# Diagnostic Accuracy of Ultrasound in Determination of Chorionicity of Twin Pregnancies at PMCH Nawabshah

Rozina Memon[1], Saira Parveen[2], Afra Rehman[3], Yasmeen Joyo[4], Mehnaz Akram Shaikh[5]

**Abstract**

**Introduction:** Placental chorionicity is significant to determine the risk of twin pregnancy. Monochorionic are likely to develop complications compared to dichorionic. There is an important role of ultrasound in detecting chorionicity as it is authentic and aid in preventing patient from developing future problems of pregnancy as these can be managed early and properly. **Objective**: - To see the accuracy of ultrasound findings of Chorioniocity in twin pregnancies. **Material and methods:-**The study was done in Department of Gyn/Obs Unit 2 at PMCH Nawabshah. It is a cross sectional study done from February 2017 to July 2018. All the patients of study were admitted from OPD and Emergency center. Only pregnant ladies were included in this study who fulfilled the criterion of our study. **Results:-** Out of 100 patients, 30 were found to have twin pregnancy Age difference was also noted ranged from 20 to 50 years, among patients. Ultrasound findings were noted in all patients with multiple pregnancies. Only 20 (66.6%) patients had Lambda sign means dichorionic and 10 (33.3%) had T-sign. **Conclusion**: In short, it is concluded that diagnostic accuracy of ultra-sonographic findings in twin pregnancies are accurate and authentic in diagnosing the chorionicity of twin pregnancies.

**Key Words:** Chorionicity, Lambda Sign, Twin, Ultra-sonographic, Monochorionic. T-Sign.

1. Assistant Professor Gyn Unit-I, PUMHSW Nawabshah.
2. Assistant Professor, Gyn Unit-III PUMHSW Nawabshah
3. Assistant Professor Gyn Unit-II, PUMHSW Nawabshah
4. Assistant Professor, Gyn Unit-II PUMHSW Nawabshah.
5. Senior Registrar PMCH Nawabshah.

Correspondence: Rozina Memon, Assistant Professor Gyn Unit-I, PUMHSW Nawabshah.

Email:drrozinamemon@yahoo.com

## INTRODUCTION

Twin pregnancies constitute 1-2.5% of all pregnancies. It is very strange to know that tremendous increase of up to 80% has occurred in twin pregnancies after 1970 probably due to the increase in maternal age at the time of conception and after the introduction of assisted reproduction technology. [1]

Twin pregnancies are progressively defenseless against creating perinatal mortality and horribleness from 3 to multiple times when contrasted with singletons. The fundamental factor to decide these dangers of twin pregnancies is placental chorionicity. Mono chorionic twins have higher channels of creating fetal unfavorable result when contrasted with dichorionic.[2] The causes typically are complexities related with mono chorionicity, for example, twin to twin transfusion disorder (TTTS), twin switched blood vessel perfusion disorder (TRAP) and particular intrauterine development limitation (IUGR) which are the aftereffects of vascular anastomosis between the two twins with

single placenta. That is why the diagnosis of chorionicity in twin pregnancies is significant clinically so that a plan should be formulated to supervise monochorionic gestations and to diagnose complications early.[3,4]

It is realized that dizygotic twins have constantly a dichorionic placenta yet the presence of placentas will rely upon the destinations of blastocyst implantations. In distant implantations, two separate placentas can be seen where as reverse is in case of close implantations.[5]

The principal trimester is the better one to recognize the chorionicity as ahead of schedule as 4-5 weeks postmenstrual by utilization of trans vaginal ultrasound. Uterine sacs with thick deciduas can be distinguished as they show up as a sonolucet round structures with a splendidly echogenic edge. By the assistance of chorionic sacs, pregnancy can be diagnosed as monochorionic, dichorionic and trichorionic.[6]

The representation of a solitary sac at 4-5 weeks can't be precluded the chance of monochorionicity in twin pregnancy. By sixth postmenstrual week, the yolk sac and incipient organism can be pictured inside the chorionic sac and the determination can made of single pregnancy or monochorionic twin pregnancy.[7,8]

The ultrasound shows the various signs to evaluate the chorionicity which includes the number of placental masses, gender, and the features of the interwine membrane. The last factor is the most significant and useful in this regard. The remove from the layer from placental surface delineates the particular "lambda" appearance in diachorionic pregnancy and the "T" appearance in monochorionic ones. [9,10]

The rationale of our study is to determine the accuracy of ultrasonographic picture of chorionicity in case of twin pregnancy so that the right decision to be taken for the further procedure to be done.

## Material and Methods:-

This study was conducted in Department of Gyn / Obs Unit 2 at PMCH Nawabshah. This is a cross sectional investigation directed from 1st september 2017 to 30th August 2018. Complete 30 patients were remembered for this investigation. All the patients were conceded from OPD and Emergency focus.

