

Effect of age and parity on primary caesarean section rates

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Summary

Objective: To study the effect of maternal age and parity on the rates of primary caesarean section.

Method: We reviewed all patients who delivered at the Princess Badeea Teaching Hospital between 1 January, 1995 and 26 November, 1995.

Results: There were 8,732 deliveries included in this study. The primary caesarean section rates in primiparous women less than 25, 25 to 34 and over 34 years of age were 6.1%, 11.1% and 22.2%, respectively. A similarly dramatic rise with advancing maternal age was seen in multiparous women with rates of 3.1%, 6.4% and 9.5%, respectively, in the three age groups. A strong association between maternal age and primary caesarean section exists ($p < 0.05$). Caesarean section rates in the primiparous women were higher in all age groups when compared with multiparous women ($p < 0.0001$).

Conclusions: Increasing maternal age and parity are factors strongly associated with increased primary caesarean section rates.

Key words: Primary caesarean section; Maternal age; Parity.

Introduction

Caesarean section rates have been steadily increasing in Jordan in the last few years, from 6.5% in 1990 to 9.2% in 1994 [1]. Little consensus exists on the reasons for this increase. Possible explanations for this trend are the increasing age of the obstetric population, fears of medical litigation and changes in obstetric practice [2, 3]. Wadherea and Nair [4] reported a steady increase in the total caesarean sections with maternal age. Nevertheless, because age-related primary caesarean section rates are not available and because repeat caesarean sections - which should be more frequent among older women - are not excluded from most statistical summaries, the precise relationship between maternal age and caesarean section rates is unknown. The explanation for this can only be speculative. The purpose of this study was to directly analyze the effect of maternal age and parity on primary caesarean section rates.

Materials and Methods

All deliveries at the Princess Badeea teaching Hospital (PBTH) in North Jordan occurring between 1 January, 1996 and 26 November, 1996 were reviewed. We excluded cases which were complicated by multiple gestation, so all singleton pregnancies were included in this study. Thus, 8,732 deliveries remained for analysis. These were grouped into three maternal age categories according to whether the woman was primiparous or multiparous.

Various clinical indications were recorded. Electronic fetal monitoring of fetal heart rate was done in the majority of patients in whom diagnosis of fetal distress was made. Antepartum diagnosis of fetal distress was made if there was persistent deceleration that may have been associated with changes in variability of the baseline fetal heart rate. The category of hypertension included all cases of hypertension requiring treatment and those in which the blood pressure was persistently $>140/90$ mm Hg in labour. The 1 and 5 minute Apgar scores were used to assess infants in whom the diagnosis of fetal distress was made. Because all caesarean sections

for fetal distress were attended by neonatal staff, it was considered that the 5 minute Apgar scores would be influenced by resuscitation efforts and would mask the effect of fetal distress.

To investigate whether different diagnostic standards were applied we looked at the frequencies of low one-minute Apgar scores, a marker of fetal distress, in the different age groups.

Statistical analyses were performed with the Chi-square test and Fishers exact test as appropriate. Differences were considered statistically significant when $p < 0.05$.

Results

Women aged 35 years and older constituted 14.4% of the total population, representing 0.7% of the primiparous women and 13.7% of the multiparous women. The overall primary caesarean section rate was 6.6% and the rates for each age-parity are presented in Table 1. There was a striking increase in caesarean section rates in the primiparous women in all age groups when compared with multiparous women ($p < 0.0001$). Caesarean section rates were lower in multiparous women but there was a significant increase in the primary caesarean section rates with rising age in both primiparous and multiparous women ($p < 0.05$).

Rates of dystocia among all of the age groups are presented in Table 2. It should be noted that dystocia is poorly-defined clinically and the term is generally applied only when caesarean section is performed.

