



A STUDY ON STRUCTURAL ANOMALIES OF PLACENTA IN FULL TERM PATURATIONS.

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ABSTRACT

The placenta is a disc shaped compact mass of vascular tissue. It is like a flat circular disc with diameter of 15 – 20 cm. It weighs about 500 grams. The placenta is the only organ that develops from two different individuals that is foetus and mother. It presents two surfaces meternal and foetal. The meternal surface presents a smooth shining surface, at the center of which umbilical card is attached. Placenta along with umbelical cord act as a transport system between mother and foetus and is a foetometernal organ that sustains the developing fetus with in the uterine wall of mother up to complete development for 36 – 38 weeks of gestation. The placenta provide nutrition for the developing fetus and remove the foetal waste. Ultrasound examination of placenta is important part of obstetrical evaluation of pregnancy. Though it is a reproductive tissue, it functions as an endocrine gland. It acts not only a structure of Anchor and nutritive bridge, but as well as respiratory and endocrine organ. Study about the structure and anomalous developmental patterns of placenta is very important for gynecologists and practitioners. The study the abnormal types of placentae, the variations in the attachment of umbilical cord gives essential knowledge for practicing clinicians and gynecologists which is useful for understanding pathological pregnancies such as preeclampsia, Intrauterine growth restriction and Diabetes Mellitus. **Material and Method:** Forty separated human placentae were procured from Obstetrics and Gynaecology Department of Government General Hospital, Guntur Medical College Guntur. Kept them in 40% formaldehyde solution for hardening. The specimens numbered 1-40, Membranes cleared, observed the attachments of umbilical cord, meternal&foetal surfaces observed and anomalies noted. **Results:** According to attachment of umbilical cord (a) central attachment: (17), (b) paracentral attachment: (18), (c) Marginal attachment (Battle dore): (5). 2. According to Number of arteries and veins: The specimens with 2 umbelical arteries and 1 umbelical vein: (38). 2. Absence of one umbelical artery in 2 specimens. 3. Abnormal Placenta placenta succenturiata (1), Normal placentae: (38), Bilobed Placenta: (2). **Conclusion:** The present study showing the central attachment of umbilical cord in 17 specimens out of 40 = 42.5%; paracentral attachment in 18 specimens out of 40 i.e., 45%; Marginal attachment in 5 specimens out of 40 i.e, 12.5%. The umbilical arteries are 2 in number in 38 specimens = 95%. The single umbilical artery was in 2 specimens = 5% only. Regarding abnormal placentae: 1 specimens was placenta succerturiata = 2.5%, 2 specimens were Bidiscoidal and it is 5%.

KEYWORDS: Placenta, Anomalies, Disc Shape, Umbelical artery & Umbelical vein.

INTRODUCTION

The placenta is a highly vascular disc like structure by which the foetus is attached to its mother's uterine wall. The placenta consist of two components (a) meternal component develops from endometrium of the uterus (b) the foetal component develops from chorion. The placenta provides exchange of gases, nutrients and metabolic waste products between mother and embryo (Ref-1). All eutherian mammals possess placenta. Human placenta is discoid chorio – deciduate organ which connects the foetus with the uterine wall of mother. At full term the placenta is disc like and presents

after separation from the uterine wall foetal and meternal surfaces and peripheral margin. Foetal surface is smooth, covered by amnion and presents the attachment of the umbilical cord close to its centre. Beneath the amnion umbilical vessels radiate from the cord. Sometimes the extra embryonic part of the yolksac, known as the umbilical vesicle, is found beneath the foetal surface close to the umbilical cord and is connected by a fibrous remnant of the vitello intestinal duct. Meternal surface is rough and irregular and is mapped out into 15 – 30 polygonal areas as known as cotyledons which are limited by fissures. Each fissure is occupied by a placental

