Reporting Caesarean Delivery in Quebec Using the Robson Classification System

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Abstract

Objective: The increasing rates of Caesarean sections throughout the world is preoccupant, and a good understanding of which groups of women contribute the most to the CS rate represents an important question in public health. Therefore, we sought to report the CS rate according to the Robson's classification system in the Quebec population.

Method: We performed a secondary analysis of the QUARISMA database, including all deliveries after 24 weeks' gestation from 32 maternity wards in the province of Quebec between 2008 and 2011 (n = 184 952 deliveries). CS rates were reported according to the modified Robson criteria from The Society of Obstetricians and Gynaecologists of Canada with the relative contribution to the total number of CSs.

Results: We observed a global CS rate of 22.9%. Women with previous CS and a fetus in cephalic presentation at term accounted for 35% of all Caesarean deliveries. Nulliparous women with cephalic presentation at term accounted for 30% of all CSs. Among nulliparous women with cephalic presentation, women with spontaneous labour contributed to 12% of all CSs, whereas women with an induction of labour contributed to 16% of all CSs. Non-cephalic fetal presentation accounted for 19% of all CSs. Other indications accounted for the remaining 16% of CSs.

Conclusion: Most CSs are performed for multiparous women with previous CS; nulliparous women with a cephalic presentation at term, especially those undergoing labour induction; and non-cephalic fetal presentation.

Résumé

Objectif : La croissance du taux de césarienne dans le monde est préoccupante, d'où l'importance pour la santé publique de comprendre quels groupes de femmes contribuent le plus à ce taux. Nous avons donc cherché à rapporter le taux de césarienne dans la population québécoise à l'aide du système de classification de Robson.

Méthodologie : Nous avons effectué une analyse secondaire de la base de données QUARISMA, en incluant tous les accouchements pratiqués après 24 semaines de grossesse dans 32 services de maternité du Québec entre 2008 et 2011 (n = 184 952 accouchements). Les taux de césarienne ont été rapportés selon les critères modifiés de Robson de la Société des obstétriciens et gynécologues du Canada avec la contribution relative au nombre total de césariennes.

Résultats : Nous avons observé un taux de césarienne global de 22,9 %. Les femmes ayant déjà eu une césarienne et ayant un fœtus en présentation céphalique à terme représentaient 35 % de tous les accouchements par césarienne. Les femmes nullipares avec une présentation céphalique à terme représentaient 30 % de toutes les césariennes. Parmi elles, les femmes ayant eu un travail spontané constituaient 12 % de toutes les césariennes, alors que les femmes ayant eu un déclenchement du travail constituaient 16 % de tous les cas. Les fœtus en présentation non céphalique représentaient 19 % de toutes les césariennes. Les autres césariennes (16 %) résultaient d'autres indications.

Conclusion : La plupart des césariennes sont effectuées pour des femmes multipares ayant déjà subi cette opération; des femmes nullipares avec une présentation céphalique à terme, surtout celles dont le travail doit être déclenché; et des femmes avec une présentation fœtale non céphalique.

INTRODUCTION

Caesarean sections have reached high levels (30% to 40%) in several countries.[1] Despite the WHO recommendation for an optimal CS rate of 10% to 15%, the rate is still increasing and remains preoccupant worldwide.[2]

CSs are performed to reduce the risks of complication for the mother and her child. However, at a rate beyond the one recommended by WHO, there are no proven benefits on perinatal morbidity or mortality.[3−5] In Quebec, the CS rate increased from 17.7% in 1992 to 23.3% in 2006 without significant change in perinatal mortality.[3] It has been suggested that an increase of the CS rate among low-risk women could translate into greater maternal and perinatal mortality and morbidity.[6,7]

The Robson classification system (10-group classification) is a recognized tool that fulfils international and local needs for CS classification.[8] Based on the obstetric characteristics of the women (parity, number of fetuses, gestational age, onset of labour, fetal presentation, and previous CS), the 10 categories are totally inclusive and mutually exclusive.[9] Providing reliable epidemiological data using the Robson classification system for births and mode of delivery can help health care professionals determine and understand the CS trend and the reasons for its increase.[10] Considering the objective of multiple countries to reduce the rate of CS, using a detailed classification tool could help associations determine interventions to achieve this goal.[3,11,12]

The aim of this study was to report the CS rate among the obstetrical population in Quebec using a modified Robson classification system.

METHOD

All data used were extracted from the QUARISMA study database, a cluster, randomized controlled trial evaluating the effect of an intervention on the CS rate.[7] This study was conducted in 32 hospitals from 2008 to 2011 in the province of Quebec and included 184 952 women and 188 030 newborns. All women were included, regardless of allocation group, because no statistical difference was detected for the distribution of CS among the Robson's groups between the intervention and control groups (Kruskal-Wallis test $P = 0.81$). The goal of the QUARISMA study was to reduce the CS rate using a multifaceted intervention involving audits and feedback, clinical recommendations, and best practice implementation. All the women delivered at ≥ 24 weeks' gestation, and newborns with fetal weight ≥ 500 g (live births and stillbirths) during this period were included.[7] Relevant information (parity, mode of previous deliveries and their indications, gestational age, onset of labour—spontaneous or induced) were collected. To provide a global rate of the actual CS in Quebec, all deliveries were included. The trial received approval from the institutional review board at each participating hospital.

Classification System

Data were grouped into a modified version of the Robson 10 categories, including additional categories to increase indications for CS and deepened analysis.[10] As suggested

ABBREVIATIONS

QUARISMA	Quality of Care, Obstetrics Risk Management, and Mode of Delivery study

by the SOGC, the following additional categories were included: (1) spontaneous labour, (2) induction, and (3) CS before labour for each Robson category when possible.[13] Moreover, category 5 (previous CS, cephalic ≥ 37 weeks) was subdivided into (1) only one previous CS and (2) >1 previous CS, and categories 6 and 7 were also subdivided into preterm (<37 weeks) and term (≥ 37 weeks).

Analysis

The number of deliveries and the contribution of deliveries in each Robson category were reported. All women were included, regardless of allocation group, for the presentation of the global prevalence. CS rate was reported according to the Robson classification as (1) CS rate for each category and (2) the contribution of each group to the total CS rate. Because this was a descriptive analysis, no statistical testing was performed.

RESULTS

Among the 184 952 deliveries, 42 393 CSs were performed for a global CS rate of 22.9%. Table reports the births and CS rate according to the Robson modified classification system. We observed that multiparous women with a singleton fetus in cephalic presentation at term and a previous CS (Robson group 5) were greater contributors to the CS rate, accounting for 35% of all CSs (78.2% CSs in the group).

The second highest contributors were nulliparous women with a singleton fetus in cephalic presentation at term (Robson groups 1 and 2), contributing 29.9% of total CSs (17.9% CSs in the group). Among them, women without spontaneous labour represented 17.7% of all CSs (28% CSs in the group), and women with spontaneous labour accounted for 12.2% of total CSs (11.7% CSs in the group). Examining specifically these groups, we observed that nulliparous women with a singleton fetus in cephalic presentation at term undergoing labour induction (Robson group 2A) are two times more likely to have a CS than those with spontaneous labour (Robson group 1) (relative risk 1.94, 95% CI 1.88 to 2.01, $P < 0.001$).

The third most important contributors to the CS rate were all fetal non-cephalic presentations (Robson's groups 6, 7, and 9), accounting for 19.4% of all CSs (93.2% CSs in the groups).

DISCUSSION

We observed that women with previous CS, those with a fetus in non-cephalic presentation, and nulliparous women with a singleton fetus in cephalic presentation at term