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DIAGNOSTIC ACCURACY OF TRANS ABDOMINAL ULTRASONOGRAPHY FOR PREDICTION OF SCAR DEHISCENCE IN FEMALES WITH HISTORY OF CESAREAN SECTION

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Abstract:
Background: Trans abdominal ultrasonography is most commonly used to obtain images of hepatobiliary, urogenital, and pelvic structures. Sonographic measurement of lower uterine segment thickness near term has been shown to be correlated inversely with the risk at delivery of uterine scar defect. *Objective:* To assess the diagnostic accuracy trans abdominal ultrasonography for prediction of scar dehiscence in females with history of cesarean section taking cesarean section as gold standard. *Material & Methods:* This Cross sectional study was conducted in Rawalpindi Medical University during 2018 to 2019. Then females underwent transabdominal ultrasonography. Females labeled as positive or negative for scar dehiscence. At time of delivery, uterine scar assessed and scar dehiscence confirmed. *Results:* In this study the mean age of the patients was 30.22±6.33 years, 62(38.75%) patients had parity 02. The mean value of gestational age of the patients was 38.81±0.740 weeks. The sensitivity, specificity diagnostic accuracy of scar dehiscence on USG was 94.03%, 94.62% & 94.38% respectively taking cesarean section as gold standard. *Conclusion:* The transabdominal ultrasonography is a useful and reliable method having high value of diagnostic accuracy for prediction of scar dehiscence in females with history of cesarean section.

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INTRODUCTION:

Cesarean section is one of the most frequent abdominal surgical operations carried out in the United Kingdom. The Cesarean section rate increased from 12% to 29% in the United Kingdom and from 21.2% to 30.1% in the USA between 1990 and 2008. The increasing Cesarean section rate and its associated complications has stimulated an interest in the behavior of Cesarean section scars and their associated potential morbidity.[1] The main cause of uterine rupture in a scarred uterus is lack of appropriate counseling and inadequate or absence of antenatal care with increasing number of women undergoing trial of labour after a previous caesarean section, in an anticipation of vaginal delivery, separation of previous caesarean scar has become a common cause of rupture especially in unskilled hands.[2]

One study showed that frequency of scar dehiscence present in 69% cases after previous cesarean section.[3] The frequency of ruptured uteri was calculated to be 0.67%, giving a ratio of 1:148 deliveries.[4] Ultrasound estimation of LUS provides a fairly simple and non-invasive method for prediction of scar dehiscence/rupture. Evaluation of thickness of LUS has been found to be a potential factor for predicting scar dehiscence [4-6]. The risk of scar dehiscence/rupture has been directly related to the thinning of LUS. However, there is controversy over the thickness of LUS.[7] One study showed that the sensitivity and specificity of Transabdominal Sonoghraphy or transabdominal ultrasonography were 91% and 93% respectively for prediction of scar dehiscence.[8] But another study showed that transabdominal ultrasonography showed the sensitivity 25%, specificity 100% for prediction of scar dehiscence.[9-11] One more study has showed that transabdominal ultrasonography showed the sensitivity 90.9%, specificity 52% for prediction of scar dehiscence.[12]

So the aim of this study is to assess the diagnostic accuracy transabdominal ultrasonography for prediction of scar dehiscence in females with history of cesarean section taking cesarean section as gold standard.

OBJECTIVE:

To assess the diagnostic accuracy of trans abdominal ultrasonography for prediction of scar dehiscence in females with history of previous one cesarean section taking cesarean section as gold standard

MATERIALS AND METHODS:

This Cross sectional study was conducted in Rawalpindi Medical University during 2018 to 2019. Sample size of 160 cases were calculated with 95% confidence level and taking expected percentage of scar dehiscence. Demographic information (name, age, gestational age, BMI, parity) was also obtained. Then females undergo transabdominal ultrasonography by a single senior radiologist had at least 4years' residency experience with assistance of researcher herself. Females were labeled as positive or negative for scar dehiscence (as per operational definition). Then females undergo cesarean section by researcher herself. At time of delivery, uterine scar was assessed and scar dehiscence was confirmed (as per operational definition). All this information was collected through proforma (attached).

Data Analysis

All collected data was entered and analyzed through SPSS 21. Quantitative variables like age, gestational age and BMI were presented by mean and SD. Variables like parity and scar dehiscence (on transabdominal ultrasonography and cesarean section) was presented by frequency and percentage.

RESULTS:

In this study total 160 patients were enrolled. The mean age of the patients was 30.22±6.33 years with minimum and maximum ages of 20 & 40 years respectively.

