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Estimation of maternal and fetal morbidity in high order cesarean section in Zawia

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Abstract: To assess the maternal and neonatal risk associated with high order cesarean sections, a prospective study was carried out in Zawia hospital, maternity wards. The patient was interviewed in the labor ward and performed case sheet filled with specific data. The outcome of 458 cases, 218 women undergoing cesarean section for the third time or more was compared with 240 women sectioned for the second time (P1c/s), the outcome measures were antenatal complication, maternal operative and postoperative morbidity and neonatal prematurity, Apgar scores and the need for intensive care. The antenatal complication is more in group of \geq P2c/s, placenta previa 9 (3.7%) versus 3 (1.3%) and abruption 8 (3.3%) versus 1 (0.4%). Intraoperative complications found in 17.7% of the cases, 14.2% of the patients with P1c/s comparing with 20.8% among the cases with \geq 2 Pc. Intra-peritoneal adhesions were more in women with \geq P2c/s (10.8%) when compared with the women with the history of P1c/s (8.7%). The need for blood transfusion was 5.0% of women with history of \geq P2c/s compared with 4.1% for women with history of one previous section. The mean duration of operation for patients with P1c/s = 41.5 min and with P2 or more c/s = 47.8 min. Neonatal morbidity rate was 20.9%. There were an increased number of preterm babies in study group of \geq 2 Pc/s. It is concluded that high order repeat cesarean section carry risk of intraoperative and post operative complication in particularly, placenta previa and acreta and risk of blood transfusion and also neonatal morbidity is increased.

Introduction

Cesarean section considered as safe surgical procedure. During the past few decades the worldwide incidence of cesarean births has increased markedly (1). Approximately one out of four women will have a cesarean delivery (2). Worldwide variation exists in rates for cesarean delivery (3), currently the rates range from 10 to 40% of all deliveries (4).

The increasing rate of cesarean section poses a threat in the developing world where family size has not dipped to the low levels seen recently in industrialized countries. About one third of cesarean section is repeat procedures (5). Repeat cesarean deliveries are associated with increased morbidity (6), increased incidence of the placenta previa, the acreta and increase incidence of scar dehiscence and rupture. Health worker in developing countries

may face different problems. Large family size is desired and sterility is not acceptable so the prevalence of multiple previous cesarean sections is high. The aim of this study was to estimate the magnitude of maternal morbidity and fetal morbidity associated with increasing number of cesarean deliveries (high order previous cesarean section \geq P2c/s).

Materials and methods

This prospective study at the department of Obstetrics and Gynecology in Zawia Teaching Hospital, Zawia, Libya which carries for approximately 5992 total deliveries during the period from January 2006 to January 2007 including 458 patients which delivered by cesarean section with history of previous one

or more cesarean section. The patient was interviewed in the labor ward and verbal consent taken from the patient and performed case sheet filled with personal data, past obstetric history, intrapartum, postpartum complications and fetal outcome. Data were assessed and analyzed for the following parameters

- A- Demographic and clinical feature including age, parity of patient, mode of operation whether elective or not and type of anesthesia
- B- Prenatal features including birth weight, APGAR score < 7 at 10 min., preterm birth below 37 weeks of gestation, small or large for gestational age, hypoglycemia and admission into neonatal intensive care unit.
- C- Operative and postoperative course including duration of operation, the severity of adhesion, cesarean hysterectomy, placenta abnormalities, bladder and bowel injury, blood transfusion, postoperative infection, DVT and postpartum hemorrhage.

This study is a comparison study between previous one and multiple cesarean section in order to estimate fetal and maternal morbidity in high order cesarean section.

Statistical analysis: Data entry and analysis were performed with SPSS11, demographic data were summarized using descriptive statistic (mean, standard deviation, range and percentage). Comparison between mean values of quantitative variable were calculated using t-student test, chi-square was used to compare qualitative data. The test of significance was considered when $p < 0.05$.

