

## **Fetal Distress in Labor and Caesarian Section Rate**

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**Objective:** To estimate the relationship between fetal distress in labor and the rate of Caesarian section.

**Design:** Retrospective study.

**Setting:** Obstetrics and Gynecology Department at Bahrain Defense Force Hospital.

**Method:** Emergency Caesarian sections due to fetal distress (235) performed between the 1<sup>st</sup> January 2008 to 30<sup>th</sup> June 2009 were reviewed. The major indications and the immediate causes for Caesarian section were identified. We assessed the baby outcomes by the measurement of Apgar score, neonatal intensive care admission and the need for intubation.

**Result:** Two hundred thirty-five emergency caesarian section were performed out of one thousand two hundred and forty five (1245) mothers were delivered by caesarian section. Total deliveries in the same period was 5945; The caesarian section rate was 21%.

The two main indications for Caesarian sections were: previous Caesarian section 337 (27%) followed by fetal distress 235 (19%), out of which 51 were performed prior to labor and 184 in labor.

Indicators of fetal distress, in labor was as follows: 22 (12%) mothers had thick meconium, non reactive CTG in 9 (5%) mothers, fetal heart deceleration in 1 (0.54%), abruptio placenta in labor in 11 (6%), and other abnormal CTG findings not classified in 141 patients (77%).

Hundred and nineteen (50.6%) were primigravida out of 235 mothers delivered by Caesarian section due to fetal distress, of which 97 mothers were in labor. Seven of 186 neonates (3.8%) had a low Apgar score (Apgar score <7 at 5 minutes). Of these 7 neonates, one required intubation and was admitted to the neonatal intensive care unit.

**Conclusion:** The Caesarian section rate in Bahrain Defense Force Hospital was high. The main reason for Caesarian sections was previous Caesarian section followed by fetal distress. The use of an objective assessment of fetal hypoxia would have lowered the rate of Caesarian delivery.

*Bahrain Med Bull 2010; 32(2):*

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Over the past 30 years, one of the most significant developments in obstetric practice has been the increase in the number of deliveries by Caesarian section.

If this increase is justified it should lead to real improvements in maternal and or fetal outcomes; however, there is a significant lack of objective data. Furthermore, significant variations in Caesarian section rate exist in various hospitals.

In many Western countries, the Caesarian section rate is around 20%<sup>1</sup>. The current WHO recommendation rate should not be greater than 15%<sup>2</sup>.

In New Jersey, the Caesarian section rate in 2005 was 35.5%, compared to 24.2% in 1997<sup>3</sup>. At King Fahad University Hospital the rate between 1994 and 1998 was 9.8%<sup>1</sup>.

The indications for Caesarian section are many, it includes maternal and fetal problems and since one of the major indications is "Repeat elective", every safe effort should be made to achieve a vaginal delivery for a women in her first pregnancy. One of the main fetal indications for Caesarian section is "Fetal distress". Fetal distress may be diagnosed during the antenatal period or during labor.

In labor, evidence of fetal compromise may present as fresh meconium staining of the amniotic fluid, or an abnormal CTG. However, neither of these factors confirms fetal hypoxia. Only fetal blood sampling (FBS) can definitely diagnose fetal acidosis and therefore hypoxia<sup>4,5</sup>.

Because many Caesarian sections are performed for fetal distress, this study was conducted to examine the contribution of fetal distress during labor as an indication for Caesarian section in The Bahrain Defense Force Hospital.

## **METHOD**

A retrospective study conducted at the Bahrain Defense Force Hospital (BDF). One thousand and two hundred forty-five Caesarian sections were performed between the 1<sup>st</sup> January 2008 to 30<sup>th</sup> June 2009. Two hundred and thirty-five emergency Caesarian sections due to fetal distress were performed during that period were reviewed.

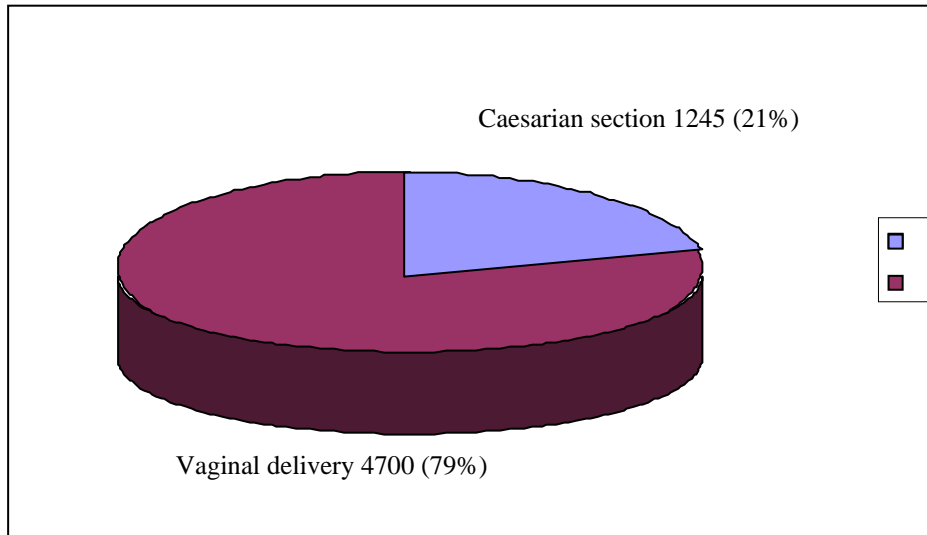
Both obstetric and neonatal data were obtained from the surgical theatre records. The major indications for emergency Caesarian section and the immediate reasons leading to Caesarian section were identified. We assessed the baby outcomes by the measurement of Apgar score, neonatal intensive care admission and the need for intubation.

