

STRUCTURAL AND FUNCTIONAL PARTICULARITIES OF THE UMBILICAL CORD IN PERINATAL OUTCOMES

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Introduction

Umbilical cord (UC) has individual structural and functional particularities, which can influence the fetal condition.

Purpose

To study the structural and functional particularities of the UC and to assess its role in perinatal outcomes.

Material and methods

A prospective cohort study of 190 patients were has been conducted. The patients were divided in group L1 with UC pathology and L0 without diseases. Clinical and paraclinical examinations were performed and a morphological UC exam was done. The data was statistically processed (SPSS 23 and SAS 9.4 programs); the statistical significance was 0.05.

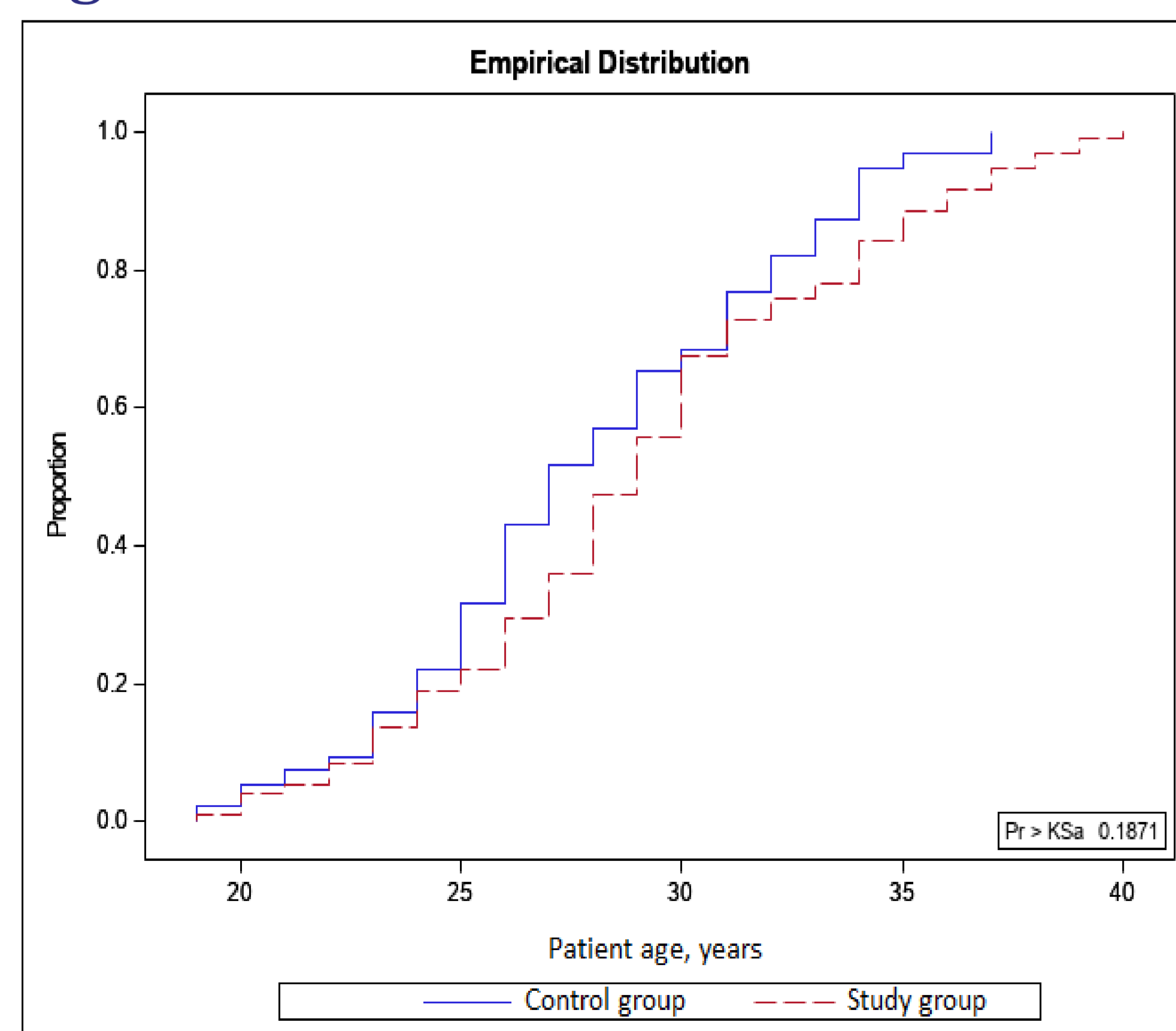
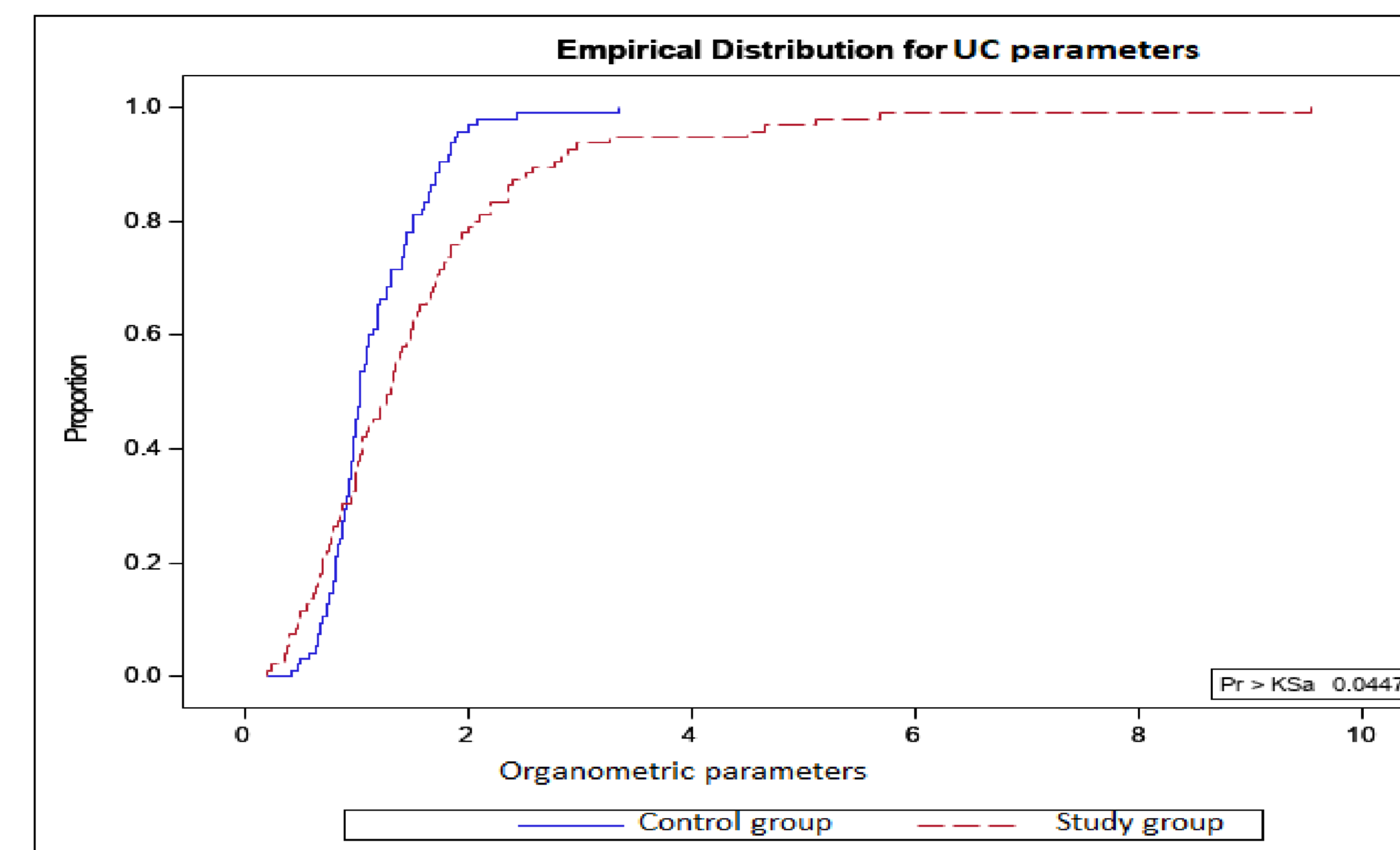


Fig. 2. Distribution of groups according to age criteria (years)

Results

The age of the patients in the control group L0 was between 19-37 years old with the average of 27.86 ± 4.36 and in group L1 – between 19-40 years old with an average of 29.09 ± 4.84 (fig. 2). No demographic differences were detected between both groups.



