SINGLE INTRAUTERINE FETAL DEATH IN MONOAMNIOTIC TWINS DUE TO CORD ENTANGLEMENT

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Summary: A case of monoamniotic twin intrauterine fetal death of one of the fetuses is presented. The death was most probably caused by cord entanglement and thrombosis. A discussion on incidence, etiology and pathology is included.

Monoamniotic twin pregnancy is a rare condition in which twins develop within a single amniotic sac. Intrauterine fetal death of one fetus in a twin gestation is an uncommon occurrence although twin gestation is associated with increased perinatal morbidity and mortality (Pritchard, 1980). Among the various factors which have been implicated in the death of one fetus in multiple gestations are twin to twin transfusion, placental insufficiency, placental abruption, congenital anomalies and cord pathology such as entanglement, torsion and thrombosis (Colgan, *et al.,* 1982). We wish to report a case of monozygotic twins complicated by the intrauterine death due to cord entanglement of one of the twins.

CASE REPORT

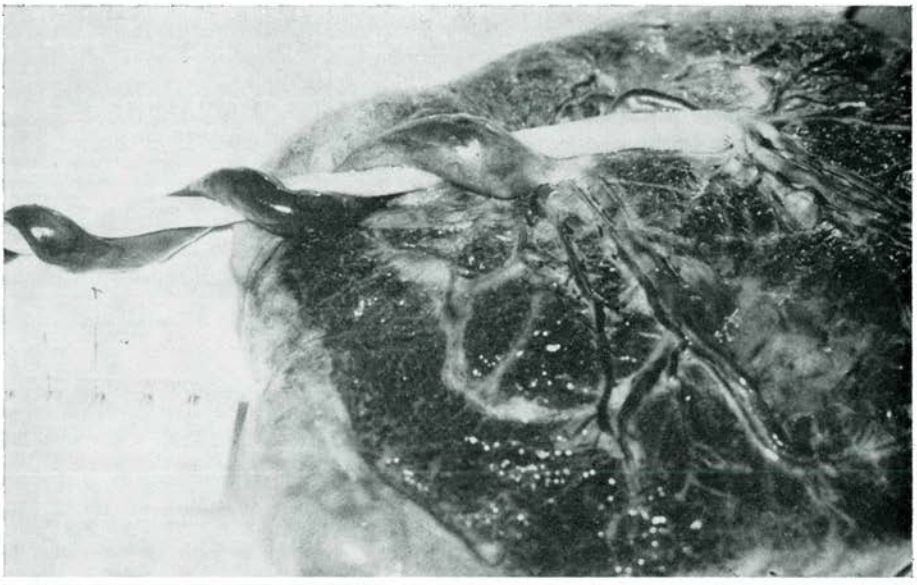
A 24-year-old, healthy, gravida 2, para 1 woman presented in active labor at 35 weeks of gestation. Twin gestation was diagnosed at 20 weeks by a routine U.S. scan which demonstrated two viable fetuses without malformations. The patient was routinely examined by her physician and no other complications were noted. Physical examination on admittance revealed vital signs, a fundal weight of 40 cm, cervix effaced almost 100% and dilated to 8 cm. The presenting part of twin A (Vx) was at spine level. Ten minutes after admission twin A was born spontaneously in an occipito-anterior position. This infant weighed 1860 gr and had a 1 minute Apgar score of 7.

Twin B, also a female was delivered 5 minutes later as a vertex presentation. This infant was a macerated stillborn weighing 1500 gr without any malformations. The placenta measured $21 \times 18 \times 1.5$ cm, was monochorionic monoamniotic and weighed 540 gr. No significant infarctions were sigated. No other pathologic conditions were noted. The umbilical cords were inserted centrally 3 cm from each other (fig. 1) running separately for 4 cm and then twisting around each other to form 15 loops (fig. 2) in a counter clockwise spiral. Cord A measured 52 cm and was thrombotic in all its length (black color). After delivery the mother was in good condition with normal laboratory data. The live twin (A) had an uncomplicated outcome with normal hematologic and hemostatic laboratory investigation.

