and uterine rupture. The study of Babu and Magon provides new

guidance for future randomized trials.^[1] The authors suggest that a continuous modified mattress suture technique aiming to a correct approximation of the cut margins (decidua-to-decidua, myometrium to myometrium) leads to improved scar healing and a low rate of scar defect evaluated by ultrasound six months following cesarean.

These findings are in complete agreement with the best evidence currently available: Closure of the transverse uterine incision using a single running locking suture penetrating the full thickness of the myometrium and endometrium has been associated with a two- to four-fold risk of uterine rupture compared to double-layer closure.^[2,3] A recent meta-analysis demonstrated that this association was likely true only when the single-layer closure was performed in a locking fashion;^[4] it is possible that the locked suture, by being more hemostatic, can cause a strangulation of the scar tissue and lead to weaker healing. However, it is also possible that the weakness of the scar following a single-locked suture of the uterus is secondary to the fact that this technique is usually performed with inclusion of the decidua (endometrium) in the scar tissue. In several animal experiments, Poidevin demonstrated that suturing the complete thickness of the uterus, including the endometrium, was associated with inclusions of endometrial tissue in the scar, resulting in scar defects several weeks or months later.^[5] Finally, in a quasi-randomized study, Hayakawa *et al.* recently found that a double-layer closure consisting of a continuous suture of the endometrium followed by a second continuous suture of the myometrium was associated with fewer scar defects compared to the usual single- and double-layer closures.^[6] The above data suggests, as reported by Babu and Magon, that precise approximation of the cut margins is crucial in uterine scar healing and inclusion of the endometrium

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in the suture may be the primary factor precluding an optimal approximation of the muscular tissue, leading to a weaker scar.

Based on the above, further studies evaluating the closure of the uterus should focus not only on the number of layers, but also on the inclusion or exclusion of the endometrium in the suture, as well as the locking (or not) of the suture.

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