Only pregnant ladies from 20 years to 50 years were selected for the study having the twin pregnancies diagnosed on ultrasound. Patients with single pregnancy were excludd from the criterion. Patients above 50 years were also not the part of our study.

A complete detailed history and clinical examinaton was done in addition to routine blood investigations. All those patients who went for ultrasound for multiple times. Ultrsound findings were noted from the 1st trimester till the reaching of full term. With the help of ultrasound, patients are extracted and findings were recorded and accuracy was determined accordingly.

## RESULTS:-

Total 100 patients were taken for the study. Out of them, 30 were found to have twin pregnancy as is shown below **figure 1**. Age difference was also among patients. Only 7 (23.33%) were aged from 20-30 years whereas 20 (66.6%) had age ranged from 31-45 years and only 3 (10%) were of age from 46 to 50 years as is shown in **table 1** below. Ultrasound findings were not in all patients with multiple pregnancies. Only 20 (66.6%) patients had Lambda sign means dichorionic and 10 (33.3%) had T sign means mono chorionic as is shown below **figure 2**. The membranes were also evaluated on the basis of ultrasound findings. 15 (50%) patients had thin membranes and 15 (50%) had thick membranes. as is shown in below **table 2**. The number of placental masses has more value as compared to location of masses.

Only 8 (26.6%) patients had ultrasound finding of widely separated placentas in dichorionic twins. 3 (10%) patients had two placental masses in monochorionic placenta. A single placenta was found in monochorionic twins in 5 (16.6%) patients and 14 (46.66%) patients had dichorionic twins with fused placentas. **table 3**. Later on the procedure was timely decided on the basis of these ultrasound findings in order to prevent patients from developing complications of twin pregnancies. The sensitivity and specificity of ultrasound findings were 100 and 99.8% respectively All the patients had safe delivery.

**Table 1: Age Difference**

| S.NO: | AGE IN YEARS | n | % |
|---|---|---|---|
| 1 | 20-30 | 07 | 23.3% |
| 2 | 31-40 | 20 | 66.6% |
| 3 | 41-50 | 03 | 10% |
| TOTAL | 20-50 | 30 | 100% |

**Table 2: ULTRASOUND FINDINGS**

| S.NO: | ULTRASOUND FINDINGS | n | % |
|---|---|---|---|
| 1 | Thin membrane | 15 | 50% |
| 2 | Thick membrane | 15 | 50% |
| TOTAL | | 30 | 100% |

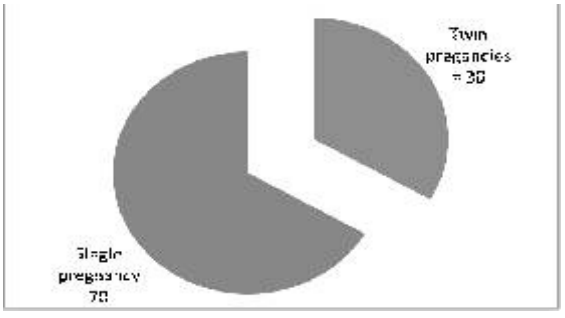


**Fig: 2 Different Signs**

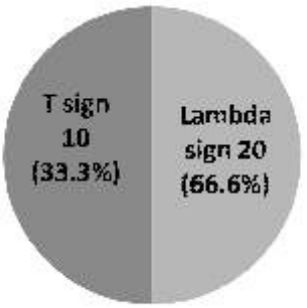


**Table ULTRASOUND FINDINGS**

| S.NO: | ULTRASOUND FINDINGS | n | % |
|---|---|---|---|
| 1 | Separated placenta in dichorioinc twins | 8 | 26.6% |
| 2 | Two separate placental masses in monochorionic | 3 | 10% |
| 3 | A single placenta in monochorionic twins | 5 | 16.6% |
| 4 | Dichorionic twins with fused placenta | 14 | 46.6% |
| TOTAL | | 30 | 100% |

## DISCUSSION

For the proper management of twin pregnancies, the pivotal step is the prenatal determination of chorionicity. It helps a lot to assess for the risks, genetic counseling, the executives of TTTS and particular IUGR, demise of one twin and grading fetal peculiarity. Normally it is done in 1sr trimester when exactness could be up to 100%.[11] Various studies have confirmed the

ultrasonographic finding of Lambda sign and T sign which are predicting the chorionicity. Same signs are also found on ultrasonography findings of our patients. The sensitivity and specificity report in our study at this stage was 98-100% whereas in other studies these were reported from 89.9% to 100% and from 97.4% to 99.8% respectively.[12] it has been reported a sensitivity of 100% but the gestational age at that time was at 7–14 and 5–14 weeks respectively. This showed good results when patients were examined in early stages of pregnancy (below 10 weeks) when the sonographic diagnosis relies on the number of the chorionic sacs rather than the T/lambda sign.[13]

