Objective To establish the visualization rates of placental cord insertion in the first and second trimester of pregnancy, to study its evolving pattern and the cord insertion related perinatal complications.

Methods We performed a single-center, prospective cohort study. We enrolled 2500 unselected singleton pregnancies who underwent late first trimester (FT) ultrasound scan, having a complete follow-up in our unit. We excluded pregnancies having early ultrasound markers for abnormal invasive placenta. These cases were rescanned between 20 and 23 weeks of amenorrhea and the location of the placental cord insertion was reassessed.

Results In the FT, 94.9% (n = 2329) of placental cord insertions were central/paracentral (group A), and 5% of cases (n = 123) had a peripheral insertion (group B). In the second trimester (ST) the overall visualization rate was lower than in the FT (86% versus 98%; p < 0.001). The A group has evolved as follows: 2003 cases maintained a central/paracentral insertion; 18 became peripheral; 4 cases developed a bipartite placenta, with the cord insertion located between the two lobes; no case developed a velamentous insertion. The higher risk group B has evolved towards a ST central/paracentral insertion in 63 cases, maintained a peripheral insertion (n = 38 cases), and in 4 cases a velamentous insertion was diagnosed. In the very high risk group of 8 cases we had 3 cases of intrauterine growth restriction, and 2 emergency C-sections. Severe complications related to cord accidents were absent, most probably due to tailored prenatal care.

Conclusion The placental cord insertion is better visualized in the late FT than in the ST.

Our results confirm the intrauterine dynamics of the placenta.

The prenatal assessment may be protective, increasing the awareness of attending physicians.