

## Frequency of Caesarean Section in Patients with Oligohydramnios at Tertiary Care Hospital

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### ABSTRACT

**Objective:** To determine the frequency of Caesarean Section in pregnant women with oligohydramnios  
**Methodology:** This descriptive cross-sectional study was carried out in the Department of Obs & Gynae, MTI-HMC, Peshawar from February 2021 to August 2021. Glandin E2 gel was used to induce all of the patients. Patients were evaluated for caesarean delivery if induction with two doses of Glandin E2 gel given vaginally six hours apart failed.

**Results:** As per frequencies and percentages for caesarean section in pregnant women with oligohydramnios, 42 (18.5%) patients were recorded with caesarean section.

**Conclusion:** Pregnant women at term with oligohydramnios are at increased risk of caesarean section, therefore, adequate measure should be taken in such patients in order to minimize the risk of a caesarean section associated with oligohydramnios.

**Key Words:** Amniotic Fluid Index (AFI), caesarean section, morbidity, oligohydramnios.

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### INTRODUCTION

A caesarean section is a foetus delivery that takes place through an open abdominal incision (laparotomy) and a uterine incision (hysterotomy). The first reported caesarean section occurred in 1020 AD. It is presently the most prevalent surgery in the United States, with over 1 million women giving birth by caesarean section each year<sup>1</sup>. Caesarean birth rates increased from 5% in 1970 to 31.9% in 2016. Despite ongoing efforts to minimize the number of caesarean sections, experts do not expect a major reduction for at least another decade or two. Caesarean delivery can be the safest or even the only way for some women to deliver a healthy infant, despite the dangers of both immediate and long-term consequences<sup>2</sup>.

Reduced amniotic fluid volume (AFV) for gestational age is referred to as oligohydramnios. The volume of amniotic fluid changes throughout pregnancy, increasing linearly until 34 to 36 weeks when it plateaus (about 400ml) and remains steady until the baby is born<sup>3</sup>. After 40 weeks of pregnancy, the AFV begins to gradually decline, resulting in a lower volume in post-term pregnancies. Using fundal height measurements and ultrasound inspection, this pattern enables for clinical assessment of AFV during pregnancy<sup>4</sup>.

Whenever there is a mismatch between the fundal height measurement and gestational age, the differential diagnosis should consider amniotic fluid abnormalities. If there are any discrepancies, an ultrasound of the amniotic fluid should be performed<sup>5</sup>.

In one study, 27 individuals with oligohydramnios had caesarean sections after failing to induce labour (18.0%)<sup>6</sup>.

This study will determine the importance of obtaining routine prenatal care throughout pregnancy because regular prenatal care allows the healthcare team to notice and diagnose gestational problems such as oligohydramnios. In our local population, this study will aid in the formulation of an adequate follow-up plan to reduce the risk of both foetal and maternal problems related with oligohydramnios.

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## METHODOLOGY

This descriptive cross-sectional study was done in the Department of Obs & Gynae, MTI-HMC, Peshawar from February to August, 2021. The Institutional Review Board of HMCP approved this study by certifying it with IRB certificate No. Ref: 621/HEC/B&PSC/2022. Patients presenting to Gynaecology OPD of the hospital were included in our study, subject to fulfillment of our inclusion criteria. All female patients with ages between 18 to 40 years and having singleton pregnancy who presented at term with an AFI (5–8 cm) were included in this study, while patients having perinatal loss in the past, recurrent missed abortions, and intrauterine growth retarded infants were excluded. Following that, informed consent was obtained from all patients prior to the study's conduct. AFI was measured using ultrasound by a consultant sonologist and labeled if it was between 5–8 cm. The glandin E2 gel was used to induce all of the patients. Patients, in whom induction with two doses of glandin E2 gel given vaginally 6 hours apart failed, were considered for caesarean section. All information such as age, gestational age, AFI index, socioeconomic status, residence, and caesarean section was recorded on a separate pro forma attached to this pro forma.

