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INFLUENCING FACTORS OF EMERGENCY CESAREAN SECTION IN AL-KHOBAR CITY, EASTERN PROVINCE, KSA, 2016

Medical Science

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ABSTRACT

Objectives: The purpose of this study is to evaluate the influencing factors on emergency cesarean section (CS).
Methods: This retrospective cross-sectional study was conducted on women who had a CS in the maternity care units (MCU) in Al-Khobar from 1st of July 2014 to 1st of July 2015. A total of 300 medical records were randomly selected with an equal allocation to MCU.
Results: Emergency CS was prevalent in the young age group 21-29-year-old. The influencing factors of emergency cesarean section were: delivery characteristics (duration of labor (p=0.000) and a low birth weight less than 2500 grams (p=0.005)), maternal factors (tender scar (p=0.000) and antepartum hemorrhage (p=0.016)), fetal factors (p=0.002) (fetal distress (p=0.000)). Significance was found between emergency cesarean section with previous scar (p=0.000) and with Malpresentation (p=0.005).
Conclusion: Emergency cesarean section was influenced by delivery characteristics and maternal and fetal factors.

KEYWORDS

Cesarean section, emergency, Saudi

A Cesarean section is indicated for either maternal or fetal indications. A set of influencing factors have also been attributed to increasing rates of CS such as maternal age, maternal parity, the number of previous CS, mode of onset of labor, Un-booked patients for antenatal care or medical care practice especially with increased protective attitude of physicians.(AL-ROWAILY, 2014; Rachatapantanakorn & Tongkumchum, 2009)

Although CS is considered safe with the advance in anesthesia and surgical protocols, it is found to be associated with a set of complications that make the rising rate of C/S of concern.(Zia & Rafique, 2014) Complications are either maternal or fetal. Maternal complications include infections, thromboembolic events, placenta abnormalities or abdominal organs injury.(Hanan M Al-Kadri, 2015) Moreover, fetal effects include neonatal respiratory complications in term babies. Another concerning factor is the rupture of a previous CS scar after repeated CS deliveries.(Mumtaz Rashid, 2004)

Rationale

The aim of the study was to evaluate the associated factors with emergency CS delivery in all MCU in Al-Khobar.

Methodology

This work was a retrospective cross-sectional study conducted at MCU in the Al-Khobar area. Women who had no medical records at the MCU were excluded.

The private hospitals were Procare Hospital, GAMA Hospital, Al-Manaa Hospital and Saad Hospital. The only governmental hospital is King Fahd University Hospital. All hospitals were tertiary hospitals.

The sample was equally allocated to each hospital; 60 medical records from each were selected by systematic random sampling. The data collection sheet was designed based on demographic data and influencing factors from thorough literature review. The data collection sheet was approved by one family consultant and one community medicine consultant. Data were coded, entered and analyzed on a personal computer using Statistical Package of Social Sciences (SPSS) version 21. The collected data were kept confidential. Required approval was gained from the hospitals involved in the study and from the Ministry of Health.

Results

Association of demographic data and emergency CS

Table 1. Association of demographic information and emergency cesarean section

Demographic data		Emergency CS	P value
Age	20 years old or less	3 (100%)	0.00
	21-29 years old	85(68.5%)	
	30-39 years old	64 (44.4%)	
	40 years or older	9 (31.5%)	
Nationality	Saudi	109(81.7%)	0.118
	Non-Saudi	52 (32.3%)	
Marital Status	Married	159 (53.7%)	0.713
	Divorced	0 (0%)	
	Widow	1 (100%)	

As displayed in the Table 1 there was a significant association (p value=0.000) between the women age and emergency CS. According to the results, the highest rate of emergency CS was performed among women aged 21-29 years old. Approximately, 68.5% of women in this age group had an emergency CS.

