Primary caesarean section in nulliparous and grandmultiparous Saudi women from the Abha region: Indications and outcomes

***A. A. Sobande[1], E. I. Archibong[2] and M. Eskandar[1]**

[1]Department of Obstetrics and Gynaecology, College of Medicine and Medical Sciences, King Khalid University, P. O. Box 641, Abha, Saudi Arabia

[2]Abha Maternity Hospital, Abha, Saudi Arabia.

Summary

Objective

To assess the indications for and outcomes of primary caesarean section (PCS) perfomed in nulliparous and grandmultiparous women in the Abha region of Saudi Arabia.

Methods

A retrospective cohort study.

Materials

393 nulliparous women (para 0) (NPG) and 432 grandmultiparous women (parity>5) (GMPG) who had PCS at the Abha Maternity Hospital (AMH) over a 3-year period, (1997-1999) formed the basis of the study.

Results

The PCS rates in NPG and GMPG were 19.4% and 18.3% respectively with no statistically significant difference. (p>0.05). There were statistically significant differences between the two groups regarding the mean age, blood loss during surgery, post operative haemoglobin, and birth weight were compared, p<0.05. There was no statistically significant differences in the mean gestation at delivery, p > 0.05.

The most common indication for surgery in the two groups of patients was fetal distress (NPG =28%, GMPG = 25%: p=NS), followed by failure of progress in labour. (NPG = 22.7%, GMPG = 21.6%, p = NS). Antepartum haemorrhage (APH) was the indication for PCS in 6.8% of the NPG and 13.9% of the GMPG, (p < 0.05). Multivariate linear regression analysis indicated that maternal age and booking status significantly affected birth weight (p=0.004,p=0.022 respectively). However, neither birth weight nor low Apgar score was affected by the indications for CS or parity. While there were no perinatal deaths in the series, no statistically significant difference was found between the two groups with regards to low Apgar score (<7 at 5 mins), p>0.05.

Conclusion

The major indications for PCS were the same in the NPG and GMPG in our study while the CS rates were similar in both groups. However, APH and its inherent complications occured more commonly in the GMPG. Neonatal morbidity was similar in both groups of women, but the mean birth weight was significantly higher in the GMPG. However, in order to reduce the high CS rate in these groups of patients,and in our obstetric population in general, it is suggested that CTG be used appropriately in high risk women and that intermittent auscultation is recognized as a valid form of management for most low risk cases.

Keywords: ***Primary caesarean section, Nulliparous, Grandmultiparous, Saudi Arabia.***

Résumé

Objectif

Evaluer les indications pour et des résultats de la césarienne primaire (PCS) opérée chez des femmes nulliparouses et grande-multiparouses à Abho une région de l' Arabie Séoudite.

Méthodes

Une étude rétrospective cohorte.

Matériels

393 femmes nulliparouses (para 0) (NPG) et 432 femmes grande-multiparouses (parité > 5) (GMPG) qui avaient subi la PCS à la maternité d'Abha (AMH) plus d'une durée de 3 ans, (1997 - 1999) était l'objet de cet étude.

Résultats

Les taux de PCS dans NPG et GMPG étaient 19,4% et 18,3% respectivement sans aucune différence importante statistique (p>0,05). Il y avait des différences statistiques importantes entre les deux groupes en ce qui concern l' âge moyen, la perte du sang pendant la chirurgie, hemoglobine post-opératoire, et poids de naissance ont été comparés p <0,05.

Il n'y avait aucune différence statistiquement importante dans la gestion moyenne pendant l'accouchement, p > 0,05. L'indication la plus fréquente pour la chirurgie dans les deux groupes des patientes était la douleur foetale (NPG = 28%, GMPG = 25%, p = NS) suivi par l'échec du progrès pendant l' accouchement, NPG = 22, 7%, GMPG = 21,6%, p = NS). Hémorragie Antepartume (APH) était l'indication pour PCS en 68% du NPG, et 13,9% du GMPG (p < 0,05). L'analyse de la regression multivariate lineaire a indique que l'âge maternel et la situation d'inscription ont des conséquences sensible sur le poids de naissance (p = 0,004, p = 0,022 respectivement). Toutefois, ni le poids de naissance, ni la baisse du score Apgar était touché par les indications pour CS ou la paraite. Tandis qu' il n'y avait aucune difference statistiquement importante chez les deux groupes, en ce qui concerne la baisse en score apgar (<7 dans 5 mins.) P > 0.05.