Lee et al. study finished up four sex grating twin sets with monochorionic placentas. Carroll et al. distinctively surveyed the exactness of T/lambda sign and film thickness. His decision was that the film thickness improved affectability by 1.3%.[14] The biggest arrangement is by D'Addario V et al [17] they analyzed 613 twin pregnancies with transabdominal ultrasound at the hour of the normal first trimester screening (11–14 weeks): affectability and explicitness were 100% and 99.8% separately. The main mistake happened in a pregnancy entangled by a little hematoma running along the site of the film insertion.[15]

Collective nine studies done on 2292 twins were analysed and chorionicity was diagnosed by determination of lambda sign. Monochorionic was labeled to those having single placental mass in the absence of lambda sign and dichorionic with single placental mass with lambda sign or placentas were not fused to each other. Placental histology was also taken to confirm the chorionicity. Sensitivity of lambda sign as predictor of dichorionicity was 99% and specificity was 95%. Sensitivity in the absence of lambda sign was 95%. Same findings were observed in our study on ultrasound but sensitivity and specificity was a little bit higher than the other studies.[16]

## Conclusion

In short, it is concluded that diagnostic accuracy of ultrasonographic findings in twin pregnancies are accurate and authentic in diagnosing the chorionicity of twin pregnancies.

## REFERENCES:-


1. Witchel SF. Disorders of sex development. Best Pract. Res. Clin. Obstet. Gynaecol. 2018;48:90–102.
2. El-Maouche D, Arlt W, Merke DP. Congenital adrenal hyperplasia. Lancet. 2017;390:2194–2210.
3. Warsof SL, Larion S, Abuhamad AZ. Overview of the impact of noninvasive prenatal testing on diagnostic procedures. Prenat. Diagn. 2015;35:972–979.
4. Devaney SA, Palomaki GE, Scott JA, Bianchi DW. Noninvasive fetal sex determination using cell-free fetal DNA: a systematic review and meta-analysis. JAMA. 2011;306:627–636.
5. Grendar M, Loderer D, Lasabova Z, Danko J. A comment on "Comparing methods for fetal fraction determination and quality control of NIPT samples" Prenat. Diagn. 2017;37:1265.
6. Bevilacqua E, et al. Performance of screening for aneuploidies by cell-free DNA analysis of maternal blood in twin pregnancies. Ultrasound Obstet. Gynecol. 2015;45:61–66.
7. Ananth CV, Chauhan SP. Epidemiology of twinning in developed countries. Semin. Perinatol. 2012;36:156–161.
8. Fosler L, et al. Aneuploidy screening by non-invasive prenatal testing in twin pregnancy. Ultrasound Obstet. Gynecol. 2017;49:470–477

9. Taylor-Phillips S, et al. Accuracy of non-invasive prenatal testing using cell-free DNA for detection of Down, Edwards and Patau syndromes: a systematic review and meta-analysis. BMJ Open. 2016;6:400-402
10. Brison N, et al. Predicting fetoplacental chromosomal mosaicism during non-invasive prenatal testing. Prenat. Diagn. 2018;38:258–266.
11. Wang Y, et al. Maternal mosaicism is a significant contributor to discordant sex chromosomal aneuploidies associated with noninvasive prenatal testing. Clin. Chem. 2014;60:251–259.
12. Brison N, et al. Accuracy and clinical value of maternal incidental findings during noninvasive prenatal testing for fetal aneuploidies. Genet. Med. 2017;19:306–313.
13. Yair J. Blumenfeld, Valirijaamomiroya, Dwight J Rouse et al. Accuracy of SonographicChorionicity Classification in Twin Gestation J Ultrasound Med 2014.33(12);2187-2192.
14. Lee YM, Cleary-Goldman J, Thaker HM, Simpson LL. Antenatal sonographic prediction of twin chorionicity. Am J Obstet Gynecol. 2006;195:863–867.
15. Senat MV, Quarello E, Levaillant JM, Buonumano A, Boulvain M, Frydman R. Determining chorionicity in twin gestations: three-dimensional (3D) multiplanarsonographic measurement of intra-amniotic membrane thickness. Ultrasound Obstet Gynecol. 2006;28:665–669.
16. Paladini D. Sonography in obese and overweight pregnant women: clinical, medicolegal and technical issues. Ultrasound Obstet Gynecol. 2009;33:720–729.
17. D'Addario V , Rossi C , Diagnosis of chorionicity: The role of ultrasound. d i a g n p r e n a t . 2 0 1 4;2 5(2):58–64.