## RESULTS

The mean age was  $27.50 \pm 4.27$  years. The mean AFI was  $3.07 \pm 0.734$  cm. The mean gestational age was  $38.39 \pm 0.804$  weeks. As many as 182 (80.2%) patients were in the 20-30 years age group while 45 (19.8%) patients were in the 31-40 years age group. A total of 113 (49.8%) patients were from urban areas while 114 (50.2%) were from rural areas. Forty-two (18.5%) patients were recorded to have required caesarean section in pregnant women with oligohydramnios (Table 1). Caesarean sections were stratified with age ( $p=0.154$ ), (Table 2), and gestational age ( $p=0.221$ ), (Table 3).

**Table 1: Frequency of Caesarean Section**

| Caesarean Section | Frequency | Percent (%) |
|-------------------|-----------|-------------|
| Yes               | 42        | 18.5        |
| No                | 185       | 81.5        |
| Total             | 227       | 100         |

**Table 2: Frequency of Caesarean Section Related to Age Group**

| C-Section | Age Group   |             | Total | P-value |
|-----------|-------------|-------------|-------|---------|
|           | 20-30 Years | 31-40 Years |       |         |
| Yes       | 37          | 5           | 42    | 0.154   |
|           | 20.3%       | 11.1%       | 18.5% |         |
| No        | 145         | 40          | 185   |         |
|           | 79.7%       | 88.9%       | 81.5% |         |
| Total     | 182         | 45          | 227   |         |
|           | 100%        | 100%        | 100%  |         |

**Table 3: Frequency of Caesarean Section Related to Period of Gestation**

| C-Section | Gestational Age |            | Total | P-value |
|-----------|-----------------|------------|-------|---------|
|           | < 38 Weeks      | > 38 Weeks |       |         |
| Yes       | 19              | 23         | 42    | 0.221   |
|           | 15.6%           | 21.9%      | 18.5% |         |
| No        | 103             | 82         | 185   |         |
|           | 84.4%           | 78.1%      | 81.5% |         |
| Total     | 122             | 105        | 227   |         |
|           | 100%            | 100%       | 100%  |         |

In the current study, the mean and SDs for age were  $27.50 \pm 4.27$  years. The mean and SDs for AFI were  $3.07 \pm 0.734$  cm. The mean and SDs gestational age was  $38.39 \pm 0.804$  weeks, which was comparable to the findings of Berghella V which recorded almost similar parameters<sup>1</sup>.

## DISCUSSION

Reduced amniotic fluid volume (AFV) for gestational age is referred to as oligohydramnios. The volume of amniotic fluid changes throughout pregnancy, increasing linearly until 34 to 36 weeks when it plateaus (about 400ml) and remains steady until the baby is born<sup>3</sup>. After 40 weeks of pregnancy, the AFV begins to gradually decline, resulting in a lower volume in post-term pregnancies. Using fundal height measurements and ultrasound inspection, this pattern enables for clinical assessment of AFV during pregnancy<sup>4</sup>.

Total 182 (80.2%) patients were in the 20-30 years age group while 45 (19.8%) were in the 31-40 years age group. These findings were consistent with the results of Magann EF<sup>5</sup> which also recorded almost the same number of patients in the aforementioned groups.

As per the main variable of our study, 42 (18.5%) patients were recorded with caesarean section (Table 5). This was inconsistent with the findings of Clapp MA<sup>3</sup>.

When there is a discrepancy between the fundal height measurement and gestational age, amniotic fluid disorders should be considered in the differential diagnosis. Any discrepancies should prompt an ultrasound examination of the amniotic fluid<sup>5</sup>.

In a study, caesarean section due to failed induction with oligohydramnios, was performed in 27 patients (18.0%)<sup>6</sup> which was consistent with the findings of this study as almost the same i.e. 42 (18.5%) patients were recorded with caesarean section (Table 1).

Oligohydramnios complicates about 0.5–5 percent of all pregnancies, with the prevalence varying according to the definition used and the population studied. Though the cause of oligohydramnios is largely unknown, common causes include ruptured membranes, genetic and chromosomal abnormalities that result in congenital anomalies and placental insufficiency.