septum. Peripheral margin is continuous with the foetal membrane which consist form outside inwards of used deciduoparietalis and capsularis, chorion and amnion. The placenta consists of chorionic plate on the foetal side. Basal plate on the maternal side, stem villi extending between the plates and intervillous space between the stem villi filled with the maternal blood. The placenta classified I. According to the attachment of the umbilical cord (a) Battledore placenta. Umbilical Cord attached close to the margin of placenta (b) Velamentous Placenta – Cord fails to reach the placenta and is attached to the foetal membrane close to the periphery of the organ. II. According to the site of implantation (a) placenta previa: attachment of placenta to the lower uterine segment lapping the internal OS (b) Accessory placenta: A small accessory lobe of placenta is connected to the main mass by foetal membrane and is known as placenta succenturiata. III. According to the shape (a) lobed placenta consist two (or) more lobes, (b) Placenta membranacea: The placenta is diffuse and thin, and the villi project from the entire blastocyst cavity (c) circumvallate placenta in which the peripheral margin of the placenta is surrounded by a sulcus and is overlapped by a circular fold of decidua. Iv. According to distribution of umbilical arteries (a) Disperse type the umbilical arteries divide in dichotomous manner and undergo successive reduction in caliber (b) Magistraltype: The arteries maintain almost a uniform caliber upto the periphery of the placenta and give off number of smaller side branches. (Ref-2). Instead of being shaped like a disc the placenta may be. (a) bidiscoidal: consist of two discs, (b) lobed: which divided in to lobes (c) diffuse: the chorionic villi persist all round the blastocyst: so placenta is thin does not assume the shape of disc (d) placenta succenturiata: a small part of placenta separated from the rest of main part (e) fenestrated: a hole is in the disc of placenta (f) circumvallate: the peripheral edge of placenta covered by a circular fold of decidua. The umbilical cord attachment instead of centre it may be (a) marginal: Battledore placenta, (b) furcated: blood vessels divide before reaching the placenta (c) velamentous insertion: the blood vessels attached to amnion and ramify before reaching placenta (Ref – 3). Spanner (1935-1936) described on arrangement of vessels that the vessels within the substance of the placenta as being vertical to the foetal as well as to the maternal surface of the organ (Ref-4). Bacsich and Smout (1938) studied the foetalvessles of the human placenta and they divided the placenta into three groups namely disperse, magistral and border line according to the patterns made by the branches of arteries (Ref-5). Zeek and Assli (1952) has commented on the absence of foetal vessels which might concerned in the nutrition of placenta and they wondered if the placenta is nourished by the maternal circulation. Banirschke and Bourne (1950) and Fairman (1960) described a very association of the absence of the umbilical artery with congenital abnormalities and the authors observed simultaneous existence of hydramnos in such cases (Ref-6). Benirschke (1962) observed a very

high incidence (7%) of absence of umbilical artery in multiple pregnancies (7). Hathout (1964) describe its association with still births. (Ref-8). A significant association of absence of one umbilical artery with magistral pattern and also with developmental defects, hydromnios and multiple pregnancies has been mentioned by Bhargava, chakravarthy and Raja (1971) (Ref 9 & Ref-10) So many researchers for the study of placenta observed abnormal structure of placenta (or) the vasculature is related to abnormal development foetus and it may cause still births & hydromnios. The abnormal patterns of development of placentae are most common with multiple pregnancies.

MATERIALS AND METHODS

The human placentae are collected from the Obstetrics and Gynecology Department of Govt General Hospital, Guntur after obtaining the prior permission from the Head of the Department obst & Gynaecology for a period of 10 days in 2015 December. They were cleaned membranes trimmed, kept in 40% formaldehyde lotion. After 3 days they get hardened, took them for study. Surfaces observed, attachment of cord, number of vessels in the cord, distribution of vessels observed. The abnormalities in the cord attachment and structural abnormalities noted and recorded.

DISCUSSION

Vishram Sigh Text book of Embryology described the classification of placenta. 1. According to attachment of cord, 2 types Battle dore and velamentous, 2. According to the site of implantation 2 types, placenta previa and accessory placenta. 3. According to distribution of umbilical arteries disperse & Magistral types. The present study out of 40 placentae normal disc shaped placentae 38. According to attachment of umbilical cord the author explained 2 types (1) Battledore type (or) Marginal attachment of cord (2) Velamentous type where umbilical vessels fail to reach to foetal surface and attached to foetal membranes close to the periphery of organ. The present study observed (1) central attachment of cord in 17 specimens (2) paracentral attachment in 18 specimens and (3) Marginal attachment in 5 specimens out of 40 placentae. According to shape: (a) Lobed placenta two (or) morelobes (b) Placenta Membranace. The present study out of 40, 38 specimens were with single lobe & 2 specimens showed bi-lobed pattern. Diffuse variety not observed. Banirschke and Bourne and Fairman described first that the absence of umbilical artery association with congenital abnormalities. Banirschke reported the incidence of absence of umbilical artery in multiple pregnancies was 7%. In the present study the incidence is 5% i.e, the absence of one umbilical artery observed in 2 specimens out of 40 placentae.

