***Table 1:*** *Main Indications Of Caesarean Section Total Patients =1149 Caesarean Section (N = 246)*

| Indications of C/Section | No. of Patients | Percentage | p-value |
|---|---|---|---|
| Previous caesarean section | 56 | 22.76% | (p-value > 0.05) |
| Failed progress of labour | 45 | 18.29% | (p-value > 0.05) |
| Fetal distress | 38 | 15.44% | (p-value > 0.05) |
| Breech presentation | 35 | 14.25% | (p-value > 0.05) |

## DISCUSSION

Primary caesarean section usually determines the future obstetric course of any woman and therefore should be avoided wherever possible. The caesarean section rate in our study was 21.40%. The rising caesarean section rate is a worldwide phenomenon although WHO states that there is no additional benefit associated with rising caesarean section rate of above 15%[8]. In England caesarean section rate was 9% in 1980 which was raised to 21.3% in 2000[7,10] Haidar G et al from Hyderabad Pakistan and Shamshad from Abotabad reported caesarean section rate as high as 67.7% and 45.1% in 2007 respectivly[11,12].

The most common indication in our study was repeat caesarean section (22.76%). Lubna Ali from Karachi Pakistan reported repeat caesarean section the commonest indication for caesarean section[13], similar trends have been found in Northern Greece (30.9%) by Mersaovdi et al.[14] So the decision for primary caesarean section is important[15,16], unless there is a clear, compelling and well supported justification for caesarean section, a carefully supervised justified trial of labour is necessary. Trial of scar in singleton pregnancies can be given to reduce the rate of repeated caesarean section as the risk of uterine rupture is low 0.3%[17]. Successful vaginal birth after caesarean (VBAC) in grand multiparous does not lead to increased maternal complication[18].

The second most frequent indication observed in our study was failed progress 18.29%. This was mainly due to mishandling by Daies, injudicious use of oxytocin or unjustified induction of labour without prior assessment of risk factors, foetal size, position, presentation, stage of labour, and pelvic adequacy. A similar retrospective study, factor responsible of high caesarean section rate in Pakistan during study period 1985 – 1996 were mostly dystocia(6.32%), repeat caesarean section(5.8%), fetal distress(3.5%) and caesarean rate was 27.26% in primigravada and 24.1% in multipara[23]. Current research suggests that labour induction makes a caesarean section more likely among primigravidas if cervix is unfavourable[19,20]. Use of partogram helps in early diagnosis of abnormal labour patterns and timely management[21], antenatal diagnosis of malpresentation and their effective management greatly prevents obstructed labour as well as failed progress.

The majority of caesarean section in this study were of unbooked cases (61.38%). This is mainly due to the paucity of general and obstetrical health care awareness in the catchments areas as well as devastating depriving socioeconomic conditions[22]. It is well documented that caesarean carries a much high maternal mortality and morbidity as compared to vaginal delivery even though caesarean section is being performed for indications such as fetal distress; perinatal mortality continues to be very high among caesarean deliveries[24].

The high caesarean section rate in our study was because of the fact that majority of the pregnant women of this surrounding population are delivered vaginally at home by traditional birth attendants (TBA) or lady health visitor (LHV) and general practitioners (GPs) in private hospitals, most of these patients are referred to this teaching hospital who have one or the other risk factors and who already had a trial of labour somewhere else. So the caesarean section rate was obviously high in these high risk and unbooked cases.

## CONCLUSION

The caesarean section prevalence in our study was 21.40%, because mostly referred cases after initial trial of daies, lady health visitors and general practitioners in private hospitals were received. Common indications of caesarean section observed in this study were previous caesarean section. Majority of patients who underwent caesarean section were unbooked.

*Measures recommended* to reduce caesarean section are as follows:

- Proper antenatal care and counseling regarding the planned hospital delivery.
- Proper diagnosis of labour.
- Partogram should be maintained for good monitoring of progress of labour especially in patients with previous one caesarean section.
- Good analgesia and proper fetal monitoring during labour.
- Avoiding undue inductions of labour.
- Trial of VBAC should be encouraged in appropriate cases.
- Expertise in external cephalic version and vaginal breech delivery in good selected cases.
- Proper training of traditional birth attendants and lady health visitors, effective working of referral chain and time demanded health policies.