Conclusion

Les indications principales pour PCS étaient les mêmes dans le NPG et GMPG dans notre étude tandis que les taux de CS étaient pareils dans les deux groupes. Cependant, APH et ses complications proper se sont produit plus fréquemment chez le GMPT. Morbidité néonatale était pareil dans les deux groupes des femmes, mais le poids de naissance moyen était sensiblement élevé dans le GMPG.

Pourtant, afin de reduire le taux élevé de CS dans ces groupes des patients, et dans notre population obstétrique en general, nous tenons à suggèrer que CTG devrait être utilisé de manière appropriée chez des femmes à haut risque et que l'ausculation intermittente soit reconnue comme une methodé valable de la prise en charge dans la plupart des cas de bas risque.

Introduction

The increase in the caeserean section (CS) rate in the developed world in general and in the United States of America in particular is well documented but continues to be a topical issue amongst obstetricians. [1-4] Leitch, et al [5] suggested that this increase could be as a result of a lowering in the overall threshold concerning the decision to carry out CS rather than changes in obstetric management. Although maternal deaths resulting from CS are becoming a rarity, there are conflicting reports regarding the impact of its short and long term consequences on the childbearing population. [6-7] In a study by De Muylder et al.; it was shown that CS rate in Zimbabwean hospitals varied between 2.2% and 16.8%. At the same time, Dumont, et al; [8] reported that three-quarters of women from hospitals in West Africa were delivered by CS for maternal reasons and estimated the observed CS rate in West African women to be 1.3%. Reports from individual institutions in the Middle East, including ours, have also shown an increase over the past 20 years. [9-10] It is as yet not clear if the increase in CS rate has resulted in more favourable perinatal outcomes. In an environment like ours where large family size is still the norm, it is desirable to

* *Correspondence*

try to reduce the number of caesarean sections performed. One way of doing this is to reduce primary caesarean sections especially in the nulliparous and grandmultiparous women. [9] We have conducted this retrospective study to assess the rate, indications for and complications of PCS in the nulliparous and grandmultiparous women in our community and to offer suggestions for reducing the PCS rate in our institution.

Materials and Methods

The hospital records of all women who were delivered by CS at the Abha Maternity Hospital (AMH) over three-year period from January 1997 to December 1999 were retrieved and analyzed retrospectively. There were 2,392 women. Out of these, those nulliparous and grandmultiparous women, who had CS for the first time were extracted from the whole group. There were 393 nulliparous and 432 grand multiparous women.

All patients admitted to labour ward had an initial CTG for an hour and depending on the CTG findings, it was either continued or fetal heart monitoring done by intermittent auscultation. The majority of the women were however monitored throughout labour with the CTG. The data extracted from the case records included maternal age, parity, abortions, booking status, gestation at delivery, length of labour, indications for CS, birth weight, pre- and post-operative haemoglobin levels. Other data included the grade of attending surgeon, intra-operative and post-operative complications. Apgar score at 5 minures, and perinatal outcomes.

The data were coded, tabulated and entered into an IBM compatible computer. Statistical analyses were carried out using the Statistical Package for the Social Sciences (SPSS). Number and percentage were calculated for qualitative variables while mean and standard deviations were also calculated for quantitative data. Comparison between mean values of quantitative variables were calculated using the Students-t test, while chi-square was used for qualitative data. Multivariate linear regression analysis was used to test the association between fetal outcomes; (birth weight and low Apgar score) and some independent variables i.e indications for CS, parity, booking status, maternal age and gestation at delivery. All tests of significance used were at the 5% level.