DISCUSSION

The incidence of monoamniotic twin pregnancy has been reported to range from 1 in 1650 to 1 in 93,000 pregnancies (Pritchar, 1980). These fetuses are the products of a single ovum, develop within a single sac, are the same sex and have the same genetic constitution. Twin gestation is associated with increased perinatal morbidity and mortality, but intrauterine death of one fetus is a relatively uncommon condition. (Pritchard, 1980). The cause of fetal death is not always obvious, but cord pathology is most frequently encountered and includes conditions such as cord torsion, thrombosis and entanglement. Torsion of the umbilical cord is rare. It occurs more commonly in male fetuses and abnormally long cords. Segmental deficiency in Wharton's jelly render these cords more susceptible to torsion.

1



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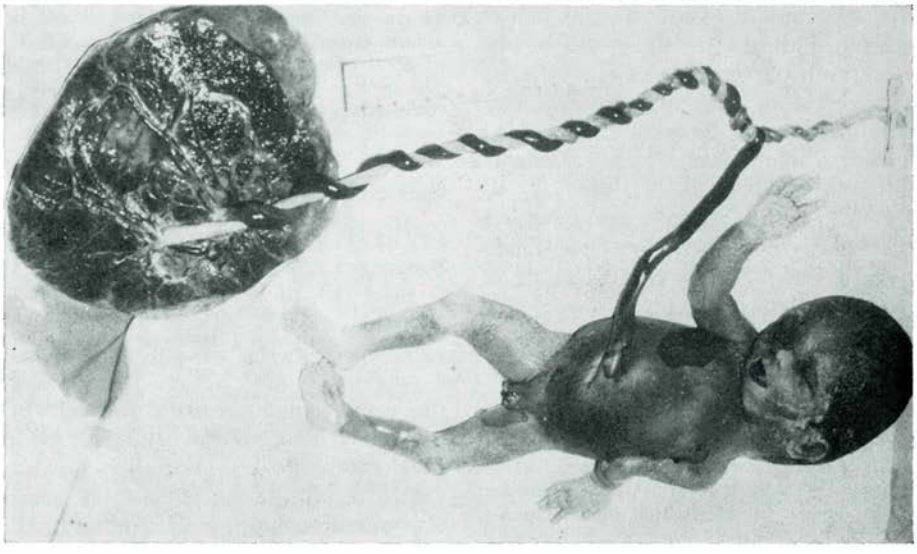

Fig. 1. — Photograph of the placenta and the insertion of the two cords.
Fig. 2. — Photograph of the whole placenta, the twisted umbilical cords (15 loops) and the macerated fetus.

Cord entanglement is the most common cause of death in monoamniotic twins and is three times more likely to occur then in dizygotic twins (Colburn *et al.,* 1982). The finding represents very early and active fetal movements (Benirschke *et al.*, 1967). The high fetal wastage is the major concern with monoamniotic twin pregnancy, survival of both fetuses is reported to be around 40% (Folgmann 1976).

The cause of fetal death in our case could not be precisely determined but most probably was due to cord entanglement which led to the thrombosis in cord B. Not every cord entanglement causes death of the fetus (Colburn, *et al.,* 1982). Perhaps another factor is necessary to produce fetal wastage. The time delay between the occurrence of entanglement and birth, the power of compression of the cord by spiralling and the thrombotic changes of the cord may have an important contribution together with entanglement in producing death.

It is obviously very important to diagnose twin gestation as soon as possible and determine whether the gestation is monoamniotic. Antepartum diagnosis of a single amniotic sac will alert the perinatologist to monitor these pregnancies more closely with serial U.S. examinations, fetal movement counts, double NST's and growth patterns.

The high incidence of fetal mortality could be reduced by prompt delivery on any sign of deterioration.

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