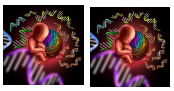
CLARA ANGELA FOUNDATION

Ultrasound and doppler examination in multiple pregnancies



Dear mother-to-be,

During pregnancy, as in the case of singletons, multiple births are also monitored by means of repeated ultrasound examinations with the aim of detecting fetal malformations, developmental and growth disorders as early as possible. This improves monitoring of the infants and birth planning in terms of location, timing, and mode of delivery. In certain situations, invasive diagnostic measures (link), prenatal life-saving interventions or, in rare cases of severe anomalies, even abortion of one or both children may be considered (§ 218 a paragraph 2 StGB).

In multiples, ultrasound should be used early to determine placental chorionicity and amnionicity:

In **monochorionic multiples**, the children share a common placenta. In most cases there is only a thin partition between the children, the amnion. This may result in unequal blood exchange with complications via placental vascular connections:

1) Directed chronic transfusion from one twin (donor) to the other twin (acceptor) leads to chronic feto-fetal transfusion syndrome (FFTS; engl. **"twin-to-twin transfusion syndrome" (TTTS)**, a potentially life-threatening condition that occurs in the second trimester and can nowadays be successfully treated before birth by fetoscopically guided laser coagulation of the connecting vessels on the placenta.

2) Rarer and usually occurring after the 24th week is the **"twin anemia-polycythemia sequence" (TAPS)**, which results in one twin having too few red blood cells (anemia) the other too many (polycythemia).

3) The proportions of the placenta between the multiples may be unequally distributed, so that one fet develops (severe) growth restriction while the other develops in time; this clinical picture is called **"selective intrauterine growth restriction"**. Mixed forms of these clinical pictures may be present in some of the affected multiples.

4) Rare special forms are **monochorial monoamniotic multiples**; in this case there is no partition between the children at all, which can lead to further cord complications.

5) In all multiple gravidities, there is an increased risk of preterm birth. Therefore, measurement of cervical length should also be done at every examination.

In **dichorial multiples**, the partitions are 4-layered and there is no exchange of blood between the children. However, as in all pregnancies, placental insufficiency may occur, especially in the third trimester, resulting in growth retardation of one or even all children. Frequently, changes are found in the fetal placental vessels, leading to conspicuous Doppler findings in the umbilical artery. In the advanced stage of placental insufficiency, fetal oxygen deficiency can be detected by Doppler measurements. oxygen deficiency can be detected with the help of Doppler measurements. Doppler examinations of the middle cerebral artery and the ductus venosus can prompt inpatient admission for more intensive monitoring or delivery if fetal

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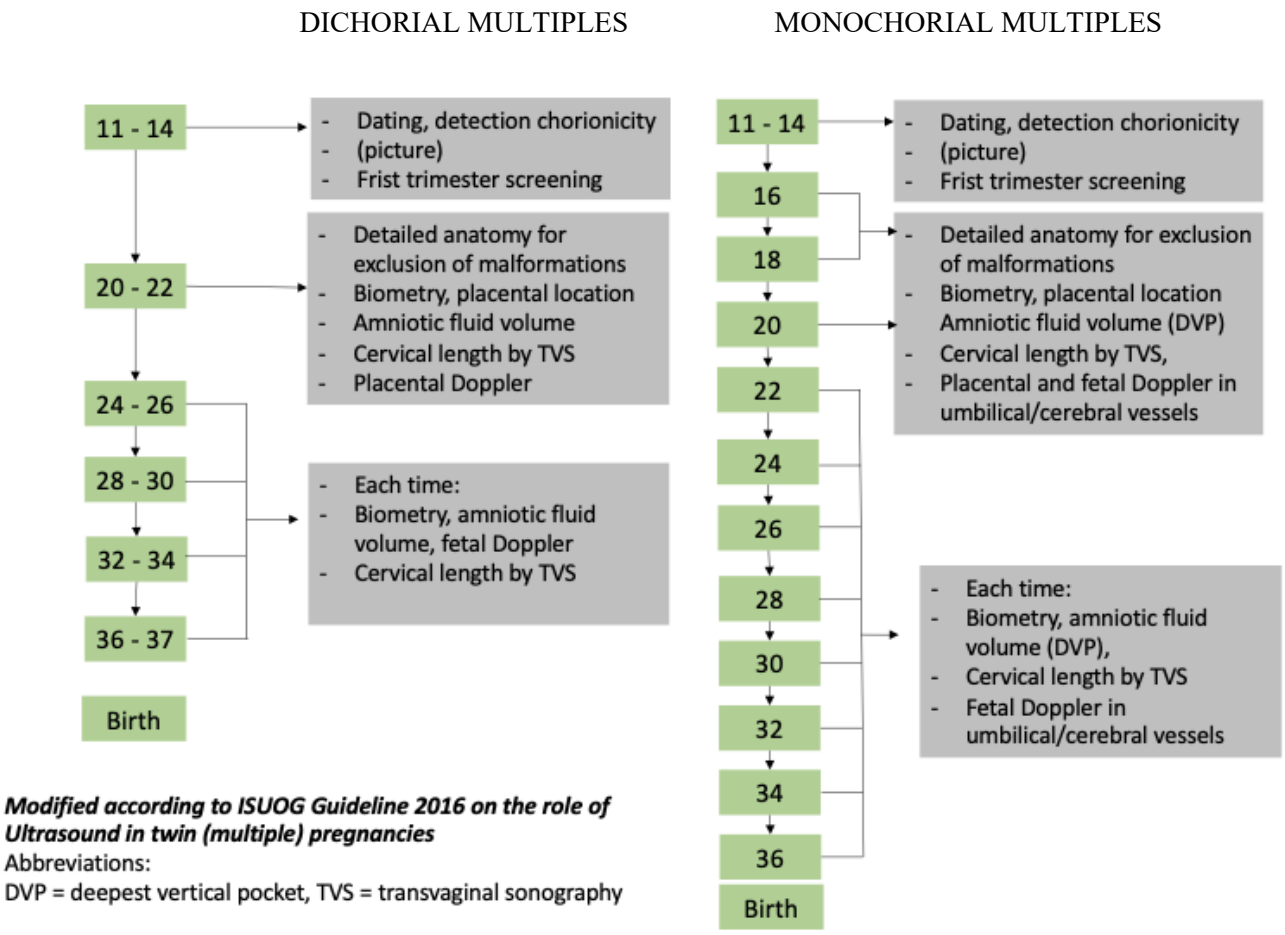
compromise is suspected. Also, in dichorial multiples, cervical length should be measured regularly from the 16th week of gestation.

According to national and international guidelines, ultrasound and Doppler examinations are therefore performed at different intervals in dichorial and monochorial pregnancies, since the complications listed above can still occur in monochorial pregnancies.

To help you prepare for this, the figure below schematically indicates the time and type of examination depending on the placental chorionicity and amnionicity:



Modified according to ISUOG Guideline 2016 on the role of Ultrasound in twin (multiple) pregnancies

Abbreviations:

DVP = deepest vertical pocket, TVS = transvaginal sonography

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