Northern Ireland twin study 1983

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SUMMARY
Two hundred and fifty-three twin deliveries in Northern Ireland during 1983 were studied. A high perinatal mortality rate of 57 per 1000 births was found, over four times greater than the overall perinatal mortality rate for Northern Ireland in that year. The main cause of these losses remains premature delivery which is frequently complicated by fetal growth retardation. Serial ultrasound scanning in the third trimester is considered mandatory in order to reduce the incidence of undiagnosed fetal growth retardation in twins.

INTRODUCTION
The antenatal diagnosis of a twin pregnancy seldom fails to create great excitement, coupled with a sense of foreboding in the patient concerned. This latter reaction is usually due to the thought of the many problems to be faced in rearing a set of twins. The patient is usually unaware of the more imminent problems associated with the antenatal course and delivery of a multiple pregnancy. Human multiple pregnancy has always been associated with a high perinatal mortality rate. Since the incidence of twin pregnancy in the developed world is falling, and is currently only 1 per cent of all births, a clearer picture of the overall situation can be obtained by studying a regional population rather than any single hospital population. This study reports on all twin pregnancies delivered in consultant maternity units in Northern Ireland during the year 1983.

PATIENTS AND METHODS
The case records of all patients with a recorded delivery of twins in any of the 18 consultant maternity units in Northern Ireland during 1983, at a gestational age of 24 weeks or greater, were studied. Details were recorded on a computer-compatible form which included information about the mother's previous medical and obstetrical history, details of the pregnancy including complications and hospital admissions, as well as information about labour, delivery and the neonatal period.

RESULTS
Twin pregnancies numbering 253 were studied.

Antenatally — Seventy per cent of patients had attended a booking antenatal clinic by 20 weeks' gestation but only 56 per cent of all the twins were diagnosed by this stage. Sixteen patients (6.4%) remained undiagnosed in labour. Ten of these patients had never had an ultrasound scan and the other six had a scan.
which had failed to pick up the twin pregnancy. On 34 occasions (13%) the first ultrasound scan failed to pick up the presence of a twin pregnancy. One hundred and sixty-one patients (63%) required admission to hospital during the antenatal period, the commonest indications being for rest, or because of suspected pre-term labour or pre-eclampsia (Table I). Some patients suffered more than one antenatal complication. Eighty-three patients (33%) were admitted for rest in the absence of any established complication at some stage during the pregnancy, but only 49 (19%) were admitted at any point between 26 and 34 weeks’ gestation.

**TABLE I**

*Antenatal complications*

| Condition                        | Number of patients | Percentage of twin pregnancies |
|----------------------------------|--------------------|--------------------------------|
| Premature labour (less than 37 weeks) | 79                 | 31%                            |
| Mild pre-eclampsia               | 37                 | 15%                            |
| Anaemia (less than 9.5 grams %)   | 20                 | 8%                             |
| Threatened abortion              | 18                 | 7%                             |
| Urinary tract infection          | 14                 | 5%                             |
| Severe pre-eclampsia             | 9                  | 4%                             |
| Antepartum haemorrhage           | 8                  | 3%                             |
| Hydramnios                       | 7                  | 3%                             |
| Essential hypertension           | 4                  | 2%                             |
| Other                            | 4                  | 2%                             |

**Delivery** — The mean gestational age at delivery in spontaneous labour was 36 weeks (range 24 to 41 weeks). Thirty-one per cent of labours were pre-term, and 30% were induced. Forty-three per cent of all babies were delivered normally, 12.8% required an assisted cephalic delivery and 28% were delivered as vaginal breech deliveries. The Caesarean section rate was 15% and included three sections for the second twin only (Table II, Figure).

