Pregnancies with three or more fetuses are referred to as multifetal. The majority are polyzygotic (non-identical) because each embryo is derived from fertilisation of a different ovum. In monozygotic (identical) pregnancies a zygote, formed from the union of one ovum and one sperm, undergoes a division to form two or more genetically identical individuals.
In multifetal pregnancies the fetuses are usually non-identical but in some cases there may be coexistence of identical and non-identical fetuses.

How common are multifetal pregnancies?
Normally, twins occur in about 1 in 50, triplets in 1 in 6,000 and quads in 1 in 500,000 pregnancies. In the last two decades however with the increasing availability of assisted reproductive technologies the rate of triplet and other multifetal pregnancies has risen dramatically. In about 10% of pregnancies achieved by such techniques there are two or more fetuses.

What are the risks with multifetal pregnancies?
Multifetal pregnancies are associated with a high risk of miscarriage (delivery before 24 weeks) and severe preterm delivery at 24 to 32 weeks. The majority of babies that are born preterm now survive and develop normally. Sadly some of the babies that are very premature die and others become handicapped. The chances of an adverse outcome depends on the gestation at delivery. Survival increases from less than 10% before 28 weeks to more than 75% by 32 weeks. The risk of severe handicap in those babies that survive decreases from about 50% for those born at 28 weeks, to less than 5% by 34 weeks.
In addition to the risks of miscarriage and preterm delivery, there is also a higher risk for many pregnancy complications in multifetal pregnancies and their frequency increases with the number of fetuses.

In the management of multifetal pregnancies there are three options:
- Continuing with the whole pregnancy
- Termination of the whole pregnancy
- Embryo reduction to twins

In pregnancies with four or more fetuses there is evidence that embryo reduction to twins is associated with a decrease in the risk of miscarriage and severe preterm delivery. In triplet pregnancies there is controversy concerning the possible benefits of reduction. The chance of miscarriage is about 1% in singleton pregnancies, 2% in twins, 5% in triplets and 8% in triplets reduced to twins. The chance of preterm delivery at 28 to 32 weeks is about 2 % in singleton pregnancies, 5% in twins, 20% in triplets and 10% in triplets reduced to twins.

Embryo reduction
One of the options in the management of multifetal pregnancies is embryo reduction to twins. The aim is to increase the chances of survival and decrease the risk of handicap.

In pregnancies with three or more fetuses there is evidence that embryo reduction to twins is associated with a decrease in the risk of miscarriage and severe preterm delivery.
Embryo reduction involves the introduction of a thin needle into abdomen and the injection of a KCl into the chest of one or more fetuses, which will result in their death. The dead fetus and placenta do not get removed from the uterus but they gradually over a period of about three months. disintegrate and become part of the surviving placenta.

The greater the amount of dead fetal-placental tissue the higher is the chance of complications and therefore it is best to carry out the embryo reduction at 10-13 weeks. This is the earliest gestation for ultrasound examination to determine if any of the fetuses have abnormalities or poor growth.

The greatest risk of miscarriage after reduction is within one week of the procedure. However the risk persists for several months and is due to the breakdown of the dead fetoplacental tissue.

Monochorionic twins

In one in 50 pregnancies there are two fetuses. In 80% of twin pregnancies the two fetuses live in their own sac and they have their own placenta (dichorionic). In 20% of twins the fetuses also have their own sac but they share the same placenta (monochorionic).

Twin to twin transfusion syndrome

In one third of monochorionic twin pregnancies there is an imbalance in the net flow of blood across the placental vascular communications from one fetus (the donor) to the other (the recipient). This condition is called twin to twin transfusion syndrome (TTS). In half of the cases the condition is mild to moderate and without any treatment usually both babies survive. However, the pregnancy needs to be monitored closely and delivery is undertaken at 32 to 34 weeks. In the other half (or 15% of all monochorionic twins) the condition is severe and both babies are at very high risk of death or handicap.

Severe disease often becomes apparent at about 18 to 22 weeks of pregnancy with polyhydramnios.

In severe TTS the donor fetus tries to compensate for the blood loss by stopping urine production. Since all the amniotic fluid is urine, lack of urination causes a decrease and eventually absence of amniotic fluid. This fetus gets 'stuck' and immobile at the edge of the placenta where it is held fixed by the collapsed amniotic sac. Without any treatment this donor twin is at high risk of death or handicap due to deficiency in oxygen, nutrients and blood.

The recipient twin tries to compensate for the extra blood it receives by producing more urine. This causes a big increase in the amount of amniotic fluid (polyhydramnios). This distends the uterus leading to miscarriage or very severe preterm delivery. Eventually the recipient twin develops congestive heart failure.

Options for management of the syndrome
There are essentially four options in the management of severe TTS:

- No treatment. In more that 90% of cases the pregnancy will end in miscarriage or very severe preterm delivery; both babies will die and the few that survive have a high risk of being handicapped.
- Termination of the pregnancy.
- Amniocenteses and drainage of large amounts of amniotic fluid. This treatment usually needs to be repeated everyone to two weeks. There is controversy concerning the effectiveness of this therapy with the reported survival varying from 40% to 80%. However, there is agreement that about 25% of the survivors are handicapped.
- Laser Surgery - at present this option not available here.