

## LETTER TO THE EDITOR

# Advantages of Peritoneal Closure at the Time of Cesarean Section

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Dear Editor,

Hemorrhage during pregnancy is a major cause of severe maternal morbidity and mortality in high as well as in low resource settings<sup>1,2</sup>. In particular during Cesarean section (CS), intraoperative and post-operative bleeding may become life-threatening emergency. Consequently, any strategy to reduce severe blood loss deserves consideration and eventual implementation.

We would like to call attention upon the controversy over closure or non-closure of the parietal peritoneum during the CS surgical procedure, an issue currently being debated among obstetricians.

In recent years several studies have explored adhesion formation as a long-term complication of leaving the visceral and parietal peritoneum unsutured. Some authors recommend closure of the peritoneum in order to prevent adhesion formation involving the anterior uterine wall and the muscular layer (Figure 1), often observed after repeat Cesareans<sup>3,4</sup>; others claim that the available evidence to routinely suture the peritoneum is still inadequate and conflicting<sup>5</sup>.

While waiting for more robust evidence of well-designed trials, we would like to emphasize the usefulness of closing the parietal peritoneum as a preventive measure against hemorrhagic complications occurring in the early post-operative period after C-section. This assumption is based on our observation that this simple surgical step may turn crucial in differentiating bleeding occurring from the abdominal wall from that coming from an intraperitoneal source. The former

may stem from a torn vessel of the muscular/fascial layer such as in high risk pre-eclamptic patients with altered coagulation, as well as in repeat CS when access to the uterus disrupts the interposed tissues. On the other hand, intraperitoneal bleeding may also be caused by a loose suture of the incised lower uterine segment or may come from adhesions or omental damage.

In our studies, hemorrhage complicating CS occurred as often as 5.6 per 1000 procedures during a 10-year observation period and we have become aware of how differently the clinical picture changes depending on the surgeon's choice with regard to closure or non closure of parietal peritoneum<sup>6</sup>.

Suturing the parietal peritoneum compartmentalizes and constrains abdominal wall bleeding, that leads to hematoma formation (Figure.2a). Clinical and ultrasonographic diagnosis is simple and maternal vital parameters are moderately affected with progressive reduction of hemoglobin levels. Depending on its' size and associated symptoms, the hematoma may be drained without entering the abdominal cavity (Figure 2b).

The patient's condition remains stable and this minor surgical intervention will solve the situation often avoiding the need for blood transfusion.

In contrast, in the case of non-closure of the peritoneum, the clinical picture associated with a muscular/fascial bleeding will develop: blood effuses into the abdominal cavity, causing a rapidly developing hemoperitoneum which could lead to a sudden compromise of the patient's



**Figure 1:** Adhesions between the anterior uterine wall and the parietal muscular layer after repeat C-section



**Figure 2:** Abdominal wall hematoma after C-section: a) before drainage, b) exposed hematoma

condition. The quick drop of hemoglobin levels will almost inevitably require urgent re-laparotomy and blood replacement. Intraoperative

findings are often inconclusive with regard to the source of bleeding since the leakage from the muscular layer is rarely detectable. Implications therefore are undoubtedly more severe and include major surgery, blood transfusion and longer stay in the hospital. Altogether with implications for hospital costs, the slower recovery adds distress to the patient and family members involved in the care of the newborn.

In conclusion, we believe that closure of the parietal peritoneum besides being a surgical step that likely reduces adhesion formation, has the added advantage of confining any abdominal wall bleeding to the extraperitoneal space and should not be omitted when performing a Cesarean procedure.

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## Contribution of Authors

FM and GZ: Project development; SC and EC manuscript writing and editing. All authors mentioned in the article approved the manuscript.

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