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## LITERATURE REVIEW

### Outcomes with Split Liver Transplantation are Equivalent to those with whole Organ Transplantation.

***Doyle MB, Maynard E, Lin Y, etal.*** *Department of Surgery, Washington University School of Medicine, St Louis, USA. J Am Coll Surg. 2013 Jul;217(1):102-12*

**BACKGROUND:** Split liver transplantation is an excellent option for expansion of the donor organ pool. However, reports of increased morbidity in split liver recipients may limit use of this technique. This was a single center retrospective analysis investigating split liver transplantation. Between August 1, 1995 and March 30, 2012, 53 of 1,261 (4.2%) recipients received split liver grafts. The 1-, 5-, and 10-year patient and graft survivals in adult recipients of split grafts were 95.5%, 89.5%, and 89.5%, respectively. Survival was similar to that of whole organ recipients (p = 0.15). Twenty-three adults received split grafts: 18 (78%) were right trisegment grafts, 4 (17.4%) were right lobes, and 1 (4.3%) was a left lobe. The mean cold ischemic time was 5.7 hours (±2.4 hours [SD]) and warm ischemic time was 36 minutes (±5.5 minutes). Four (17%) recipients required hepatic artery reconstruction; 5 (21.7%) required a caval-venous patch, and 5 (21.7%) had Roux-en-Y reconstruction of the bile duct. No venous conduits were required. Thirty children received split grafts (median age 1.2 years, range 0.1 to 16.4 years) and had a median weight of 8.6 kg (range 3.6 to 45 kg). Pediatric split 1-, 5-, and 10-year overall and graft survival rates were 96.7%, 80.0%, 80.0%, and 93.3%, 76.8, and 76.8%, respectively. Complications included retransplantation in 3 (10.0%), bile leak in 5 (16.7%), hepatic arterial thrombosis in 2 (6.7%), bowel perforation in 2 (6.7%), and bleeding in 2 (6.7%). The mean donor age was 22.4 months (±8.9) months and body mass index was 22.8 kg/m(2) (±3.3 kg/m(2)).
**CONCLUSIONS:** Authors demonstrated excellent outcomes in adult and pediatric recipients using carefully selected donors for liver splitting. We recommend escalation of the use of split liver transplants to expand the donor pool for cadaveric liver transplantation.

# Correlation between Placental Location and Uterine Artery Flow Waveforms in Uncomplicated Pregnancies.

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***Abstract****: The objective of the study was to understand the changes in uterine artery blood flow in normal pregnancies and also their correlation with factors like placental location. In this prospective study, a total of 100 random uncomplicated singleton pregnant women who attended antenatal clinic in our hospital and falling under 26-32 weeks of gestation by Ultrasound were included. Colour Doppler study of the uterine arteries was also performed on each patient. The location of placenta was determined by Ultrasound and categorized as' Central', 'Lateral' and 'Lateral crossing Midline'. The mean S/D ratios of bilateral uterine arteries were then recorded by Doppler study. Thereafter the difference between the two S/D ratios calculated and analysed. Percentages and Chi square test to calculate level of significance. Results: Out of 100 women, 28 had lateral placenta, 39 had central and 33 had lateral crossing midline placenta. In all Lateral and Lateral crossing midline subjects, the ipsilateral S/D was lower than contralateral one. Also, in Lateral group the difference turned out to be statistically significant and central group, not significant.*

***Conclusion:*** *The study demonstrated a significant relationship between placental location and uterine artery S/D ratio in uncomplicated pregnancies.*

## INTRODUCTION

The changes that take place in the uterine artery blood flow in pregnancy are of utmost importance. Various studies have been undertaken to assess the effect of various factors on the uterine blood flow in normal and abnormal pregnancies[1]. In our study, we tried to correlate it with placental location. Several methods have been used to document placental location, including manual exploration of uterus, soft tissue x-ray films and isotopic placentography. Nowadays, ultrasound has proved to be the safest, easiest and the most accurate method for assessing placental location. Also, Doppler Ultrasound provides a non invasive method for the study of uteroplacental circulation and fetal hemodynamics.