Results

In this study, 458 cases were included 218 (47.5%) had one prior cesarean section and 240 (52.4%) had two or more cesarean section of them 165 (36%) had 2 - 3 previous cesarean section and 85 (18.5%) had 4 - 6 cesarean section. The findings of the present data are presented under the following headlines:

- 1- Age, parity and antenatal complications.
- 2- Intraoperative complication in comparison between P1c/s and \geq P2c/s.
- 3- Postoperative complications.
- 4- Fetal and neonatal outcome.

Age, parity and antenatal complications

Age: the age of the patient in this study ranged from 18 to 46 years with mean age of 34.7 ± 5.4 years. Figure 1 shows that the highest percentage (34.4%) was for the age group of 38 - 42 years followed by 28.8% for the age of 33-37 years. The lowest percentages were for groups < 20 years and 41 - 46 years. The mean age of patients with P1c/s = 31.3 ± 5.2 years and the mean age of the other group = 37.8 ± 3.4 years and by using t student test for independent sample, the difference between these two means is statistically significant ($p = 0.0001$).

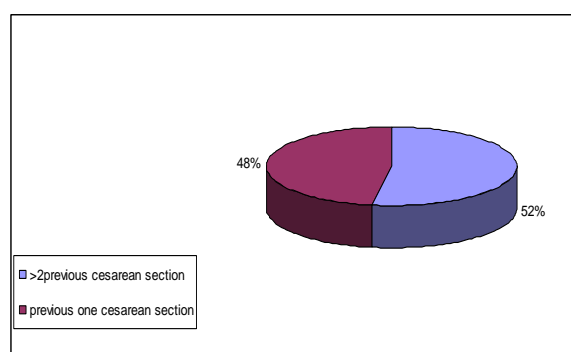


Figure 1: Distribution of patients by number of c/s

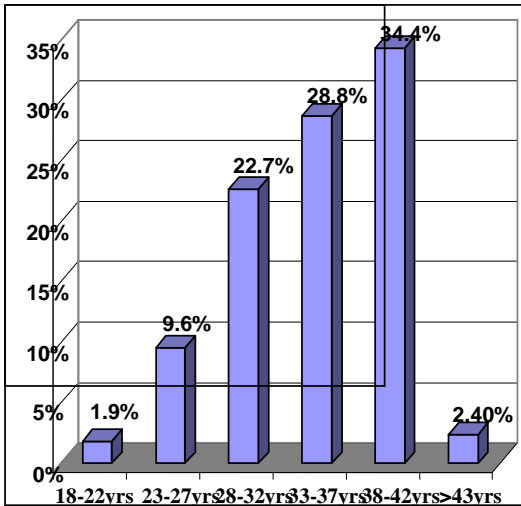


Figure 2: Age distribution of mothers

Parity: the parity of the mothers under study ranged between one and seven with mean parity of 2.8 ± 1.54 years. More than half (55%) of the mothers have one or two children, 36% have 3-5 children and 9% have more than 6 children.

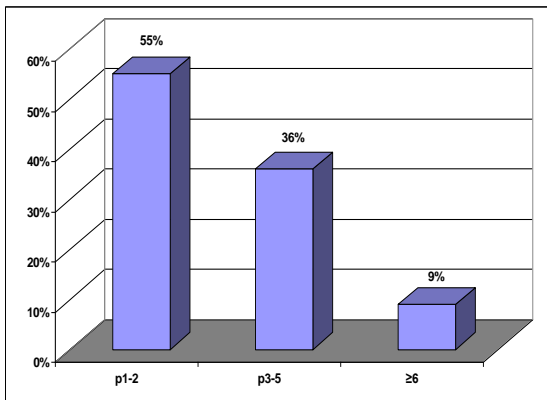


Figure 3: Parity distribution of mother under study

Antenatal complication: complication found in this study includes diabetes I cases (2.84%), hypertension (gestational hypertension, mild preeclampsia, severe preeclampsia and chronic hypertension) detected in 14 cases (3%), breech presentation 16 cases (3.5%) and premature rupture membrane 17 cases (3.7%), and antepartum hemorrhage (placenta previa and abruption placenta) (4.5%).

