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Studying the Histomorphology of the Umbilical Cord Vessels with the Neonatal Profile: Experience at our Centre

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The umbilical cord is an important vascular appendage in the fetal well-being. Pre-natal and post-natal examination of the placenta form cornerstones for studying the anomalies of umbilical cord and predicting the fetal outcome. The prenatal Ultrasonography forms an indispensable part in the antenatal follow up of all pregnant ladies. However, unbooked pregnancies, loss to follow up and inadequate antenatal workup imposts a huge diagnostic challenge on the pathologist while studying the histomorphology of the placenta. Normally, the umbilical cord of the fetus contains three vessels, one umbilical vein and two arteries

Of the 50 placentas studied over a period of 6 months in our hospital, 5 cases showed abnormalities of umbilical cord, four cases showing supernumerary vessels and one case with single umbilical artery. All the five cases were unbooked cases and no prenatal USG was done. The diagnosis of umbilical cord anomalies was ascertained on gross examination of the cord followed by microscopy for confirmation. The case showing a single umbilical artery was followed up to rule out associated anomalies. USG Abdomen revealed a single Kidney while Echocardiography and screening for chromosomal anomalies were advised.

The most leading cause of supernumerary vessels of the umbilical cord is the persistent right UV. This anomaly is commonly seen to be associated with congenital anomalies like cardiac abnormalities, duodenal atresia, imperforate anus and bowel malrotation.

Single umbilical artery is seen in 1% of term deliveries, usually diagnosed prenatally by USG and followed up throughout pregnancy. There is an association between single umbilical artery with a gamut of congenital anomalies. Infants with no detectable abnormalities at birth may have underlying subtle renal anomalies, like unilateral renal agenesis, pelvic kidney and fused kidneys.

To summarize, the close association of various congenital malformations with abnormalities of the umbilical cord makes it imperative that a Prenatal Ultrasonography and Colour Doppler may be done as a part of prenatal work up of all antenatal cases.

However, in the absence of prenatal USG, studying the histomorphology of umbilical cord becomes quintessential for a pathologist. Therefore, a careful gross examination of the cord with proper sectioning from both the maternal and fetal ends of the cord helps in early screening of such neonates who are at an increased risk of various congenital anomalies, spanning multiple organ systems. The early diagnosis followed up with an early and comprehensive workup of such neonates can restrict the morbidity and mortality to a great extent.