The ratio of the systolic peak velocity and end-diastolic velocity (S/D) has been used as an expression of uterine vascular resistance. Though there are other indices used like Resistive index, yet uterine artery S/D is a relatively simple indicator to calculate and express vascular resistance.

## MATERIALS AND METHODS

In this prospective study, a total of 100 random uncomplicated singleton pregnant patients between 26-32 weeks of gestation, attending the antenatal clinic of our hospital were included. All patients were examined once during their pregnancy. Gestational age was determined by ultrasound. 26 weeks was set as the lower limit because the trophoblastic invasion of spiral arteries and loss of diastolic notch is well established by then. Also, beyond 32 weeks the difference between the two S/D ratios tends to decrease. Patients with chronic hypertension, twin gestation, uterine anomalies, preeclampsia/ eclampsia were excluded.

The equipment used was convex probe at 3.5 MHz of GE Logiq 5 Pro ultrasound machine. The location of placenta was determined by real time ultrasound by placing the convex probe in the midline to acquire an axial section. The placenta was classified irrespective of its anteroposterior and fundal position. It was classified as 'central (C)' when it was equally distributed on right and left sides. It was classified as 'lateral crossing midline (LCM)' when majority of placental tissue was on one side. The third group comprised of placentas that were purely 'lateral (L)'. Placental location was evaluated without knowledge of the systolic/ diastolic ratio values to avoid bias.

The Doppler flow velocity waveforms were obtained with the mother lying comfortably in a slight left lateral tilt to minimize the risk of developing supine hypotension due to caval compression. The spectral Doppler waveform was obtained by placing the Doppler transducer 2-3 cm medial to the anterior superior iliac spine. This landmark permitted regional consistency and reproducibility of flow velocity waveforms. Here, the uterine artery is seen to cross the external iliac artery, just after its origin from the internal iliac artery and this point was taken as the sampling point [Fig 1]. Three measurements of S/D ratio were taken on each side [Fig 2]. The average ratio was then calculated from the three values and said to be the mean uterine S/D of each side. Numerical value thus calculated was rounded off to the first decimal place. Thereafter, the difference between the two S/D ratios (right and left) was calculated by simple subtraction if lower value from the higher, in each patient.

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***Figure 1:*** *Localization of Uterine artery. Artery seen crossing the ipsilateral external iliac artery*

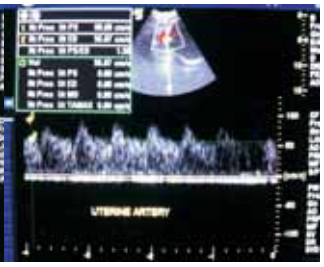


***Figure 2:*** *Normal spectral waveform of Uterine artery between 26-32 weeks.*

## RESULTS

It was observed that of the 100 subjects included in the study, 28 had lateral placentas(L), 39 had centrally located placentas(C) and 33 had placentas on one side but crossing midline (LCM).

The differences obtained in S/D ratios were categorized under three groups as shown in the Table 4. To make the difference interval groups uniform, 0 - <0.2, 0.2 - <0.4 and 0.4 - <0.6 were used and 96 pregnancies fell under this(N=96). The remaining 4 subjects had difference of e" 0.6 in the right and left uterine arteries and all 4 had lateral placentas.

It was noted that in all the 28 (24 out of 96 patients and 4 extra) patients of 'lateral' placenta group, the ipsilateral S/D was lower than contralateral S/D and the difference of S/D ratios of the two sides turned out to be statistically significant.

In no patient of this group it was noted otherwise. In this group as many as 50% of the subjects had the difference of 0.4 - <0.6 in the two uterine arteries(Table-1). In group-wise distribution also, the findings are substantiated (Table-4), as only 9% of the subjects falling under 0 - <0.2 category, had lateral placentas.

