The intrauterine hazards of twins

Society is intrigued by twins, and twin children are often the focus of admiring attention. It is not surprising that most parents are proud when they hear that twins are on the way. Many, however, will be disappointed: a large proportion of these parents will never produce the two healthy babies for which they hope.

The vanishing twin

The outcome of many twin pregnancies is a singleton infant. In at least 50% of twin pregnancies one fetus is lost, the majority in the first trimester—the vanishing twin syndrome.¹ It is only since the advent of ultrasound that many of these second fetuses have been detected at all. Now that twin pregnancies are detected very early the question arises about whether to tell the parents immediately and risk a later disappointment. Many parents say they would prefer to know.

For those twins who survive the first trimester there are still many hazards, all of which contribute to the high perinatal mortality and long term morbidity associated with multiple births.

Growth retardation

The average weight of a newborn twin is about 800 g less than a singleton, but if allowance is made for gestational age the discrepancy is reduced to 500 g. The difference in the rate of growth increases through the pregnancy. The growth of the human fetus is influenced by litter size, and the deceleration that occurs at about 36 weeks in singletons takes place correspondingly earlier in twins and higher multiple births.

Even when allowance is made for their slightly shorter gestation monozygotic twins are lighter than dizygotic ones. Nor can this be wholly explained by the reduced efficiency of a monochorionic placenta because dichorionic monozygotic twins also appear lighter than their dizygotic counterparts.² A variety of explanations has been proposed for the different growth rates in the two types of twins, including the effects of events in early embryonic development when the cell mass is reduced by division, the possible beneficial effect that antigenic differences between dizygotic twins may have on intrauterine growth, and maternal factors, such as greater height

and higher hormone concentrations in dizygotic mothers.²

Discrepancies in birth weight are commoner and larger within monozygotic pairs. This is mainly due to the fetofetal transfusion syndrome. Eccentric insertion of the umbilical cord or, in dichorionic pairs, differing sites of implantation of the placenta may also affect the rates of fetal growth.

Congenital anomalies

It is now generally agreed that congenital anomalies are more common in twins than singletons but that this increase is probably limited to monozygotic twins.³ Several reasons for the increased risk among monozygotic twins have been proposed. These include, firstly, the less favourable environment of a shared placental circulation; secondly, the disruption of the developmental genetic clock of the embryo caused by the zygote division, making the monozygotic embryo more susceptible to subtle environmental agents; and, thirdly, that monozygotic twinning may in itself be a form of congenital malformation.

In addition to anomalies specific to twinning such as conjoined twinning and acardia, there are some conditions that seem to have a particularly high incidence in twins. These include oesophageal atresia, single umbilical artery, and some chromosome anomalies, such as Klinefelter's and Turner's syndromes. These like many other anomalies may occur in only one of a monozygotic pair.

Fetofetal transfusion syndrome

One in four pairs of twins share a fetal blood circulation. In many instances these monochorionic twins harmoniously share a 'third circulation' without apparent ill effect. For some, as in the fetofetal transfusion syndrome, the results may be disastrous.

When no superficial anastomoses are present on the placenta to compensate for the deep arteriovenous blood flow a chronic haemodynamic imbalance may develop and continue for many months, causing not only unequal growth of the fetuses but anaemia and polycythaemia of such severity as to cause death to one or both fetuses. The poor growth of the donor is due to the loss of nutrients together with the haemoglobin to the cotwin. There may also be

reduced maternofetal transfer of nutrients and of immunoglobulin G across the grossly abnormal and oedematous placenta.⁴ Size and maturity of the fetal organs may differ even more strikingly than body size.⁵

Intrauterine death

About twice as many twins are stillborn as singletons. This is partly due to the problems already described. In other cases the life of one fetus may have to be deliberately risked where, for example, an induced premature delivery would jeopardise the chances of survival for the healthier twin, as in the case of discordant blood group incompatibility.

Most twins survive the intrauterine death of their cotwin, physically at least, unharmed. In monochorionic twins, however the survivor may have severe problems from disseminated intravascular coagulation. If one fetus dies early in the pregnancy emboli may disrupt the development of the survivor. Some congenital anomalies, such as cerebral abnormalities, aplasia cutis, and intestinal atresia, may be caused by such ischaemic insults in a twin pregnancy.⁶ The presence of a fetus papyraceus or a macerated stillborn twin in a monochorionic pregnancy should always alert the paediatrician to the possibility of a structural defect in the survivor.

The loss of a twin

It is not known how much the early loss of a twin fetus may affect the mother or indeed the single survivor. There is evidence that at least some lone twins have personality problems that could be related to the loss of their twin partner. It may be more important than now realised that both the mother and the surviving child are made aware of the twinship and are offered appropriate support in coming to terms with their loss.⁷

In a dichorionic multiple pregnancy where one fetus is abnormal the new option of selective feticide is now available to parents who would otherwise have to choose between terminating the pregnancy despite the sacrifice of a normal baby or continuing the pregnancy while knowingly carrying an abnormal child.⁸ Couples who undergo selective feticide must cope not only with their bereavement but also with the stress of carrying a dead fetus for many weeks and later of explaining to the surviving twin what has happened.

It is now recognised that parents who have a stillborn twin face very particular problems.⁹ They have to experience the joy of a new baby and the tragedy of a death simultaneously. Because they still have a live infant their loss, if acknowledged at all, is usually greatly underestimated. They are encouraged to attend to the live baby and often discouraged from talking about the dead baby. This can lead to unresolved mourning, the idealisation of the dead child, and sometimes to a definite rejection of the survivor. Such parents may have difficulty in distinguishing the two babies in their minds. Some may feel the dead one never existed—a fantasy baby. Substantive memories, such as photographs or even an ultrasound scan showing the two babies together, can help to clear the emotional confusion. Naming the baby not only helps to distinguish the babies but later makes it easier when talking to the surviving child about his twin.

It should also be recognised that the parents have in the survivor a lasting reminder of the child that might have been. Birthday celebrations are coupled with painful memories of the death. All parents should be offered expert counselling not only during their own bereavement but later if they have to cope with the often complex feelings of a child deprived of its close partner.

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