Dystocia, fetal distress, preeclampsia and breech presentation were the major indications for caesarean section in this study population and the frequencies in various

Table 1. — Primary caesarean section in various age and parity

	(Maternal age)					
	≤ 24 years		25-34 years		≥ 35 years	
	Total	Caesarean %	Total	Caesarean %	Total	Caesarean %
Primiparous women	1365	6.1	826	11.1	63	22.2
Multiparous women	2175	3.1	3106	6.4	1197	9.5

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Table 2. — Frequency of major indications for caesarean section

Indication	(Maternal age)					
	≤ 24 years		25-34 years		≥ 35 years	
	Primiparous women (n = 1365)	Multiparous women (n = 2175)	Primiparous women (n = 826)	Multiparous women (n = 3106)	Primiparous women (n = 63)	Multiparous women (n = 1197)
Dystocia	25 (1.8%)	12 (0.55%)	31 (3.7%)	48 (1.54%)	2 (3.17%)	36 (3%)
Fetal distress	20 (1.5%) 14 (0.3%)		23 (2.8%)	32 (1.03%)	4 (6.3%)	9 (0.75%)
Preeclampsia and hypertension	13 (0.92%)	6 (0.3%)	12 (1.4%)	23 (0.74%)	3 (4.74%)	25 (2.08%)
Placental abruption	3 (0.2%) 12 (0.55%)		1 (0.12%)	7 (0.03%)	0 (0%)	4 (0.3%)
Transverse lie	2 (0.15%)	4 (0.18%)	1 (0.12%)	23 (0.74%)	1 (1.58%)	14 (1.3%)
Breech	15 (1.1%)	13 (0.6%)	17 (2.1%)	51 (1.64%)	1 (1.58%)	18 (1.5%)
Placenta previa	1 (0.07%)	2 (0.09%)	3 (0.36%)	10 (0.32%)	1 (1.58%)	2 (0.12%)
Others	5 (0.36%)	5 (0.23%)	4 (0.5%)	5 (0.16%)	2 (3.19%)	6 (0.5%)
Total	84 (6.1%)	68 (3.1%)	92 (11.1%)	199 (6.4%)	14 (22.2%)	114 (9.4%)

Table 3. — Frequency of 1-minute Apgar scores of ≤5 in infants of women having caesarean section for fetal distress

	(Maternal age)					
	≤ 24 years		25-34 years		≥ 35 years	
	n	%	n	%	n	%
Primiparous women	10/20	50	6/23	26.08	3/4	75
Multiparous women	3/14	21.4	7/32	21.9	2/9	22.2

age groups are shown in Table 2. These indications account for 87.4% and 76.3%, respectively, of all caesarean sections in the primiparous and multiparous women.

The frequencies of low 1-minute Apgar scores among infants of women having a caesarean section for fetal distress were similar in the three age groups of primiparous and multiparous women (Table 3). From this distribution, it would appear that fetal distress is being similarly diagnosed in older and younger women even though it is more common in older women (> 34 years).

Discussion

Our data and results confirm the association between maternal age, parity and primary caesarean section rates. There is a dramatic increase seen among both primiparous and multiparous women. It may also be that the increased rates in older women derive from physician beliefs that this group is at increased risk for labour complications and caesarean delivery. This is in agreement with the observations of Kirz et al. [5] and Martel et al. [6]. Younger women are at increased incidence of pregnancy-induced hypertension and preeclampsia and occasionally there may be an element of cephalo-pelvic-disproportion (CPD), in which instance, especially if the patient is young or of small stature, caesarean section might not be avoidable [7]. Older women are at risk of developing hypertension, uterine fibroids or degenerative changes in the joints of the lumbosacral spine and pelvis [7]. Elderly primigravida >34 years had the highest primary caesarean section rates in all age and parity groups in our study (22.2%). This might be

due to the fear that this group of patients are of low fertility and there is an increased risk of mild CPD. Maternal mental attitude may aggravate minor emotional problems. Fetal distress occurs more frequently compared with other groups, so the need for operative delivery is usually increased. Primigravidas are a group at risk. Their capacity for childbearing has never been put to the test. They are at higher risk of having pre-eclampsia, dystocia and prolonged labour when compared with multigravid patients.

Significant problems associated with multiparity and increasing age are placenta previa, fetal malpresentation, unstable lie and minor CPD because babies tend to increase in size with subsequent pregnancies, thus this is associated with increased caesarean section rates. More needs to be learned about how physicians make management decisions and whether these decisions are the most appropriate ones for older and primiparous women who are at increased risk of primary caesarean section.

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