Association of delivery information and emergency CS

Table 2.Association of delivery information with emergency cesarean section

Delivery information		Emergency CS	P value
Parity	Prim gravid	64(81%)	0.00
	Previous vaginal deliveries	37 (61.7%)	
	Previous CS	60 (37.3%)	
Previous CS status	None	101(72.7%)	0.00
	One	33 (50.8%)	
	Two	27 (28.1%)	
Birth order	Nulliparous	64 (81%)	0.00
	Multiparous (1-4)	80 (45.5%)	
	Grand multiparous (5 or more)	17 (37.8%)	
Mode of onset of labor	Spontaneous	122 (100%)	0.00
	Induction of labor	39 (100%)	
Labor duration	No labor	0 (0%)	0.00
	Less than 12 hours	129 (100%)	
	12 hours or more	32 (100%)	

Birth weight	Less than 2500 grams	38 (61.9%)	0.005
	Normal 2500-3999 grams	120 (51.9%)	
	4000 grams or more	3 (23.1%)	
Gestational age	Preterm	34 (69.4%)	0.016
	Term	127 (50.6%)	
Comorbidities	None	133 (52.8%)	0.376
	Gestational age	9 (45%)	
	Pre-eclampsia	16 (69.6%)	
	Placenta Previa	3 (60%)	

As displayed in Table 2 there was a significance (p=0.000) between women parity and emergency CS delivery. Prim gravida women were more likely to have an emergency CS. Approximately, 81% of prim gravida women performed emergency CS. On the other hand out of women who had a subsequent pregnancy with no previous CS 61.7% were emergency CS and out of women who had a subsequent pregnancy with previous CS 37.3% were an emergency CS. Concluding that emergency CS were more likely to occur in prim gravida women.

Another significant (p=0.000) association was found between numbers of previous CS deliveries and emergency CS. Approximately 72.7% (n=101) of women with no previous CS status had an emergency CS.Women with one or two and more previous CS had a lower rate of emergency CS 50.8% and 28.1%, respectively. Regarding birth order significant association (p=0.000) was found with emergency CS.

Analyzing the mode of onset of labor a significant association (p=0.000) was found. The highest percentage of the emergency CS was performed in women who had spontaneous delivery. From the sample studied, 122 had emergency CS post spontaneous labor and 39 women had an emergency CS post induction. The rest were scheduled electively.

Duration of labor had a significant association (p=0.000) with emergency CS deliveries. Some women had no labor duration where they were scheduled electively, but others were compared based on if they had 12 hours or less or longer than that. It was found that out of 161 women who had emergency CS 129 had a labor less than 12 hours and only 32 women had labor of 12 hours or longer.

Emergency CS association with maternal and fetal factors

Table 3. Association of emergency cesarean section with maternal and fetal factors.

Risk factor	Emergency CS	P value
Maternal		
Previous two or more scars	**24 (19.4%)**	**0.00**
Hemorrhage	**7 (100%)**	**o.o16**
Preclampsia	**15 (65.2%)**	**0.282**
PROM	**9 (81.8%)**	**0.068**
Failed induction	**26 (100%)**	**0.00**
Tender scar	**27 (100%)**	**0.00**
Failure to progress	**30 (100%)**	**0.00**
Cephalopelvic disproportion	**8 (72.7%)**	**0.232**
Cervical circlage	**2 (66.7%)**	**1**
Fetal factor		
Malpresentation	**11 (26.2%)**	**0.00**
Fetal distress	**51 (100%)**	**0.00**
Multiple pregnancy	**13 (68.4%)**	**0.236**
Oligohydrominos	**1 (25%)**	**0.340**
Polyhydrominos	**0 (0%)**	**1**
Cord prolapse	**2 (100%)**	**0.501**
Malposition	**2 (50%)**	**1**
IUFD	**1 (100%)**	**1**
Fetal macrosomia	**1 (50%)**	**1**

Shown in Table 3 are associations between maternal factors and emergency CS deliveries. A significant association (p=0.000) between ladies who had two or more previous scars and emergency CS was present. Approximately, 19.4% of those women were emergency deliveries. Another factor, failed labor induction was found to have a significant association, as all women who had failed induction went into emergency CS. A tender scar was recorded among women who went into labor after one previous CS and had another CS due to a tender scar. It had significant association (p=0.000) with emergency CS as all women with tender scar went into emergency CS. Also, failed labor progress was another indication for emergency CS in 30 women with significant association (p=0.000) demonstrating that all women who had failed labor progress had emergency CS.

