SUMMARY AND CONCLUSION
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On the whole 60 expectant mothers were selected and information on the socio economic background, haemoglobin level, food habits, maternal history, obstetric performance and pregnancy outcome details were collected.

The present study involved use of 60 freshly collected placenta from labour room and also from the operation theatre after caesarian section. All the placentas are collected from labour room are weighing from 440 gm to 520 gm are utilized for present study. Before collection placenta were carefully examined for other gross abnormalities like, marginal insertion of umbilical cord, infarction on the maternal surface of the placenta, accessory lobes and abnormal placenta are not selected for the present study.

These specimens, before injection of cast material thoroughly rinsed with normal saline to remove any blood clots. The size, shape, surface area, weight of placentas were noted along with the inspection of marginal veins for any thrombus; the number of cotyledons, condition of membranes, presence of infarction, calcification and site of insertion of umbilical cord were noted.

The present study employed the use of cellulose acetate butyrate (CAB) granules. We used 50 % solution of the Cellulose acetate butyrate for the purpose of injection. The syringe was filled with the red solution and fitted into the canula of umbilical artery and blue solution in the umbilical vein. The plastic mixture was freshly prepared and cooled prior to instillation, thus delaying polymerization for approximately 10 min. Corrosion was performed over several days by alternating immersion of the plastic-instilled tissue in 40% KOH and distilled water, both at 60 °C.
Once the washing was complete the vessels were displayed. Finally, the casts were examined to observe the branching pattern of the umbilical vessels.

The study confirms the findings of earlier workers that the mode of termination and branching pattern of umbilical artery is highly variable. These variations are of foremost importance as regards to the feto-maternal circulation.

**Morphological study confirms following findings:**

- Average baby weight is 2.735 kg with SD of 0.183.
- Average weight of the placenta is 474.1 gm with SD of 17.634.
- Average placental area is 264.4 sq. cm. with SD of 21.669.
- Average placental volume is 578.917 cm³ with SD of 23.326.
- Average ratio of feto-placental weight is 5.763 with SD of 0.220.
- Average number of cotyledons in single placenta is 18.967 with SD of 1.765.
- Marginal cord attachment found in 8.33 % placentas.

**Umbilical vessels**

- There are two umbilical arteries and one umbilical vein present in umbilical cords.
- Hyrtl anastomosis is present between the umbilical arteries in the vicinity of the umbilical cord insertion into the placenta.
- The chorionic vasculature exhibits a combination of the dichotomous and monopodial patterns.
- For a central cord insertion the dichotomous pattern was dominant, whereas for a marginal cord insertion the monopodial pattern was dominant.
- In the centrally inserted cord the vessels that branch off the umbilical arteries traverse along half of the placenta diameter.
whereas in an intermediate insertion three of those branches traverse along two thirds of the diameter and rest of two along only about one third of the chorionic plate diameter.

The chorionic vessels branch through 6-8 generations from the cord insertion towards the margins of the chorionic plate.

The vein bifurcated twice immediately after insertion into the placenta.

No extra-placental anastomoses found between umbilical artery and umbilical vein.

Adjacent segment shows anastomoses at arteriole level below the placental septum.

Cotyledons are merely forming vascular segments of the placenta.

Region of the placental septa which fail to extend up to fetal membrane is the only avascular plane in respect to umbilical vessels.

The present 3-dimentional study gives better idea of feto-maternal exchange to the clinicians.