It was observed that in all 33 patients having 'Lateral crossing midline' placentas (LCM) also, the side where majority of the placental tissue was situated had lower uterine artery S/D than the contralateral side. However, statistical significance of the difference could not be attained in our study. Further, the 39 patients of 'central' placenta group showed the propensity

to have lesser difference in the two S/D ratios as compared to Lateral and Lateral crossing midline groups (Table 2,3)). This difference in the S/D ratios of two sides was not statistically significant in our study. 47.2% of subjects falling under 0.2 - <0.4 group, were seen to have central placentas (Table-4). Only 30.8% of central placenta patients fell under 0.4 - <0.6 group whereas 50% of lateral placenta patients and 42.4% of LCM patients fell under this difference group (Tables-1,2,3).

Three of the patients demonstrated diastolic notching in one side's uterine artery waveform, and all three fell under the Lateral placenta group. It was further observed that the notching occurred in the contralateral uterine artery with regard to placental location in all these three cases.

***Table-1***

| Lateral placentas (L) (24/96) n= 24 | Number | Difference grp | Percentage |
|---|---|---|---|
| | 2/24 | 0 - <0.2 | 8.3 % |
| | 10/24 | 0.2 - <0.4 | 41.7 % |
| | 12/24 | 0.4 - <0.6 | 50 % |

***Table-2***

| Central placentas (C) (39/96) n=39 | Number | Difference grp | Percentage |
|---|---|---|---|
| | 10/39 | 0 - <0.2 | 25.7 % |
| | 17/39 | 0.2 - <0.4 | 43.5 % |
| | 12/39 | 0.4 - <0.6 | 30.8% |

***Table-3***

| Lateral Crossing Midline (LCM) placentas (33/96) n=33 | Number | Difference grp | Percentage |
|---|---|---|---|
| | 10/33 | 0 - <0.2 | 30.3 % |
| | 9/33 | 0.2 - <0.4 | 27.3% |
| | 14/33 | 0.4 - <0.6 | 42.4 % |

Statistical analysis was based on percentages and Chi-Square formula to calculate level of significance.

***Table-4***

| Statistical Analysis | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0 TO < 0.2 | | 0.2 - <0.4 | | 0.4 - <0.6 | | Chi-Square Test Value | Result* |
| L | 2/22 | 9 % | 10/36 | 27.8 % | 12/38 | 31.6 % | 7 | Significant |
| C | 10/22 | 45.5 % | 17/36 | 47.2 % | 12/38 | 31.6 % | 2.62 | Not Significant |
| LCM | 10/22 | 45.5 % | 9/36 | 25 % | 14/38 | 36.8 % | 1.27 | Not Significant |

## DISCUSSION

The main branch of each uterine artery enters the uterus just above the cervix and ascends along the lateral part of its wall. It gives rise to arcuate arteries that derive their name from the arching pattern in the uterus. The arcuate arteries give off multiple branches called radial arteries into the outer third of the myometrium, deriving their name due to their penetrating the uterine myometrium at right angles[2]. As the radial arteries approach the inner myometrium they become spiral arteries. In the non-pregnant state, the uterine artery is a high resistance vessel.

Physiological modification of spiral arteries is required to permit the increase in uterine blood flow which is necessary to meet the requirements of the fetus and the placenta. This modification is termed as 'Physiological change' which takes place in 2 stages- the first wave of trophoblastic invasion converts the decidual segments of the spiral arteries in the first trimester (completed by 13 weeks) and the second wave converts the myometrial segments in the second trimester (completed by 26 weeks)[2]. As a result of physiological change, the diameter of the spiral arteries increases, thus reducing impedance to flow and optimizing fetomaternal exchange in the intervillous space[3,4]. Thus there is an increase in the diastolic flow and consequent fall in S/D ratios. Also, the early diastolic notch seen normally up to 26 weeks of gestation, disappears thereafter in normal pregnancies[5,6]. It has been shown in humans that both uterine arteries along with their significant number of branches supply the corresponding side of the uterus[7].

