Management of Multiple Pregnancies
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Introduction
The incidence of multiple pregnancies has increased from about 1% to 1.5% in the past few decades. This is mainly due to an increased use of assisted reproductive technologies (ART) such as superovulation and in utero insemination (SO-IUI), and in vitro fertilization (IVF) in developed countries. Multiple pregnancies remain a disproportionate contributor of preterm labour, perinatal morbidity and mortality despite recent advances in the management of multiple pregnancies.

Frequent expert use of ultrasound in diagnosis and monitoring of multiple pregnancies, and improved understanding of the pathophysiology of complications in multiple pregnancies have led to improvements in the management of multiple pregnancies.

Antenatal management
Early scan to diagnose of chorionicity in multiple pregnancies
Chorionicity refers to the placentation of the multiple pregnancies. Monochorionic (MC) twins refer to a pair of identical twins (i.e. monozygotic) that are attached by separate umbilical cords to a single placenta with vascular anastomoses present between the 2 umbilical cord insertions (see figure 1). Dichorionic twins, on the other hand, refer to a pair of twins with either a single fused placenta or separate placentas where there are no vascular anastomoses between the 2 umbilical cord insertions. The majority of dichorionic twins are dizygotic (i.e. non-identical twins) though a small proportion are monozygotic.

The chorionicity should be documented at the time of ultrasound diagnosis of multiple pregnancy (see figures 2 and 3). The diagnosis of chorionicity is very accurate when the ultrasound scan is performed in the first trimester. A referral for determination of chorionicity should be made as early as possible when there is doubt as to the actual chorionicity of the multiple pregnancy.
First Trimester Screen (FTS) at 11-13 weeks

The current standard of care for screening for aneuploidy in singleton pregnancies is the First Trimester Screen (FTS) at 11-13 weeks gestation where nuchal translucency (NT) is measured by a trained and accredited sonographer. For multiple pregnancies, all women who booked before 14 weeks should be offered FTS at 11-13 weeks. During this scan, the chorionicity of the multiple pregnancies can be accurately diagnosed as well.

In multiple pregnancies, it is critical that there is proper mapping of the fetuses by the relative positions of the placenta and cord insertions. This is to facilitate accurate identification of the fetuses to be karyotyped by the same or another operator when there is increased risk at FTS for only one fetus.

Inclusion of first trimester biochemistry of free bhCG and PAPP-A may increase the detection rate over NT only, and hence may be considered for twins. The detection rate of Down syndrome with combined biochemistry and ultrasound at FTS is less in twins compared to singletons (about 85% detection rate vs 90% detection rate at a false positive rate of 5%).

Detailed scan at 20 weeks to screen for structural abnormalities and cervical length

This is standard care in singleton pregnancies. In multiple pregnancies, this is especially important as the risk of a structural abnormality in either twin is almost twice that of a singleton pregnancy. The presence of more than 1 fetus during the ultrasound scan makes it more difficult to scan each fetus thoroughly and introduces the possibility of mistakenly scanning the same fetus twice whilst thinking that all the fetuses have been separately scanned. Hence this scan should be performed by a skilled obstetric sonographer.

The cervical length should be determined during this scan as a short cervical length less than 25 mm at this stage increases the risk of preterm labour. A short cervical length at this stage would prompt careful education of the patient on the symptoms of preterm labour, and increased surveillance of the patient for signs of shortening cervical length. Prevention of preterm labour in this group of patients may involve the use of progesterone and/or cervical cerclage, though the data is still not clear in this group.

Ultrasound and CTG surveillance of dichorionic twins

For the 80% majority of twins that are DC, the couples should be counselled regarding the higher risks of spontaneous miscarriages, stillbirths, preterm births and intrauterine growth restriction (IUGR) when compared to singletons.

Close ultrasound surveillance for IUGR every 2-3 weeks should be performed till delivery from 28 weeks onwards. Weekly cardiotocography (CTG) from 32 weeks onwards may be offered to further improve the surveillance of the DC twins till delivery.

Ultrasound and CTG surveillance of monochorionic pregnancies

For the 20% of twins that are MC, the couples should be counselled with regards to the high risk nature of the pregnancy and the recommendation for increased ultrasound surveillance. MC pregnancies are at higher risk of spontaneous miscarriages, stillbirths, preterm births, and IUGR even when compared to DC pregnancies. As MC pregnancies are characterized by the ubiquitous presence of placental vascular anastomoses, they face specific risks of twin-twin transfusion syndrome (TTTS) and a high risk of death or ischaemic brain damage to the co-twin when one twin dies.