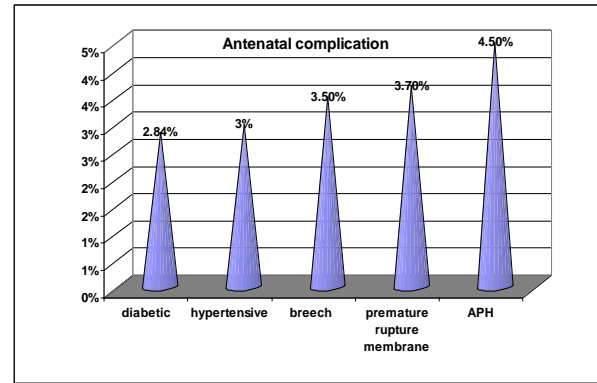


Figure 4: Main antenatal complications

	APH	Previous 1c/s	≥ previous 2c/s
		(218)	(240)
Placenta previa	3 (1.3%)		9 (3.7%)
Abruption placenta	1 (0.4%)		8 (3.3%)

Table 1: Percentage of APH between two groups

Type of incision and anesthesia: there were elective cesarean section 226 cases (49.3%) and emergency cesarean section 232 (50.7%). General anesthesia used for 308 patients (67.2%) and spinal anesthesia done for 150 patients (32.7%). The type of abdominal incision was low midline incision in 15 cases (3.2%) and of Pfannenstiel incision in 443 cases (96.7%).

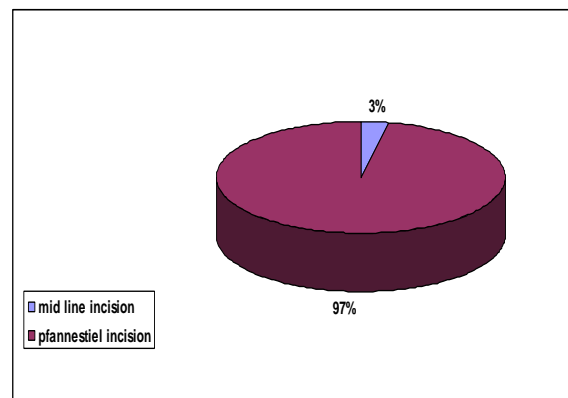


Figure 6: Distributions of patients under study by type of cesarean c/s

Intra-operative complications: intraoperative complications found in 17.7% of the cases, including: presence of adhesions, bladder and

bowel injury, cesarean section hysterectomy and blood transfusion, presence of adhesions was ranked firstly (9.8%) followed by blood transfusion (4.6%) then bladder injury in 0.9%, cesarean hysterectomy done in 0.4% of the patients and bowel injury in only one patient 0.2%.

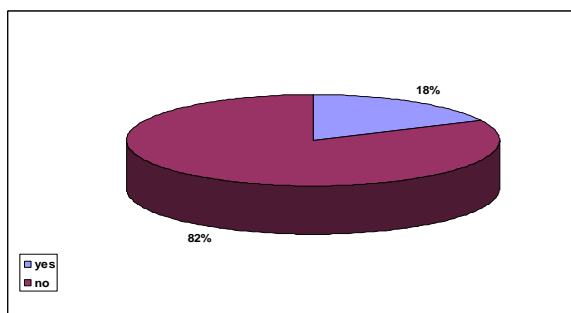


Figure 7: Percentage of intra operative complication

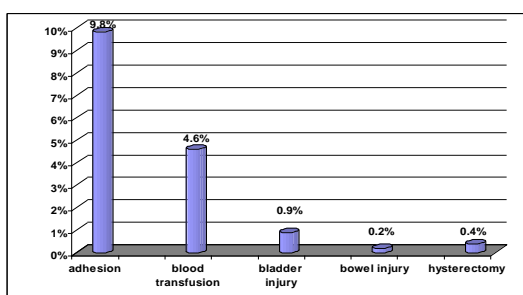


Figure 8: Main intr-operative complications

The occurrence rate of intraoperative complications differ between the main two groups as seen in the next table, 14.2% of the patients with P1c/s had one or more complications while 20.8% among the cases with ≥ 2 Pc/s and by using chi-square test; the difference is statistically not significant ($p = 0.067$).