RESULTS

1) Out of 40 placentae – 38 are disc shaped.

2) Out of 40 Placentae: According to attachment of umbilical cord. 17 are central, 18 are paracentral, 5 are marginal.

3) Out of 40 placentae: According to the shape:, 38 were with single lobe, 2 specimens were with two lobes.

4) Out of 40 placentae: According to number of umbilical arteries: 38 were with 2 UA & 1UV, 2 Specimens with single UA & UV.

5) Out of 40 placentae: According to attachment of vessels: 39 Specimens to the placenta proper 1 specimen to foetal membrane (Placentae Succenturiata).

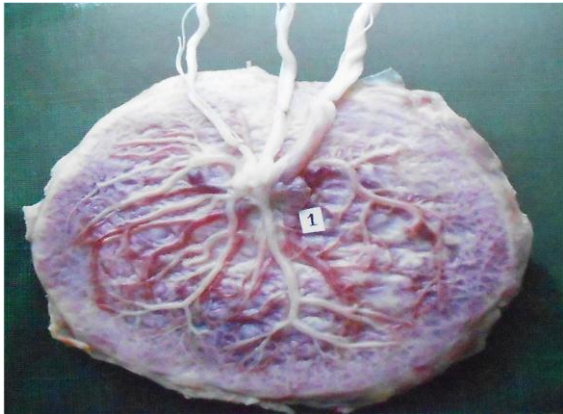


Fig - I :- Placenta showing foetal surface & central attachment of cord



Fig -2:- Placenta showing foetal surface & paracentral attachment of cord



Fig - 3:- Placenta with marginal attachment of Cord (Battledore palcenta)



Fig-4:- Placenta with attachment of foetal vessels to foetal membranes (Placenta Succenturiata)



Fig-5:- Placenta Bidiscoidal (or) Bilobed Placenta

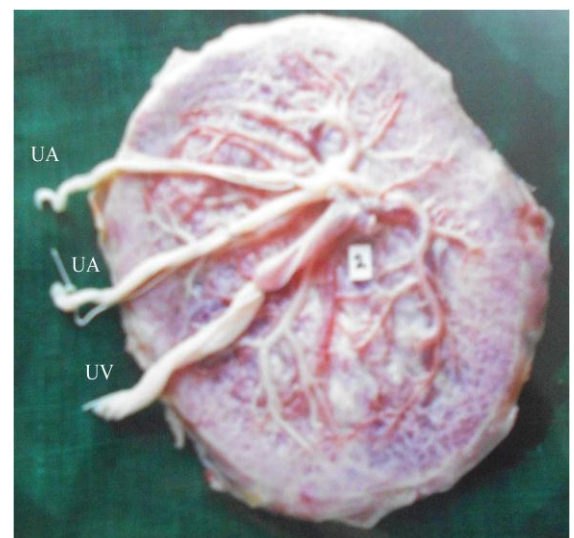


Fig-6:- Placenta with 2 UA & 1 UV (Normal)

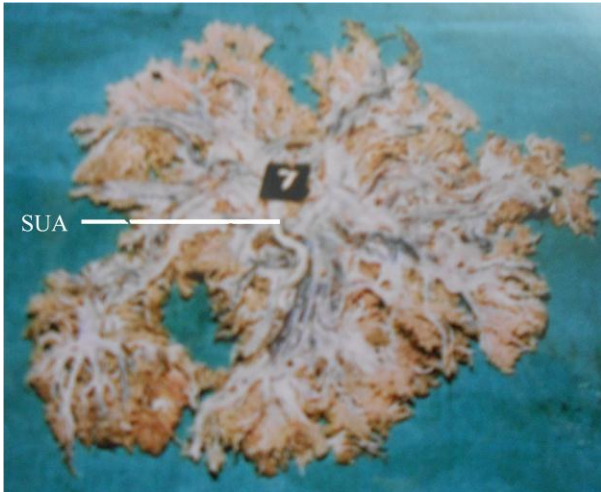


Fig-7:- Placenta with single UA & 1 UV

CONCLUSION

All the placentae are disc shaped. Maximum numbered were with central & para central attachment of cord and less number with marginal attachment. Absence of 1 UA – 5%.

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