South African Society for Ultrasound in Obstetrics and Gynaecology

BEST PRACTICE GUIDELINE - PRENATAL CARE FOR TWINS

Introduction

These guidelines are an adaptation of international guidelines ("ACOG Practice Bulletin No. 144: Multifetal gestations: twin, triplet, and higher-order multifetal pregnancies," 2014; "Management of Monochorionic Twin," 2016; Morin et al., 2011; Visintin, Mugglestone, James, & Kilby, 2011) on the management of twin pregnancies to the realities of private practice in South Africa.

The most crucial diagnosis is that of chorionicity. Chorionicity should be diagnosed in the first trimester, confirmed, clearly communicated to the patient (and her partner) and documented.

Monochorionic twins are at especially high risk of complications and should be managed in consultation with a maternal and fetal medicine (MFM) specialist (MFM)[1].

Higher order multiple pregnancies (triplets and more) should always be managed in conjunction with a MFM specialist.

Pregnancy dating

Twins should be dated as follows:

- After IVF: by oocyte retrieval date (or, in case of frozen embryo transfer, by the embryonic age at transfer)
- Other pregnancies:
    - By LARGEST crown rump length (CRL), ideally when CRL is between 45 and 84 mm (using modified Robinson tables from 1985)(Robinson & Fleming, 1975)

[1] There are non-MFM specialists approved by SASUOG to do second opinion obstetrical examinations. These individuals can also provide all or most of the MFM specialist services in this guideline. For brevity, "MFM specialist" is used in this guideline rather than "MFM specialist or other SASUOG approved second opinion practitioner".

- If CRL exceeds 84 mm, by LARGEST head circumference (using Chervenak 1998)(Chervenak et al., 1998)

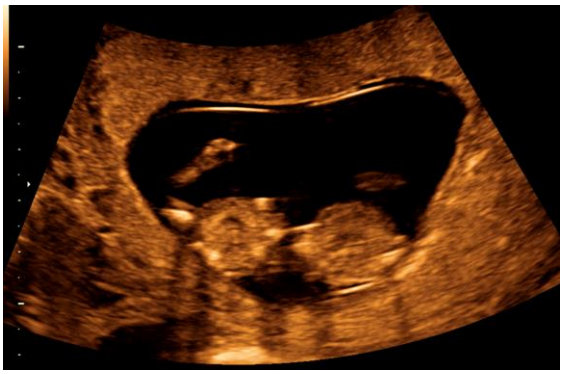
As with a singleton, twins' EDD should NOT be changed once determined by these rules.

Determining chorionicity and amnionicity

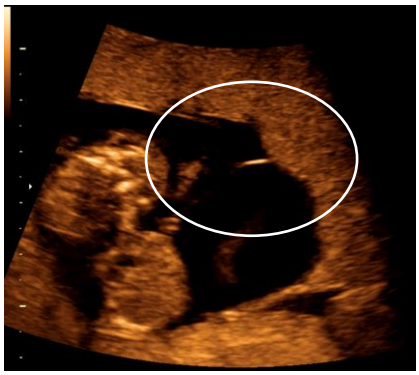
Chorionicity and amnionicity should be ideally determined before 13w6d.

- If no amniotic membrane is seen between the twins (while scanning in different directions), the patient should be referred to an MFM specialist before 13w6d. This implies either a monoamniotic (MA) twin pregnancy, or a monochorionic, diamniotic (MCDA) twin pregnancy with either a membrane in line with the scanning direction or anhydramnios in one sac (see figure 1). Both require assessment by a MFM specialist.

Figure 1.



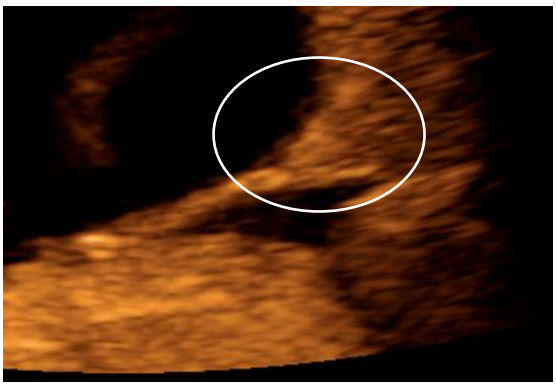
Twins at 12 weeks; no dividing membrane seen suggesting MA twin pregnancy