Regarding the association between emergency CS and fetal factor. There was a significant association between emergency CS and fetal distress and Malpresentation. The major fetal factor was fetal distress (p=0.000) as out of 300 women 51 had their emergency CS due to fetal distress and 26.2% of women with Malpresentation had emergency CS.

Discussion

Association between Emergency CS and demographic factors

A CS is considered to be an emergency if decided during or before labor when it was unplanned. This study shows high prevalence rate among women aged 21 to 29 years old. As known Saudi ladies most commonly have their first pregnancy in their twenties which could explain why emergency CS occur mostly in this age group.(Babay, Addar, Shahid, & Meriki, 2004)

The lower rate among women aged 30 to 39 years old might be justified by the fact that most women in their thirties will have elective CS after a previous scar or due to the fact that women in this age group are multiparous with history of normal vaginal delivery which lower their chance of emergency CS. Similar results were found in a study done in morocco where elective CS were performed more among women with the mean age of 31.5 ± 6.54 years, but emergency CS were performed among women 27.8 ± 6.07 years.(Benzouina et al., 2016)

Association of delivery information and emergency CS

Emergency CS were more prevalent in prim gravid women, which was similar to Al-Rowaily research where in his sample 31.4% of emergency CS were among primigravid women.(AL-ROWAILY, 2014) This is likely because most prim gravid women will have a trial of vaginal delivery before having a CS in contrast to multiparous women who are more susceptible to elective CS if they had a previous one. Most of the time prim gravid women have their emergency CS due to failure to progress or fetal distress.(Omamalin Ng)

Women who had no previous CS were more likely to have emergency CS than an elective one. Those women are either multiparous or nulliparous, which will put them at risk for an emergency CS if needed but less likely an elective one. Lower rates were found among women who had one or more previous CS. This is related to the reason that women who had one previous CS may have a trial of vaginal delivery or go into labor before scheduling their elective surgery due to a tender scar. But, women with two or more previous CS usually are scheduled electively. Also, this might be explained by the fact that medical practitioners treating women who had previous CS might be more comfortable with the decision of repeating the CS.

Regarding birth order, as mentioned most emergency CS were performed among prim gravid women. The risk for emergency CS was to found to decrease with increasing parity. Which might be due to previous vaginal deliveries which decrease their risk.(Omamalin Ng)

It was observed that emergency CS were more likely to occur in women with spontaneous labor in contrast to those who were induced. Other studies showed that labor induction increases the risk of emergency CS.(Kaul et al., 2004) On the other hand, the lower number of women who had CS section after induction could be attributed to careful monitoring before induction.

Birth weight had a significant relation with emergency CS. Emergency CS were more likely to occur among low birth weight babies. Similarly, a study conducted in Morocco found that newborns delivered by emergency CS were more likely to have lower birth weight.(Benzouina et al., 2016) An explanation for this is that women who deliver by emergency CS most of the time have an emergency cause. This prompts the delivery before the baby enters the normal birth weight range. In contrast to other studies, large birth weight was linked to emergency CS.(AL-ROWAILY, 2014)

Association of maternal and fetal factors with emergency CS

Regarding emergency CS maternal indications in this study, failure to

progress was the most common indication followed by tender scar and failed induction

On the other hand, Fetal factors that had a significant association were fetal distress and Malpresentation. As mentioned, this could be related to the increased fetal heart monitoring during labor which leads to more emergency CS.

Conclusion

Influencing factors for emergency CS were delivery characteristics (age, parity, birth order, number of previous cesarean sections, gestational age, mode of onset of labor, duration of labor and birth weight), maternal factors (previous scar, tender scar, failure to progress, failed induction, antepartum hemorrhage,) and fetal factors (fetal distress, Malpresentation).

Recommendations

More research is recommended to evaluate the time limit of labor that is acceptable to proceed to cesarean section and label the patient as a failure to progress case. Also, increasing the awareness of the target group especially young aged women about risks of CS deliveries and its value to be performed if needed. Finally, more researches need to be conducted regarding the risk factors for emergency CS compared to a control group is necessary.

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