Intraoperative complication	P1c/s	≥ 2 Pc/s	p-value
Adhesion	8.7%	10.8%	0.530
Blood transfusion	4.1%	5.0%	0.824
Bladder injury	0.5%	1.3%	0.625
Bowel injury	0	0.4%	1.000
Cesarean hysterectomy	0	0.8%	0.500

Table 4: Intraoperative complication and comparison between P1c/s and > 2 Pc

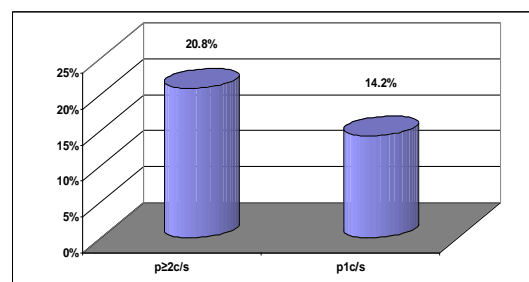


Figure 9: Comparisons of intraoperative complication and number of c/s

Intraperitoneal adhesions were observed in women with history of two or more previous cesarean section (10.8%) when compared with women with history of one previous cesarean section (8.7%) as intraperitoneal adhesion is the leading cause for massive blood loss that need blood transfusion; 5.0% of women with history of P2c/s received blood compared with (4.1%) for women with history of one previous cesarean section.

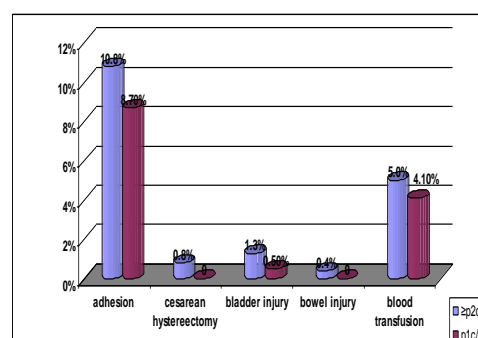


Figure 10: Intraoperative complications in relation with number of c/s.

Duration of operation: the duration of c/s ranged between 25 min and 2 hr with mean duration of 44.8 ± 7 min 98.2% of the patients stay under operation between 31 to 60 min, only 0.7% takes 30 min or less five cases (1.1%) take longer time (> 60 min). By studying the relation between the duration of operation and the number of c/s, it was found that the mean duration for patients with P1c/s = 41.5 min and for patients with P2 or more c/s = 47.8 min and the difference between these two means was statistically significant ($P = 0.0001$).

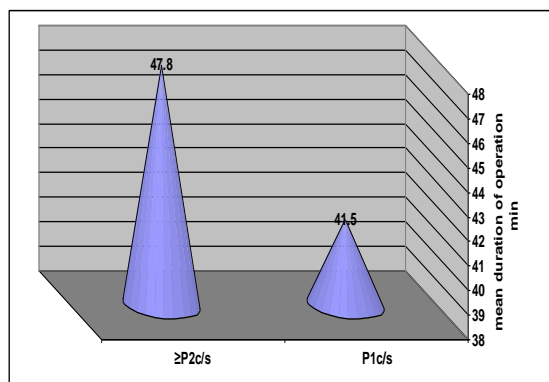


Figure 11: Relations between mean duration of cesarean section and number of cesarean section

Postoperative complication: this was found in 3.7% of the patients only where wound infection seen in six patients, post partum hemorrhage in four patients and deep venous thrombosis in three patients. The occurrence rate of postoperative complications differ between the main two groups of the study as seen in the next table, 3.2% of the patients with P1c/s had one or more complications while 4.2% among the cases. With $\geq 2Pc/s$ and by using chi-square test; the difference is statistically not significant ($p = 0.630$).

