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## Case Report

# The missing umbilical artery – A case report

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### ABSTRACT

Single umbilical artery (SUA) is a condition where one umbilical artery exists. Normally, the umbilical artery contains two umbilical artery and one umbilical vein. The incidence of SUA varies from 0.2% to 0.8%. We present a case of SUA in a term baby with birth weight of 1.7kg delivered by a 28-year-old mother. SUA is a condition which must be kept in mind during histopathological examination since it helps in improving the neonatal and maternal care.

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## 1. Introduction

The umbilical cord is an important structure which plays a vital role in the connection between the fetus and the placenta. Single umbilical artery (SUA) is a condition in which instead of two umbilical arteries in the cord, single umbilical artery remains. The incidence of single umbilical artery varies from 0.2% to 0.87% and the incidence increases 3-4 times in multiple gestation.<sup>1</sup> Isolated umbilical artery is the condition in which the newborn has single umbilical artery in the absence of congenital anomalies. Many studies are suggesting the outcomes of newborn which involve abnormalities in renal, cardiac, skeletal or other systems in newborn with isolated single umbilical artery and SUA. There is also increased incidence of prematurity and intrauterine growth retardation.<sup>2</sup> We present a case of single umbilical artery in an IUGR baby.

## 2. Case Report

This case report was written in view of rarity of presentation. Antenatal ultrasound of a 28 yr old mother at 27 weeks gestation shows a singleton fetus, normal liquor and an estimated fetal weight of 1.7 kg, placenta was attached in the upper segment and there is no evidence of congenital anomalies. The mother had pregnancy induced hypertension and she had a history of abortion. She delivered a baby of 36 weeks gestation by cesarean section. The birth weight of the baby was 1.8kg. The baby cried immediately after birth and cord was clamped and cut. The placenta along with umbilical cord and membranes was sent for histopathological examination. Grossly, the placenta weighed 300gm and cotyledons were preserved on the maternal surface of the placental disc. Membranes were translucent. The insertion of the umbilical cord was paracentral and cut surface of the umbilical cord showed one umbilical artery and one umbilical vein. (Figure 1) Serial sectioning of the placenta showed infarcted areas. Confirmation of single umbilical artery was done microscopically. (Figure 2)

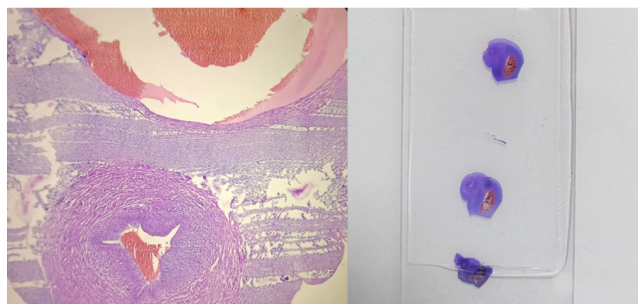
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General and systemic examination of the baby showed no dysmorphic features or congenital anomalies. Abdomen and echocardiography were done which showed no anomalies. Baby was feeding well and on regular follow up.



**Fig. 1:** Placenta specimen: Cut surface of the umbilical cord showing two vessels.



**Fig. 2:** Microphotograph showing single umbilical artery and one umbilical vein. (a.Hematoxylin and eosin,4X). Two vessel cord on the slide. (b.Hematoxylin and eosin)

### 3. Discussion

The development of umbilical cord starts around 3<sup>rd</sup> week and it is completely formed by 7<sup>th</sup> week of gestation.<sup>3</sup> The normal umbilical cord contains two umbilical arteries and one umbilical vein. The umbilical artery carries the deoxygenated blood from the fetus to the placenta while the umbilical vein carries the oxygenated blood from the placenta to the fetus.<sup>4</sup>

There are three theories to explain the development of single umbilical artery. They are primary agenesis of one umbilical artery, previously normal umbilical artery undergoes secondary atrophy or atresia, persistence of the original allantoic artery.<sup>5</sup>

Mothers with maternal diabetes mellitus, toxemia of pregnancy, antepartum hemorrhage, polyhydramnios and

oligohydramnios are at increased risk of having fetus with SUA. Increase in maternal age, multipara, habitual smoking, maternal use of antiepileptics such as phenytoin are associated with occurrence of SUA. They also have increased risk of chromosomal abnormalities and congenital malformations in fetus.<sup>5,6</sup> In our case the mother had pregnancy induced hypertension.

The common congenital anomalies associated with SUA is renal system followed by cardiovascular system and musculoskeletal system.<sup>7</sup> Screening USG and Echo was normal in our case.

### 4. Conclusion

The diagnosis of single umbilical artery mandates the appropriate investigations to be carried out for congenital anomalies and chromosomal abnormalities. Every placenta sent for histopathological examination must be properly examined and especially the umbilical cord to look for the presence of single umbilical artery. This helps in improving the neonatal and maternal care.

### 5. Authors' Contributions

P.P. and U.B provided gross and histopathological opinion, collected the data, collected the reference, and typed the article. V.P and S.S collected and compiled the data.

### 6. Acknowledgments

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### 7. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

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