Table 01: Descriptive statistics of age (years)

Age (years)		
	n	160
	Mean	30.22
	SD	6.33
	Minimum	20
	Maximum	40

In this study, 21(13.13%) patients had parity 01, 62(38.75%) patients had parity 02, 53(33.13%) patients had parity 03 and 24(15%) patients had parity 04.
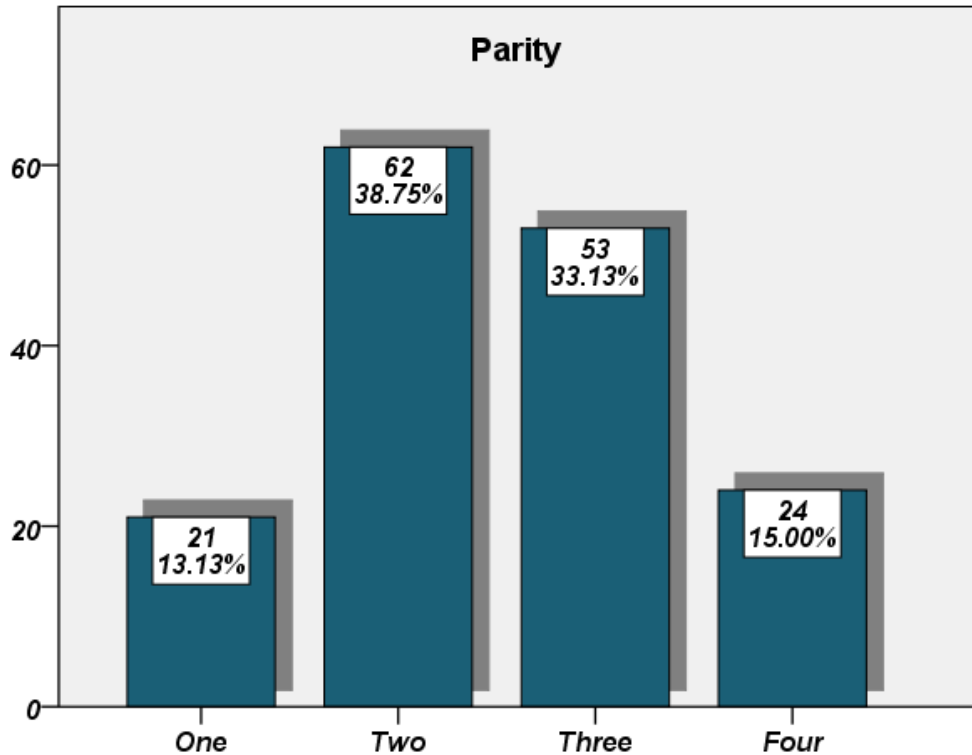
Fig#1: Frequency distribution of parity

The mean value of gestational age of the patients was 38.81±0.740 weeks with minimum and maximum gestational ages of 38 & 40 weeks respectively (table 02). The mean value of BMI of the patients was 24.22±3.321 kg/m^2 with minimum and maximum BMI values of 18.60 & 29.83 kg/m^2 respectively (table 03).

Table 02: Descriptive statistics of gestational age (weeks)

Gestational age (weeks)	n	160
	Mean	38.81
	SD	0.740
	Minimum	38
	Maximum	40

Table 03: Descriptive statistics of BMI (Kg/m^2)

BMI (Kg/m^2)	n	160
	Mean	24.22
	SD	3.321
	Minimum	18.60
	Maximum	29.83

In our study scar dehiscence diagnosed positive by USG among 68(42.5%) patients whereas scar dehiscence diagnosed negative by USG among 92(57.5%) patients (table 4). In our study scar dehiscence diagnosed positive by cesarean among 67(41.88%) patients whereas scar dehiscence diagnosed negative by cesarean among 93(58.13%) patients.

Table 04: **Frequency distribution of scar dehiscence diagnosed on USG**

		Frequency	Percent
Scar dehiscence USG	Positive	68	42.5
	Negative	92	57.5
	Total	160	100.0

According to this study the sensitivity, specificity, PPV, NPV and diagnostic accuracy of scar dehiscence on USG was 94.03%, 94.62%, 92.65%, 92.65% & 94.38% respectively taking cesarean section as gold standard (table 05).

DISCUSSION:

This present cross sectional study was carried out at department of Obstetrics & Gynecology, Lady Aitchison Hospital, Lahore to assess the diagnostic accuracy transbdominal ultrasonography for prediction of scar dehiscence in females with history of cesarean section taking cesarean section as gold standard. Cesarean section rates are increasing worldwide. As a result, women presenting with pregnancy with previous Caesarean Section are also rising. Previous Caesarean Section is becoming the most common indication for Caesarean Section, confirming the age old dictum proposed by Edward Craigin in 1914 "Once a cesarean always a cesarean." Various factors have been related to in-creased risk of scar dehiscence, includ-ing type of previous Cesarean section, surgical technique of closure of the uter-ine incision, intraoperative complications,as well as interval from previous Cesarean section, and estimated fetal weight in the current pregnancy.

In this study the sensitivity, specificity and diagnostic accuracy transbdominal ultrasonography for prediction of scar dehiscence in females with history of cesarean section was 94.03%, 94.62% & 94.38% respectively taking cesarean section as gold standard. Some of the studies are discussed below showing their results as.

CONCLUSION:

This study concluded that the transabdominal ultrasonography is a useful and reliable method having high value of diagnostic accuracy for prediction of scar dehiscence in females with history of cesarean section taking cesarean section as gold standard

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