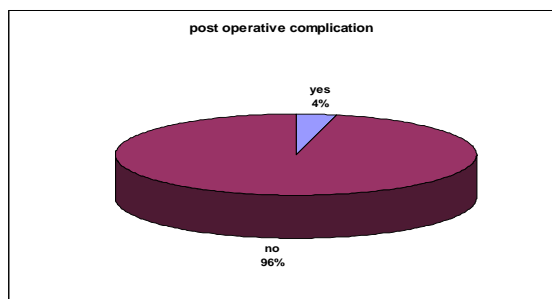


Figure 12: percentage of postoperative

Table 6: rate of post operative complication

		number of scesarian		Total
		P1 c/s	=>2 Pc/s	
post operative complication	yes	Count 7	Count 10	Count 17
		% within number of scesarian 3.2%	% within number of scesarian 4.2%	% within number of scesarian 3.7%
	no	Count 211	Count 230	Count 441
		% within number of scesarian 96.8%	% within number of scesarian 95.8%	% within number of scesarian 96.3%
Total	Count	218	240	458
	% within number of scesarian	100.0%	100.0%	100.0%

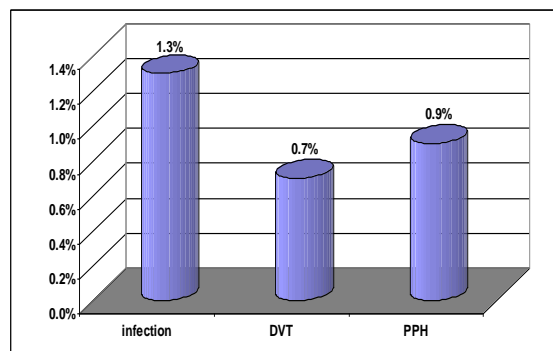


Figure 13: Postoperative complications among patients

Fetal and neonatal outcome: neonatal morbidity rate in the present study was (20.9%), there were 2.4% of the babies had APgare score < 7 at 10 min. 4.4% were preterm, 7.4% were large for GA, 3.7% were small for GA, 2% suffer of hypoglycemia and 2.6% need admission into NICU. There was only one stillbirth at gestation 36 week with unknown etiology.

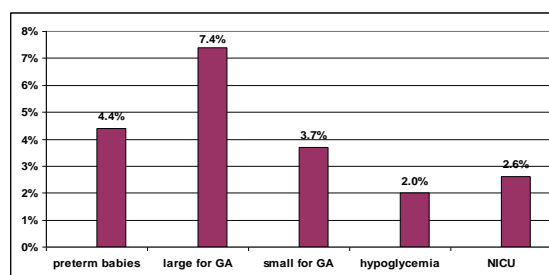


Figure 15: neonatal morbidity rates

As shown in Figure 16, small for GA seen in the babies of mother with $\geq 2Pc/s$