Different structural and functional UC anomalies were found to be significantly associated with maternal outcomes: such as woman's obstetrical history, somatic diseases, TORCH-infection and perinatal outcomes ($p < 0.05$) (fig. 3).

Fig. 3. Distribution of groups according to UC parameters

The UC pathology were associated with intrauterine growth restriction ($p < 0.0001$), fetal distress and hypoxia, which required the neonatal intensive care ($p < 0.0001$).

Histological examination revealed structural abnormalities of the amnio-chorionic plate and cell-matrix of the Wharton's jelly ($p < 0.05$) (fig. 4,5).

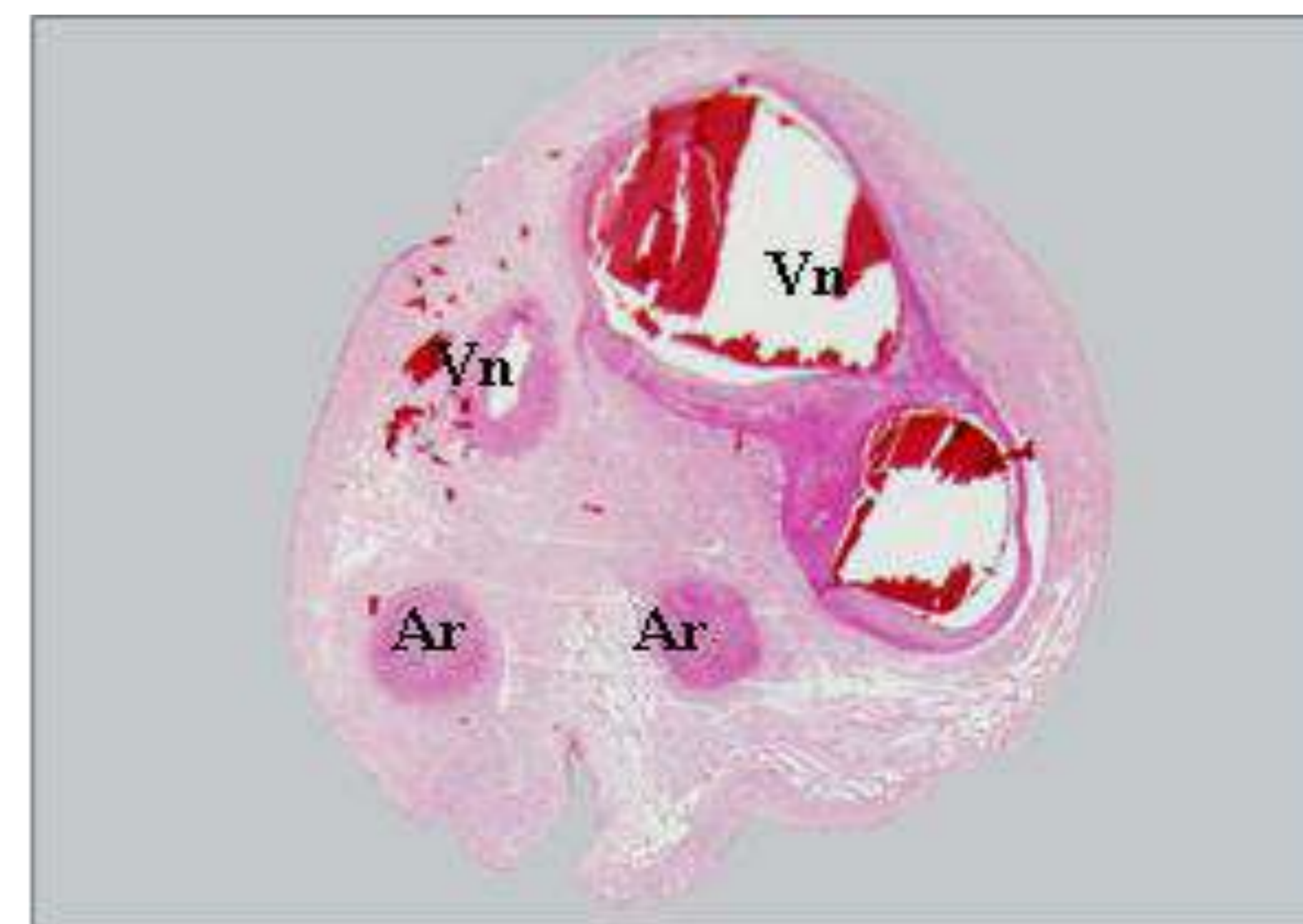


Fig. 4. Umbilical doubled vein, with scalloped edge, dysplasia and varicose of one branch, variable density of the Wharton's jelly ($\times 6$, H&E).

