# Survey on Uterine Closure and Other Techniques for Caesarean Section Among Quebec's Obstetrician-Gynaecologists

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## Abstract

**Objective:** To evaluate the preferred types of uterine closure at Caesarean section among Quebec's obstetrician-gynaecologists.

**Methods:** An anonymous survey with multiple-choice and open questions was sent by email to all members of the Association des Obstétriciens-Gynécologues du Québec in clinical practice. The primary response of interest was the type of uterine closure that would be favoured for a primigravida undergoing an elective CS at term for a breech fetus. Secondary responses of interest included type of uterine closure for CS performed for other indications, and methods of closure for the bladder flap, parietal peritoneum, rectus abdominis muscle, subcutaneous tissue, and skin. Results were stratified according to the number of years in practice.

**Results:** Of 454 persons targeted, 176 (39%) responded. Responders were more likely to have fewer years in practice than the targeted population in general. The closures for a primigravida undergoing an elective CS at term for a breech presentation were, in order of preference: (1) a double-layer closure combining a first locked layer and an imbricating second layer (61%), (2) a double-layer closure combining a first unlocked layer and an imbricating second layer (28%), (3) a locked single layer (5%), (4) an unlocked single layer (5%), and (5) other techniques (1%). A locked single-layer closure was more frequently used for repeat CS (29%), and it was the favoured technique (40%) when tubal ligation was performed at the time of CS ($P < 0.05$).

**Conclusion:** Double-layer closure is the type of uterine closure most preferred by obstetricians in Quebec. However, the first layer is locked by two thirds of obstetricians and unlocked by the remainder.

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## Résumé

**Objectif :** Évaluer les types privilégiés de fermeture utérine au moment de la césarienne chez les obstétriciens-gynécologues du Québec.

**Méthodes :** Un sondage anonyme comptant des questions ouvertes et à choix multiples a été transmis par courriel à tous les membres de l'Association des obstétriciens-gynécologues du Québec en pratique clinique. La question qui nous intéressait principalement concernait le type de fermeture utérine qui serait privilégié dans le cas d'une primigravide subissant une césarienne planifiée à terme en raison d'un fœtus en présentation du siège. Parmi les questions suscitant un intérêt secondaire de notre part, on trouvait celles qui s'intéressaient au type de fermeture utérine pour ce qui est des césariennes menées en raison d'autres indications et celles qui traitaient des méthodes de fermeture de la jonction avec la vessie, du péritoine pariétal, du muscle grand droit de l'abdomen, du tissu sous-cutané et de la peau. Les résultats ont été stratifiés en fonction du nombre d'années de pratique.

**Résultats :** Parmi les 454 personnes ciblées, 176 (39 %) ont rempli le sondage. Les répondants étaient plus susceptibles de compter moins d'années de pratique que la population ciblée en général. Les types de fermeture utérine privilégiés dans le cas d'une primigravide subissant une césarienne planifiée à terme en raison d'un fœtus en présentation du siège ont été, en ordre de préférence : (1) une fermeture en deux plans combinant un premier plan fermé au moyen d'un surjet passé et un deuxième plan imbriqué (61 %), (2) une fermeture en deux plans combinant un premier plan fermé au moyen d'un surjet non passé et un deuxième plan imbriqué (28 %), (3) une fermeture en un plan au moyen d'un surjet passé (5 %), (4) une fermeture en un plan au moyen d'un surjet non passé (5 %), et (5) d'autres techniques (1%). La fermeture en un plan au moyen d'un surjet passé a été utilisée plus fréquemment dans les cas de césarienne itérative (29 %) et a constitué la technique privilégiée (40 %) lorsqu'une ligature des trompes était menée au moment de la césarienne ($P < 0,05$).

**Conclusion :** La fermeture en deux plans constitue le type de fermeture utérine le plus privilégié par les obstétriciens du Québec. Cependant, deux tiers des obstétriciens font appel à un surjet passé pour le premier plan, tandis que les autres font appel à un surjet non passé.