Results

There were a total of 11,228 deliveries in the three-year period from January 1997 to December 1999 at the AMH with an overall CS rate 21.1%. The PCS rate amongst the NP women was 19.4% while it was 18.3% in the GMP groups. There were statistically significant differences between the two groups when the mean maternal age, number of abortions, blood loss during CS and birth weights were compared, $p<0.05$, but none in the mean gestation

Table 1 Maternal characteristics, and birth weight

Characteristic	Nulliparae N = 393	Grandmultiparae N = 432	P value
Maternal age (yrs) Mean ± SD	25.05 ±4.72	34.55 ± 4.71	0.000*
Abortion Mean ± SD	0.33 ±0.74	0.96 ±1.24	0.000*
Gestation at delivery (wks) Mean ±SD	37.4±4.04	37.5 ±6062	0.952
Blood loss (mls) Mean±SD	374.5 ± 172.2	452.3 ±209.2	0.000*
Pre-op HB (g/dl) Mean ± SD	12.28 ± 1.59	12.48± 8.08	0.738
Post-op HB (g/dl) Mean ± SD	10.46 ± 1.48	10.07 ± 1.48	0.021*
Birth weight (gms) Mean ± SD	2740.9 ±758.2	3097.2 ± 802.1	0.000*

SD = Standard deviation
**(Significant)*

Table 2 Indications for PCS in 393 nulliparous and 432 grandmultiparous women

Indication n (%)	Nulliparae N = 393	Grandmultiparae N = 432	X^2 (p value)
Fetal distress	110 (28)	108 (25)	0.47 (0.49)
Failure of progress	89(22.7)	93(21.6)	0.07(0.78)
Malpresentation	56(14.2)	50(11.5)	0.67 (0.41)
Medical disorders	33(8.4)	25(5.7)	1.01(0.29)
APH	25(6.3)	56(12.9)	4.92(0.026)*
Others	80(20.1)	100(23.0)	0.52(0.47)

Others = (Failed induction, Cord prolapse, Unfavourable cervix, Multiple pregnancy, Patients' request)

• = (Significant)
APH = Antepartum haemorrhage

Table 3 Maternal intra-operative and post-operative complications

Maternal complication n (%)	Nulliparae N = 393	Grandmultiparae N = 432	Significance
None	148(37.6)	156(36.1)	
Wound infection	10(2.5)	14(3.2)	
Urinary tract infection	62(15.7)	106(24.5)	
Blood transfusion	4(1)	19(4.3)	
Caesarean hysterectomy	0(0.0)	2(0.5)	
Deep vein thrombosis	2(0.5)	2(0.46)	$X^2 = 5.16$
Atelectasis	154(39.1)	170(39.3)	$p = 0.023$*

• = (Significant)

Table 4 Labour characteristics and fetal outcome

Characteristics n (%)	Nulliparae N = 393	Grandmultiparae N = 432	X^2(p value)
Booked patients	137(34.9)	116(26.9)	2.98(0.084)
Elective CS	85(21.6)	93(21.6)	0.00(0.985)
Surgeon			
Resident	87(22.2)	124(28.7)	10.56 (0.005)*
Specialist	204(51.3)	252(58.3)	
Consultant	102(26.5)	56(13.0)	
Labour > 12hrs	21(6.7)	39(11.6)	1.83(0.175)
Apgar score <7 at 5mins	41(10.5)	31(7.2)	1.40(0.236)

** (Significant)*

at delivery, Table 1. The indications for CS are shown in Table 2. Fetal distress was the commonest indication in both groups followed by failure of progress in labour and then malpresentation, including breech presentation. Antepartum haemorrage (APH) was the reason for CS in 12.9% of GMP and 6.3% of the NP, ($p<0.05$).The intra and postoperative complications is shown in Table 3. Two women had caesarean hysterectomy in the grandmultiparae group because of uncontrolled bleeding due to placenta praevia. Other labour characteristics and fetal outcome are shown in Table 4.

Discussion

The main purpose of this study was to identify indications and outcomes of primary caeserean section in the Abha region of Saudi Arabia. This would help in formulating strategies for its reduction especially in communities in Saudi Arabia where grandmultiparity is very common.