MC pregnancies should receive increased ultrasound surveillance from 16 weeks of gestation onwards to detect TTTS and IUGR. These ultrasound scans should be offered at an interval of at least fortnightly until delivery. Weekly cardiotocography (CTG) from 32 weeks onwards may be offered to further improve the surveillance of the monochorionic twins till delivery.

Twin-to-Twin Transfusion Syndrome (TTTS)

The diagnosis of TTTS is based on sonographic finding of severe oligohydramnios in the donor amniotic sac and severe polyhydramnios in the recipient amniotic sac. Severe TTTS tend to occur between 16-26 weeks of gestation. This complication occurs in about 10% of all MC pregnancies. These cases should be managed in centres with specific specialist expertise.

Fetoscopic laser ablation of placental vascular anastomoses (i.e. using a laparoscope inserted into the uterus to guide the ablation of the vascular anastomoses using laser) is the treatment of choice in severe TTTS presenting between 16-28 weeks of gestation. Serial amnioreduction (which is the withdrawal of excessive amniotic fluid from the polyhydramnios sac using a
Intrauterine growth restriction (IUGR)
Management of IUGR of one fetus in a multiple pregnancy should be individualized, taking into consideration the welfare of the other fetus(es). Delivery is indicated if the twins are already term. In preterm terms with severe IUGR of 1 twin, management options include: preterm delivery which may be beneficial to the severe IUGR fetus but detrimental to the other fetus as it is still premature expectant management with an aim to reduce prematurity of both fetuses with the main risk of spontaneous stillbirth in the deteriorating severe IUGR fetus.

The management of severe IUGR in MC pregnancies is made even more difficult as the spontaneous intrauterine death (IUD) of the IUGR MC fetus may cause the death or ischaemic brain damage of the other twin.

Intrauterine death (IUD) in one twin
IUD of one in a twin pregnancy should be referred to a specialist with interest in such cases.

The chorionicity, cause of IUD and the gestational age at intrauterine death are the 3 main determining factors in the clinical decision of delivery or expectant management in multiple pregnancies. Old textbooks have listed disseminated intravascular coagulation (DIC) as a complication after IUD of 1 twin. In practice, DIC does not occur and hence its theoretical risk should not contraindicate expectant management after IUD of 1 twin. In MC pregnancies, there is a significant risk of death or long-term morbidity (especially neurological) in the surviving co-twin as the surviving twin may bleed into the dead twin through the vascular anastomoses.

Intrapartum Management
Timing of delivery
Uncomplicated dichorionic (DC) twins should be delivered at 38 completed weeks. It is less clear about the ideal timing of delivery for uncomplicated monochorionic (MC) twins. Many centres currently offer delivery at 36 completed weeks.

Mode of delivery
Caesarean section is recommended for the delivery of higher order multiple pregnancies (i.e. triplets and above).

For uncomplicated term twin pregnancies, assisted twin vaginal delivery or elective Caesarean section may be offered where the first twin is vertex. In all other situations of twins, Caesarean section is often the preferred mode of delivery.

Patients offered a planned twin vaginal delivery should be counselled about the benefits and risks of such a procedure. The risks include emergency Caesarean, combined vaginal-Caesarean delivery, and intrapartum accidents of the twins especially the second twin resulting from difficulties in monitoring the second twin and intrapartum maneuvers. Planned twin vaginal delivery should be performed in a setting with continuous intrapartum monitoring of both fetuses, immediate recourse to caesarean section, appropriate analgesia (including epidural) and an obstetrician experienced in twin vaginal delivery.

Postpartum Management
The issues of postnatal blues and depression, and difficulties with breastfeeding are exacerbated in multiple pregnancies when compared to singleton pregnancies. Antenatal education with appropriate measures to reduce postnatal stresses could reduce these complications.

Conclusion
Multiple pregnancies belong to a distinct high risk group with increased incidences of almost all obstetric complications. Proper assessment of the chorionicity and frequent ultrasound surveillance of the fetuses may improve the outcomes of the fetuses.