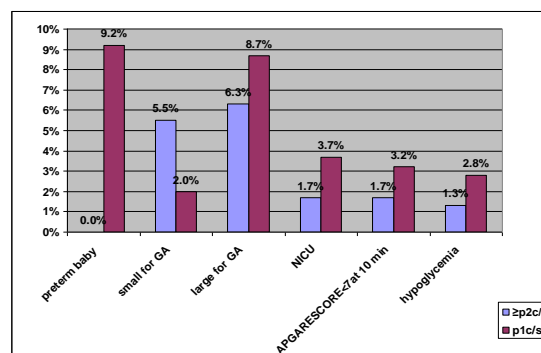


Figure16: neonatal outcome in both study group and comparison between them

Discussion

In this study, 458 cases were included 218 (47.5%) had one prior cesarean section and 240 (52.4%) had two or more cesarean section of them 165 (36%) had 2 - 3 previous cesarean section and 85 (18.5%) had 4 - 6 cesarean section. The mean age of both groups is 34.7 ± 5.4 years with mean parity of 2.8 ± 1.54 years. The antenatal complication is more in group of (P2c/s or more), ante partum hemorrhage was more; placenta previa 9 (3.7%) versus 3 (1.3%), and abruption 8 (3.3%) versus 1 (0.4%). Intraoperative complications found in 17.7% of the cases, including: presence of adhesions, bladder and bowel injury, cesarean section hysterectomy and blood transfusion. 14.2% of the patients with P1c/s had one or more complications while 20.8% among the cases with ≥ 2 Pc/s and by the difference is not significant. Intraoperative adhesions were observed in the women with the history of two or more previous cesarean section (10.8%) when compared with the women with the history of one previous cesarean section (8.7%), as intraoperative adhesion is the leading cause for massive blood loss that need blood transfusion; 5% of women with history of $\geq P2c/s$ received blood compared with (4.1%) for women with history of one previous cesarean section. By studying the relation between the duration of operation and the number of c/s we found that the mean duration for patients with P1c/s = 41.5 min and for patients with P2 or more c/s = 47.8 minutes and the difference between these two means was significant.

Postoperative complication found in 3.7% of the patients only, 3.2% of the patients with P1c/s had one or more complications while 4.2% among the cases with $\geq 2Pc/s$ and the difference is not significant. When we study the neonatal outcome, neonatal morbidity rate in our study was 20.9%. There was an increased number of preterm baby and small for gestational age in a study group of $\geq 2Pc/s$. Giving birth is important event that should be occurred in hospital setting. It has been calculated that the average women in

developed countries will have 3.3 pregnancies resulting in 2.1 live births (7). It is common in Libya for pregnant women to have had more than three caesarean sections. The high prevalence of grand multiparity in the community may be related to the cultural views of the community, which celebrates the male gender and therefore regards a woman without male offspring as a failure. In Zawia hospital, the number of delivery per year is around (6000). The cesarean section rate was about 16%. Worldwide cesarean section rate between 10 - 40% as previously reported (10, 11). When undergoing cesarean delivery, patient with previous one or more will exposed to specific problem that related to this mode of delivery (8). The problems found to increasing by increasing number of cesarean section, and the maternal and fetal morbidity at repeat cesarean delivery are still encountered. Repeated cesarean sections associated with many major operative complications such as scar pains, Intra peritoneal adhesion that risk for bowel and bladder injuries, massive blood loss, placenta prevail, placenta adherence, emergency hysterectomy, longer operative time.

In this study, intraoperative adhesions was observed in the women with the history of two or more previous cesarean section (10.8%) when compared with the women with the history of one previous cesarean section (8.7%), as reported by other (9), this is not unexpected because repeated surgery may be associated with postoperative infection and subsequent adhesion formation in previous study (10). It must be stressed that factors such as surgical technique, gentle tissue handling, and general health of the patient affect tissue healing and adhesion formation.

Analysis of the data reveals that blood transfusion was received by 5% of women with $\geq P2c/s$ compared with 4% of women with P1c/s. this higher frequency of blood transfusion may be related to associated problems in this group such as placenta previa, uterine atony due to grand multiparity. As reported by others (3, 4), it was observed

highest number of placenta previa, accrete 9 (3.7%) in \geq P2c/s compared with P1c/s 3 (1.3%). The operation time is more in case of \geq P2c/s compared with P1c/s, this may be due to more dense adhesion in case of high multiple cesarean or due problem which happened in operation like placenta previa or accrete or treating of intrapartum bleeding. The finding of smaller for gestational age more in multiple repeat cesarean sections may be due to influence of maternal age, parity and gestational period. However, it is also possible that the scarred uterus as result of multiple cesarean sections is contributing factor.

Whatever the cause small baby is advantageous to the mother as it will prevent the over distension of uterus with its consequences.

In conclusion, high order repeat cesarean section carry risk of introperative and post-operative complication in particularly, placenta previa and acreta and risk of blood transfusion with increased neonatal morbidity. Given the risk of complication associated with high order repeat cesarean section, women should be counseled about this risk and encouraged to consider avoiding large family.

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