## **RESULT**

Two hundred thirty-five emergency caesarian section were performed out of one thousand two hundred and forty five mothers who delivered by caesarian section. Total deliveries in the same period was 5945; The caesarian section rate was (21%). Four thousands seven hundred (79%) of these mothers were delivered vaginally, see Table 1 and Figure 1.

**Table 1: The Mode of Delivery**

Type of delivery	Number	Percentages
Caesarian section	1245	21%
Vaginal deliveries	4700	79.%
<b>Total deliveries</b>	<b>5945</b>	<b>100%</b>



**Figure 1: The Mode of Delivery**

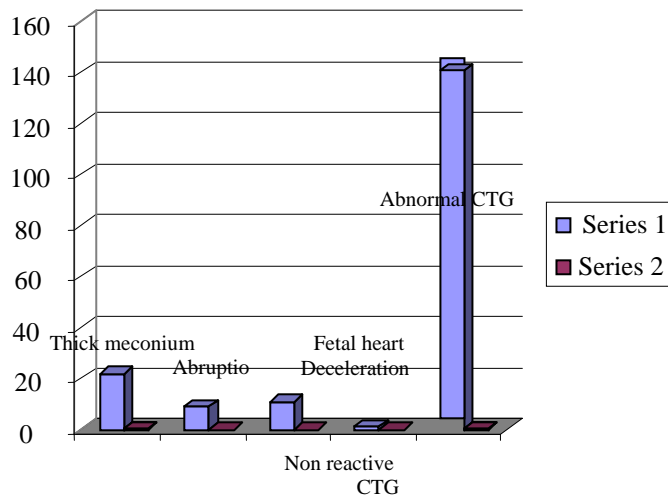
The two main indications for Caesarian sections were: previous Caesarian section in 337 (27%) mothers followed by presumed fetal distress in 235 (19%) mothers, 51 were performed prior to labor and 184 in labor.

Hundred and nineteen (50.6%) primigravida delivered by Caesarian section were due to fetal distress, 97 mothers were in labor.

Indicators of fetal distress, in labor, was as follows: 22 (12%) mothers had thick meconium, non reactive CTG in 9 (5%) mothers, fetal heart deceleration in 1 (0.54%), abruptio placenta in labor in 11 (6%), and other abnormal CTG findings not classified in 141 (77%), see Table 2 and Figure 2.

**Table 2: The Causes of Caesarian Sections Due to Fetal Distress in Labor**

Signs of Fetal Distress in Labor	Number	Percentage
Thick meconium	22	12%
Non reactive CTG	9	5%
Abruptio placenta in labor	11	6%
Fetal heart deceleration	1	0.54%
Other abnormal CTG	141	77%
<b>Total</b>	<b>184</b>	<b>100%</b>



**Figure 2: The Cause of Caesarian Sections Due to Fetal Distress in Labor**

Of the 184 mothers in labor delivered by Caesarian section, there were 186 neonates delivered because there were two twin pregnancies during the study, seven of these neonates (3.8%) had a low Apgar score (Apgar score <7 at 5 minutes). Of these 7 neonates, one required intubation and was admitted to the neonatal intensive care unit for 48 hours. The other 6 neonates with a low Apgar score quickly recovered and required no special intervention. Therefore, there was only one neonate with evidence of significant distress.

## DISCUSSION

The Caesarian section rate of 21% at BDF hospital during the study period was comparable to other universities centers, but, still higher than the WHO recommendations of 15%<sup>2</sup>.

While the majority of Caesarian sections were performed as repeat elective procedure, the second most common indication was fetal distress 19%.

This study deals with objective measurements, which could be assessed during Caesarian section performed for “Fetal Distress in Labor”. Fetal hypoxia can result in fetal death or life long problems such as cerebral palsy.

Fetal distress can be suspected using cardiotocography which could show fetal tachycardia, reduced variability in heart rate, absence of accelerations and the presence of decelerations<sup>6</sup>.

Abnormalities in cardiotocography represent the main evidence of fetal distress during labor and this might lead to a significant increase of the Caesarian section rate and might result in delivery of many infants with no evidence of severs distress<sup>5</sup>.

Fetal distress in labor could be diagnosed by other objective methods. Fetal blood scalp sampling (FBS) could be taken if fetal distress is suspected. A scalp blood PH of less than 7.20 or base excess -10 demonstrates a significant fetal metabolic acidosis indicating fetal hypoxia<sup>4</sup>.

There is an ongoing research into analysis of fetal ECG patterns, though yet these do not constitute a practical method of fetal surveillance<sup>7</sup>.

If the diagnosis of fetal distress was based on objective evidence such as FBS, there would be a significant decrease in the rate of Caesarian section<sup>8</sup>.

The aim in obstetrics is to deliver infants in good health, but relying on traditional methods of suspecting fetal distress results in large number of unnecessary Caesarian section. There is an urgent need to use techniques that are safe and more objective evidence of fetal distress.

## CONCLUSION

**This study revealed that Caesarian section rate was 20.9%, higher than that recommended by the WHO.**

**It is recommended that fetal scalp blood sampling to be used as an indicator for fetal distress. In addition, it is recommended to measure the PH of cord blood following Caesarian section for fetal distress.**

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