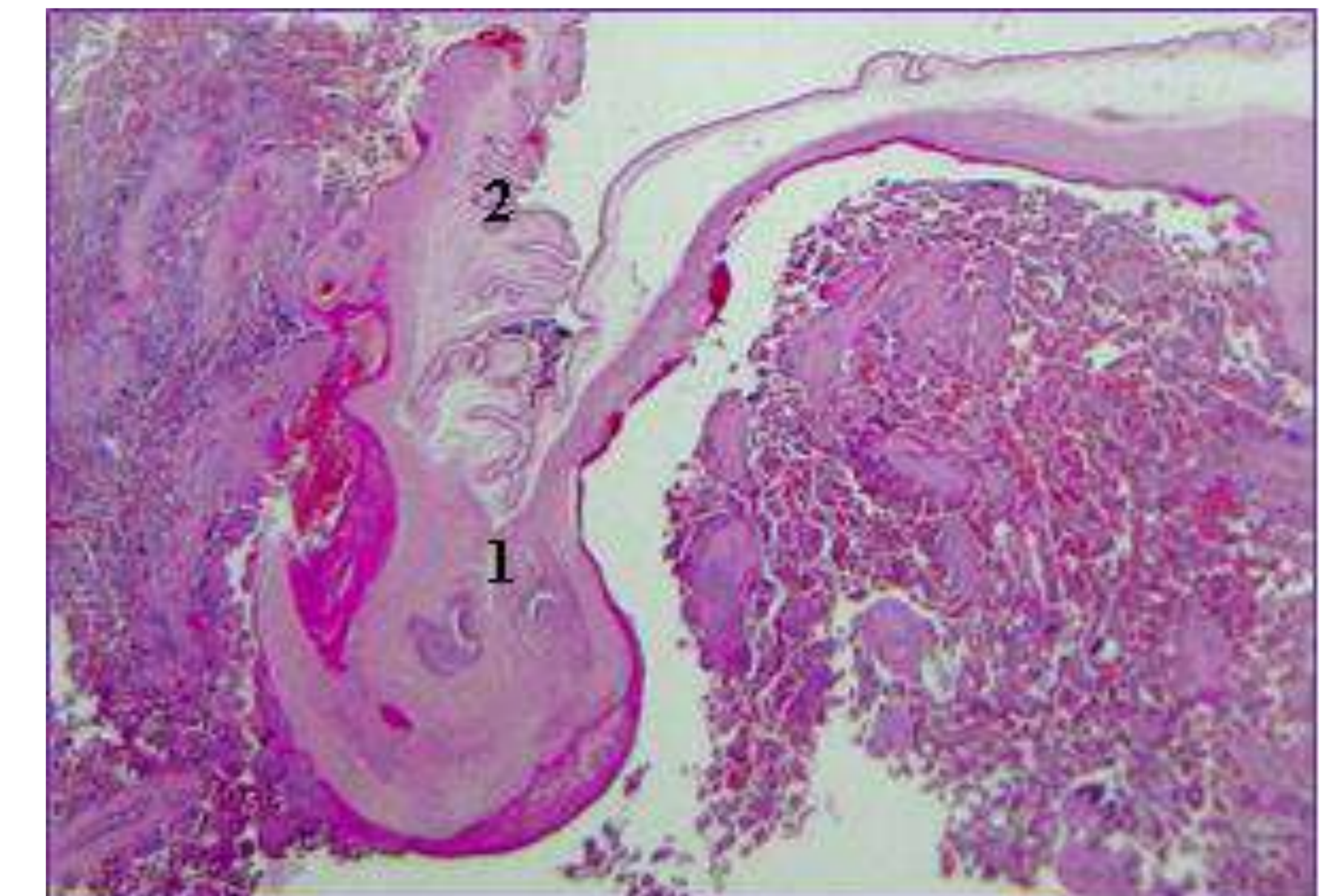


Fig. 5. Amniochorionic region, connective tissue deficiency with folding of the (1) amnion (2) amnio-chorionic plate ($\times 25$, H&E).

Conclusions

The study confirmed the correlation between UC structural and functional particularities and a high risk of perinatal outcomes.