Increased maternal and foetal morbidity is linked to oligohydramnios. Foetal discomfort, low APGAR scores, and meconium aspiration syndrome in the foetus, all contribute to perinatal morbidity and mortality<sup>3-5</sup>. This occurs as a result of umbilical cord compression and uteroplacental insufficiency<sup>4,5</sup>. As a result, even in generally uncomplicated pregnancies with oligohydramnios, termination of pregnancy is recommended<sup>6</sup>. However, several recent studies have found no negative effects of isolated oligohydramnios on the neonatal outcome, recommending that the pregnancy be carried to term<sup>7,8</sup>. Amnioinfusion has also been recommended in several studies<sup>9</sup>. The purpose of this study was to see how isolated oligohydramnios during the second trimester affected the mode and timing of delivery, as well as its link to perinatal morbidity and mortality in our hospital. The effects of isolated oligohydramnios on pregnancy outcomes during the second trimester were investigated in this study. The majority of the patients in our study were primigravidas with a singleton pregnancy. In these circumstances, isolated oligohydramnios may be the result of constitutional, dietary, or a higher proportion of unexpected births in primigravida.

Because of foetal distress caused by cord compression, caesarean section (LSCS) was the most prevalent mode of delivery in our study. Locatelli A discovered that decreased amniotic fluid content was linked to an increased incidence of caesarean section due to foetal heart rate anomalies<sup>8</sup>.

The average gestational age at delivery was 29–40 weeks, and the average birth weight of newborns was 1.5–2 kg. In our research, we discovered a significantly increased incidence of babies with low birth weight, which could be related to premature termination due to foetal distress or cord compression. In a similar study, Locatelli A found that isolated oligohydramnios is linked to a higher risk of iatrogenic premature delivery and lower birth weights<sup>2,8</sup>. Another study looked at the best way to define oligohydramnios in relation to adverse neonatal outcomes and found that an AFI of less than 5 cm, better predicts foetuses at risk for adverse perinatal outcomes than an AFI of more than 5 cm<sup>10</sup>. However, this has to be confirmed.

In this study, we discovered that pregnancies complicated by isolated oligohydramnios were not associated with substantial unfavourable perinatal outcomes, with the exception of the common complications that can occur in any pregnancy (e.g., hypoglycaemia, hypocalcaemia, and low birth-weight). Despite the fact that caesarean sections were performed due to foetal discomfort and/or cord compression, no baby suffered from birth asphyxia. These findings are also consistent with research by Rabie N and Magann EF<sup>4,5</sup>. They used data from multicenter clinical trials to establish that isolated oligohydramnios is not linked to poor foetal growth or a higher risk of perinatal complications<sup>7,10</sup>.

A greater frequency of primary caesarean section was found in the group with low amniotic fluid (30.6% with  $p=0.001$ ), according to a study done in Thailand<sup>12</sup>, while in our study it accounted for 18.5%. Caesarean section was performed 48% (336) of the time in patients with oligohydramnios in a study conducted in Bahawalpur, Pakistan, whereas it was performed 18.5% of the time in our study<sup>13</sup>. According to another study conducted in Punjab, Pakistan, caesarean section was performed in 10.7% of patients with oligohydramnios<sup>14</sup>.

In an Ethiopian study<sup>15</sup>, caesarean section was performed in 237 (80.2%) cases, with severe oligohydramnios being the most common reason. (C/S can be decided in cases of the sole presence of severe oligohydramnios, while on induction for oligohydramnios, or for the presence of previous c/s scar or malpresentation that prevents induction of oligohydramnios cases in our set up). In our study, it accounted for 18.5% of the total. Caesarean delivery was 84.4% ( $p=0.001$ ) more common in pregnancies with oligohydramnios in China<sup>16</sup>.

## CONCLUSION

This study demonstrated that pregnant women at term pregnancy presenting with oligohydramnios were more prone to caesarean section, therefore, adequate measures should be taken in such patients to minimize the risk of a caesarean section associated with oligohydramnios. However, more cross-sectional multi-centered studies should be conducted to generalize the results for our local population.

**Conflict of interest:** The authors declare no conflict of interest.

**Authors' Contribution:** SH: Worked on study design and manuscript writing; BA: Contributed in data collection and data analysis; RB: Contributed in study

design, manuscript writing, data analysis, and critical review of the manuscript; AN: Data collection and manuscript writing; NQ: Writing and article review; AZ: Data collection and article review.

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