In some communities such as Saudi Arabia, delivery by CS is considered as a sort of reproductive failure[11], especially amongst the nulliparious and grandmultiparous women. Socio-cultural beliefs and practices are equally important in relation to acceptance of CS by women. This is typified by the greater percentage of West African women who are strongly against CS.[12-13]

The overall CS rate of 21.1% during the study period is similar to figures from the developed world, [14] but much higher than those from institutions in the same geographical area.[9] Also, PCS rate in our study was much higher than those from the same geo-

graphical area,[10-15] but similar to those reported by Wilkinson, et al.[15] Although the optimum rate of CS needed to ensure optimum maternal and fetal outcome ranges from 5-15%[17] in the developled countries, this needs to be validated for the less developed countries. Notably, CS rates from West African countries are low and account for less than 1% of expected births.[18] Dumount et al, reported that in about 3.6-6.5% of West African pregnant women, CS is indicated but only 1.3% is delivered by this method.

The PCS rate in this study is quite high (18.8%). In the study by Leitch, et al[5] it was pointed out that a lowering in the overall threshold concerning the decision to carry out a CS may be responsible rather than the change in obsteric management. Other reasons adduced for the increase in CS rate include lack of midwifery support, reluctance to implement the active management of labour and epidural analgesia.[5-19]

In this study, foetal distress was the most common indication for CS followed by failure of progress in both groups of patients. These findings are similar to previous reports.[9] There is no doubt about the fallacy of using the CTG as the gold standard for monitoring the fetal heart during labour, but unfortunately majority of delivery suites including ours still depend solely on this machine for decision making regading CS. Several studies have demonstrated errors in interpretation of CTGs, [20-21] increase in operative delivery and CS, when the CTG is used routinely throughout labour,[22-27] especially in low risk patients. [25] Therefore, it can be argued that one of the reasons for the high CS rate in our study might be the initial use of CTG in all patients admitted to labour ward and especially in low risk patients. However, for auscultation to be successful, it needs to be frequent, especially in the second stage of labour, and therefore requires one to one care of the woman. This one to one care may not be practicable in our labour ward with shortage of midwifery staff. Ironically, it has been shown that one to one care alone can reduce intervention like CS[28].

Failure of progress in labour was the reason for CS in 23% of nulliparae and 22% of grandmultiparae. The nulliparae and grandmultiparae have been shown to be prone to prolonged labours leading to increased operative delivery.[29 30] Although, oxytocin has been widely used when labour progresses slowly, controlled trials have failed to confirm the usefulness of amniotomy and oxytocin in shortening dysfunctional labour and reducing CS rate.[31 - 32] Geraladene Blanch, et al[33], showed that although oxytocin significantly increased the rate of cervical dilatation and shortens prolonged labour, the CS rate was higher with oxytocin augmentation than with expectant management of dysfunctional labour. The authors also pointed out that larger studies are needed to confirm these findings. On the other hand, the liberal uses of intravenous hydration during labour and adequate analgesia have been shown to be beneficial in patients with prolonged labour.[34] This might be of help in our patients and therefore reduce the number of CS done as a result of failure of progress in labour.

In our study, malpresentation especially breech presentation was the reason for CS in about 14.2% of nulliparae and 11.5% of grandmultiparae. Even though the consensus in the developed world regarding the management of uncomplicated breech presentation at term is CS,[35] this might not be appropriate in the developing countries especially our community where grandmultiparity is common. While the authors of this paper and others[36 -37] have shown that selective external cephalic version (ECV) would reduce the number of CS done on account of breech presentation, many obstetricians still do CS for fear of litigations. However, in well selected cases and with the involvement of experienced obstetrician,complications of vaginal breech delivery can be reduced to the minimum.

Our study also revealed that APH and its complications were more common in the grandmultiparous group and this association has been confirmed by other authors[38].

Regarding the fetal outcomes, our study showed no difference in the two groups with regards to low Apgar score, but the mean birth weight was significantly higher in the GMPG. The heavier babies born to grandmultiparous patients could theoretically have an impact on the number of caesarean section and neonatal morbidity, but this was not borne out in this study.

In conclusion, our study showed that the major indications for PCS were similar in both NP and GMP in our community while APH is still major problem of the GMP. While the CS rate is similar in both groups and low Apgar score were similar in both groups, the birth weight was more in the GMP. It is suggested that intermittent auscultation be used more regularly during labour in order to reduce the CS rate while senior obstetricians should be more involved with decision-making regarding CS.

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