## INTRODUCTION

Caesarean section is one of the most frequent surgical procedures performed worldwide, but for some technical aspects of this procedure, a consensus is still lacking.[1,2] Closure of the hysterotomy site is an aspect that has gained interest because of the potential relationship with uterine rupture during a trial of labour in subsequent pregnancies.[3] Uterine rupture, one of the worst obstetrical complications, is associated with significant neonatal and maternal morbidity.[4,5]

Several techniques for myometrial closure have been described, including the use of interrupted sutures and locked and unlocked continuous sutures with single- or double-layer closure.[1,6] Locked single-layer continuous suturing, popularized in North America during the late 1980s, is part of the Misgav–Ladach technique developed by Stark and colleagues.[7,8] Single-layer, as opposed to double-layer, closure has been shown to reduce operating time and blood loss in a meta-analysis.[3] However, a recent very large randomized controlled trial[9] did not confirm such benefits, and long-term follow-up of patients is currently lacking. Recent data reported by Bujold et al. indicated that single-layer closure may be one of the most important factors related to uterine rupture.[10,11] In those studies, single-layer closure was used for uterine closure in approximately 25% of Caesarean sections. More recently, Roberge et al., in a meta-analysis, suggested that a locked single-layer closure was associated with a five-fold risk of uterine rupture in the next pregnancy, while an unlocked single-layer closure would not result in a higher risk than double-layer closure.[12]

We aimed to evaluate the preferred type of uterine closure during CS among obstetrician-gynaecologists in Quebec.

## METHODS

An online survey (SurveyMonkey.com) of all active members of the Association des Obstétriciens-Gynécologues du Québec (AOGQ) was conducted in December 2011. The survey questionnaire was sent directly to members of AOGQ through the members' email list. All responses were anonymous and consent to publish data was obtained from all respondents.

All 20 questions in the survey had multiple-choice responses with the option of adding an alternative choice ("other"). The questions were written in French and developed by the authors after a face-to-face focus group meeting with national and international experts in the field. The primary response of interest was the preferred type of hysterotomy closure for an elective CS performed in a primigravida at term for a breech presentation. Secondary responses of interest included the preferred type of hysterotomy closure for other indications for CS; the preferred type of suture material; the preference of obstetricians regarding the closure or not of the bladder flap, the parietal peritoneum, the rectus abdominis, and the subcutaneous tissue; and, finally, the favoured type of closure for the skin (staples vs. subcuticular sutures).

The respondents' characteristics were compared with those of the entire targeted population. Proportions were compared using chi-square test and SPSS 20.0 (IBM Corp., Armonk NY). A secondary analysis was performed to adjust for a potential selection bias; we compared the answers to each question according to the respondents' years in practice. A $P$ value of $< 0.05$ was considered significant.

Approval for the study was granted by the Executive Committee of the AOGQ.

## RESULTS

Of 464 potential participants, we obtained 176 (39%) responses. Responders were more likely to be younger and to have been in practice for fewer years than the targeted population (Table 1). The proportion of male and female respondents according to their number of years in practice was comparable to the targeted population (Table 1).

We found that the preferred type of uterine closure during an elective CS in a primigravida with a breech fetus at term was a first locked continuous layer followed by an imbricating second layer (60.8% of respondents, Table 2). The second preferred type of uterine closure was a first unlocked continuous layer followed by a second layer (28.4 % of respondents, Table 2) for a total of 89% of respondents who favour a "double-layer" closure in this situation. However, we observed that in cases of elective repeat CS or CS with tubal ligation, the proportion of "single-layer" closure was greater, reaching 53% in the latter situation (Table 2). We found no difference in the preferred type of uterine closure by number of years in practice (Table 3).

The other preferred techniques for CS are reported in Table 3. We found that obstetrician-gynaecologists with more than 15 years in practice more frequently favoured (1) chromic catgut for hysterotomy closure; (2) closure of the bladder flap; and (3) subcuticular suture for skin closure than their colleagues with fewer years in practice.