Our study demonstrated a significant relationship between placental location and uterine artery resistance expressed by the systolic/ diastolic ratio of the uterine artery flow velocity waveforms in normal pregnancies. When the placenta was lateral or lateral crossing midline, which comprised 61% of our study population, the uterine artery closer to the placenta had lower resistance than the one opposite to it. Also, when the difference of the S/D ratios of the two sides were compared 50% of lateral placenta patients fell under 0.4 - <0.6 difference group while only 30.8% of central placenta patients fell under 0.4 - <0.6 group. The difference in S/D ratios in the lateral group was found to be statistically significant. However, in our study the statistical significance of the difference of S/D ratios of two sides could not be established in Lateral crossing midline placenta group. There is a need for studies with larger sample sizes to establish the same.

On review of literature, it was found that in a prospective study conducted by Kofinas AD et al, they also found that right and left uterine artery flow velocity waveforms demonstrated significantly different S/D ratios when the placenta was found unilaterally. When the placenta was centrally located, the difference between the right and left uterine arteries was not statistically significant[8]. However, in contrast to our study, they classified the placentas in two groups and not three. Nevertheless, the findings in our study corroborated with theirs.

Campbell et al used duplex-pulsed Doppler to evaluate flow velocity waveforms and found that the vessels on the placental side have a lower pulsatility index[9]. However, it is not clear from their report whether the flow velocity waveforms were obtained from the right or left side or simply away from the placenta. In addition, their description indicated the measurements may have been obtained from the parametrial area anywhere between the cervix and cornu of the uterus. This is important with regard to comparisons because in our study and the one done by Kofinas et al, it was found that even on the placental side the S/D ratio increased as the distance from the placenta increased.

Further, our study also showed that it is not possible to predict the site of placentation on basis of uterine artery waveforms. This was evident by the fact that in 0.4-<0.6 group, the placental location was almost equally distributed- 31.6% lateral, 31.6 % central and 36.8% lateral crossing midline.

However, once one knows the site of placentation, one gets an idea as to what kind of uterine artery blood flow to expect.

## CONCLUSION

Our study demonstrated a significant relationship between placental location and uterine artery systolic/ diastolic ratio in uncomplicated pregnancies.

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## LITERATURE REVIEW

**A negative Urinalysis rules out Catheter-Associated Urinary Tract Infection in Trauma Patients in the Intensive Care Unit.**

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*J Am Coll Surg. 2013 Jul;217(1):162-6. doi: 10.1016/j.jamcollsurg.2013.02.030. Epub 2013 Apr 30.*

Urinary tract infection (UTI) in trauma patients is associated with increased mortality. Whether the urinalysis (UA) is an adequate test for a urinary source of fever in the ICU trauma patient has not been demonstrated. We hypothesized that the UA is a valuable screen for UTI in the febrile, critically ill trauma patient. All trauma ICU patients in our surgical ICU who had a fever (temperature >38.0°C), urinary catheter, UA, and a urine culture between January 1, 2011 and December 13, 2011 were reviewed. A positive UA was defined as positive leukocyte esterase, positive nitrite, WBC > 10/high power field, or presence of bacteria. A positive urine culture was defined as growth of e"10(5) colony forming units (cfu) of an organism irrespective of the UA result or e"10(3) cfu in the setting of a positive UA. A UTI was defined as positive urine culture without an alternative cause of the fever. There were 232 UAs from 112 patients that met criteria. The majority (75%) of patients were men; the mean age was 40 (±16) years. Of the 232 UAs, 90 (38.7%) were positive. There were 14 UTIs. The sensitivity, specificity, positive predictive value, and negative predictive value of the UA for UTI were 100%, 65.1%, 15.5%, and 100%, respectively. **CONCLUSIONS:** A negative UA reliably excludes a catheter-associated UTI in the febrile, trauma ICU patient with a 100% negative predictive value, and it can rapidly direct the clinician toward more likely sources of fever and reduce unnecessary urine cultures.