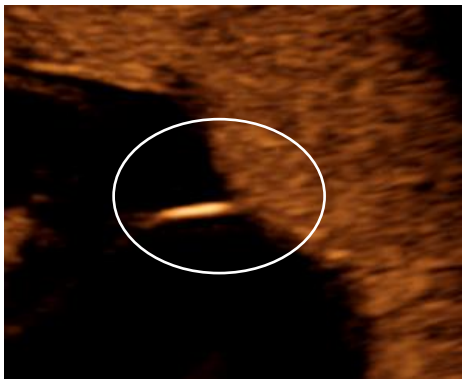
Same twins, scanned from different direction, thin dividing membrane seen with T-sign, indicating MCDA twin pregnancy

- If the dividing membrane is seen between two separate placental masses or with a lambda sign (chorionic tissue between the layers of the dividing membrane – figure 2) this indicates a dichorionic twin pregnancy.

Figure 2. Determining chorionicity



Lambda sign (dichorionic twin pregnancy)



T-sign (monochorionic twin pregnancy)

- The chorionicity and amnionicity should be clearly communicated to the patient in understandable but accurate terms such as “single placenta and single amniotic sac”, “single placenta and two amniotic sacs”, or “two placentas and two amniotic sacs”. Avoid terms such as “identical” or “not identical” as this is difficult or sometimes impossible to determine. It also does not contribute to the pregnancy management.
- Document the chorionicity and amnionicity clearly with a picture in the clinical notes, as well as with a picture given to the patient and other professionals (such as a MFM scanning the patient later in the pregnancy).
- If it is impossible to determine the chorionicity and amnionicity with absolute certainty, with either transabdominal or transvaginal ultrasound, refer the patient to a MFM BEFORE 13w6d.

Labelling twins

Twin A should be the twin occupying the amniotic sac overlying the internal cervical os when the twins are labelled for the first time.

Twins should be labelled with as much information as possible, e.g.: twin A is on the maternal left with anterior placenta and marginal cord insertion. Once the gender is known, that can be added to the description, but it should not be the only descriptor as it may become difficult to see at an advanced gestation.

Monoamniotic twins are difficult to label, unless there is a defining feature (a single umbilical artery or echogenic cardiac focus, for example).

As with EDD and chorionicity, once labelled, the labelling should be well documented, communicated clearly to the patient and other professionals and should not be changed.

Screening and testing for chromosomal and structural abnormalities in twin pregnancies

Counselling about prenatal screening and testing in patients with multiple pregnancies is complex and should be done by someone skilled in these issues (e.g. a genetic counsellor or MFM specialist). If the patient desires screening for trisomy 21 (and other trisomies), the ideal screening test is the first trimester combination screening done by an FMF accredited operator.

Biochemistry screening for trisomy 21 can be beneficial but should NOT be done:

- In case of a vanishing twin, if the fetal pole is still present when the biochemistry is done.
- Without ultrasound (as biochemistry alone is NOT accurate in case of twins).

Cell-free DNA (cfDNA) testing (non-invasive prenatal testing / NIPT) can be used in twins, with a possibly lower detection rate than in singletons. Consideration should be given to cfDNA tests which provide the fetal fraction on both twins.

With the increased risk of congenital anomalies in twins, and the complexity of prenatal diagnosis in twins and management of (discordant) anomalies, strong consideration should be given to refer all patients with twins to a MFM specialist for a first trimester anatomical

survey, even if the patient has dichorionic twins and does not desire screening for chromosomal anomalies.

A detailed second trimester ultrasound examination should be done by an experienced (and ideally FMF-accredited) operator. In monochorionic twins (with a higher risk of a fetal cardiac anomaly), fetal echocardiography should be done during the detailed second trimester ultrasound examination (which should be performed by a MFM specialist).

If a (discordant) fetal anomaly is found, and the examination has not been done by a MFM specialist, the patient should be referred urgently to a MFM specialist.

Invasive testing in twins should only be done by someone skilled to do a selective feticide in case of a discordant anomaly and after meticulous labelling of the twins. ("Amniocentesis and Chorionic Villus Sampling (Green-top Guideline No. 8)"; Ghi et al., 2016) Otherwise, if e.g. trisomy 21 is found in only one twin, and the twins have not been labelled thoroughly, the karyotype might need to be repeated to avoid an inadvertent selective feticide of the healthy twin.

Screening for preterm birth in twin pregnancies

Twin pregnancies are at increased risk of spontaneous preterm delivery and cervical length measurement is an effective screening tool.

The cervical length should be measured transvaginally at the time of the detailed anatomical evaluation around 20 weeks to screen for preterm birth.

If the cervical length is shorter than 25 mm, consideration should be given to transvaginal micronized progesterone treatment. (Romero et al., 2017).

Cervical cerclage should NOT be done routinely but can be considered as an emergency measure.

Corticosteroids should NOT be given routinely.

Screening for pre-eclampsia in twin pregnancies

Twin pregnancies are at increased risk of preeclampsia and screening is recommended in order to consider prophylactic measures (e.g. aspirin) and increase surveillance if the results indicate a high risk.

Screening for pre-eclampsia is ideally done by the FMF algorithm as it has the highest sensitivity and specificity (Francisco, Wright, Benkő, Syngelaki, & Nicolaides, 2017).

Alternatively one can use scoring systems such as proposed by the RCOG ("Hypertension in pregnancy (NICE clinical guideline 107)".

Follow-up scans

Dichorionic twins

Dichorionic twins should be scanned:

- For a late first trimester evaluation between 11 and 13w (by a FMF accredited operator)

- Around 20 weeks for a detailed anatomical evaluation (by an experienced and ideally FMF-accredited operator)
- Thereafter every four weeks for fetal biometry inclduing head and abdominal circumference, femur length, fetal weight estimate by Hadlock (Hadlock, Harrist, Sharman, Deter, & Park, 1985) and amniotic fluid evaluation (by measuring the deepest vertical pocket (DVP) of amniotic fluid)
- The umbilical artery pulsatility or resistance index of each twin should be measured from viability onwards.
- The patient should be referred to an MFM specialist, if:
    - A fetal anomaly is found
    - The estimated fetal weight of the twins differs more than 20% (calculated by dividing the difference between the fetal weights by the weight of the heavier twin)
    - Oligohydramnios (< 2cm deepest vertical pocket / DVP) or polyhydramnios (> 8cm DVP) develops
    - The umbilical artery pulsatility or resistance index is above the 95th centile.

Monochorionic twins

Monochorionic twins should be scanned:

- For a late first trimester evaluation between 11 and 13w (by an MFM specialist)
- Every two weeks from 16 weeks for fetal biometry including head and abdominal circumference, femur length, fetal weight estimate by Hadlock (Hadlock et al., 1985) and amniotic fluid evaluation (by measuring the DVP of amniotic fluid)
- The bladder filling and stomach bubble of each twin should also be documented at each visit
- A detailed anatomical evaluation with fetal echocardiography should be done around 20 weeks (by a MFM specialist)
- The umbilical artery pulsatility or resistance index of each twin should be measured from viability onwards or when discordant amniotic fluid volumes develop
- The patient should be counselled to make contact if she notes symptoms of sudden increased breathlessness, abdominal girth or abdominal discomfort as these might be symptoms of polyhydramnios and TTTS (twin-twin transfusion syndrome)
- The patient should be referred to an MFM specialist, if:
    - A fetal anomaly is found
    - The estimated fetal weight of the twins differs more than 20% (calculated by dividing the difference between the fetal weights by the weight of the heavier twin)
    - Oligohydramnios (< 2cm DVP) or polyhydramnios (> 8cm DVP) develops
    - The umbilical artery pulsatility or resistance index is above the 95th centile.

Ideally, the middle cerebral artery pulsatility index should also be done at each visit from 20 weeks onwards to detect TAPS (twin anaemia polycythaemia sequence). This complication is rare in monochorionic twins that have not undergone laser therapy though, and frequent examination of the amniotic fluid volume (to detect TTTS) is much more important.

Other complications during pregnancy

Single intra-uterine demise

Single intra-uterine demise in a dichorionic twin leaves the survivor at higher risk of preterm labour. This pregnancy should therefore be followed up with cervical length monitoring.

In monochorionic twins, demise of one twin may result in the demise of the co-twin or in survival with severe neurodevelopmental abnormalities. These complications are not uncommon (> 40%) and are due to acute exsanguination of the survivor into the circulation of the dead co-twin at the time of first twin's death. These complications CANNOT be avoided by immediate delivery or delivery after corticosteroids and such patients should be referred urgently to a MFM specialist, and NOT be delivered immediately.

Twin delivery

Mode of delivery

- Vaginal delivery is appropriate for uncomplicated dichorionic twins and monochorionic, diamniotic twins unless there is a specific indication for caesarean delivery.
- Caesarean delivery is indicated in monoamniotic twins.

Timing of delivery

- Delivery should be planned at 32-34 weeks for uncomplicated monoamniotic twins.
- Delivery should be planned at 36-37 weeks in uncomplicated monochorionic twins
- Delivery should be planned at 37-38 weeks in uncomplicated dichorionic twins