**TABLE II**

*Mode of delivery*

|                      | Twin 1 | Twin 2 |
|----------------------|--------|--------|
| Normal delivery      | 145    | 75     |
| Barnes Neville forceps | 27    | 23     |
| Kiellands forceps    | 4      | 2      |
| Vacuum extraction    | 3      | 6      |
| Assisted breech      | 34     | 50     |
| Breech extraction    | 3      | 56     |
| Elective Caesarean section | 22 | 22 |
| Emergency Caesarean section | 15 | 18 |

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Outcome — Four hundred and sixty-four babies were born alive and were still alive at one year. Eighteen were born dead, but five of these died before 28 weeks' gestation. Twenty-two died within the first year after delivery (Table III).

|                  | Twin 1 | Twin 2 |
|------------------|--------|--------|
| Alive and well   | 235    | 230    |
| Stillborn        | 11     | 7      |
| Died day 0 – 6   | 5      | 11     |
| Died day 7 – 28  | 1      | 1      |
| Died day 29 – 365| 1      | 3      |
| 5 min. APGAR less than 5 | 10 | 14 |
| Intubated        | 6      | 14     |
| Went to Special Care Baby Unit | 79 (32.6%) | 89 (36%) |
| Major abnormality| 1      | 6      |
| Minor abnormality| 7      | 6      |

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One fetus papyraceous was excluded from the statistical analysis. The perinatal mortality rate was 57 per 1,000 total births compared with an overall perinatal mortality rate for Northern Ireland in 1983 of 13 per 1,000 total births. The perinatal mortality rate for twin 1 was 48.2 per 1,000 and for twin 2 was 67.7 per 1,000. Thirty-two per cent of first twins and 36% of second twins required transferral to the Special Care Baby Unit. Sixty-six per cent of all the babies admitted to the Special Care Baby Units required to stay there longer than one week, and 20% remained there for longer than four weeks.

When the cause of perinatal death is studied using the Aberdeen classification, 23 of the 29 deaths fall in the 'premature, cause unknown' category. Fourteen of these were due to immaturity alone and nine were associated with fetal growth retardation. Twenty-seven per cent of all the babies were born growth-retarded. Seven deaths in the immature group occurred at less than 28 weeks' gestation.

**DISCUSSION**

When McClure reported in 1937 on multiple pregnancies delivered at the Royal Maternity Hospital, Belfast, the stillbirth rate alone was 111 per 1,000 births, the neonatal losses not being recorded at that time. This rate was approximately three times the overall rate for stillbirths in the hospital. Fifty years on, the overall perinatal mortality rate has fallen faster than that for multiple pregnancies. The high perinatal mortality rate in this study is in agreement with figures from many other studies in which the rate lay between 55 and 125 per 1,000 births. The association with prematurity is also a common feature. Late diagnosis of twins has been shown greatly to increase the perinatal mortality rate and so the 13% failure to pick up twins at first scan is disappointing. It is also interesting to note that in 10 of the 20 patients who never had a scan the twins remained undiagnosed throughout the antenatal period. There has been conflicting evidence as to the value of admitting twin patients electively for rest in an effort to prevent pre-term labour. Laursen showed a prolongation of pregnancy but these findings have not been confirmed in other studies. Only 19% of patients in this study were admitted for rest at any time during the relevant period of 26–34 weeks, which seems to reflect the present uncertainty as to the value of this socially unpopular practice. A definitive trial is still awaited in the hope that it may help to reduce fetal loss from uncomplicated pre-term labour.

The commonest cause of perinatal death at over 28 weeks’ gestation in this study was pre-term labour complicated by fetal growth retardation. Growth retardation in one twin may be difficult to pick up clinically as it is often masked by the presence of the other well-grown twin. It may be further complicated by fetal-fetal transfusion rather than by the more common placental insufficiency. Serial ultrasound scanning should therefore be mandatory in all twin pregnancies. Biparietal diameter assessments may help used on their own or when used as part of a predictive screen for growth retardation using many variables. Other ultrasound measurements may give more reliable indications of poor fetal growth. Neilson found that the product of the crown-rump length and the trunk area identified all growth-retarded fetuses whereas, in an earlier study, 44% had been missed on biparietal measurements alone. A report by Giles et al on the use of continuous wave Doppler ultrasound to study umbilical waveforms in twin pregnancies suggests that the technique is not difficult and allows identification of the small-for-gestational-age twin in both intrauterine growth failure and the twin-to-twin transfusion syndrome.

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The 15% Caesarean section rate in this study is very low in comparison with the comparable 1983 Scottish twin survey in which a section rate of 27% was found.\(^5\) Even higher rates are reported from Europe with Papiernik reporting a 40% rate in a recent French study.\(^12\) These higher rates reflect a significant move away from vaginal breech delivery particularly for the first twin, as advocated by several authors.\(^13, 14, 15\) This requires closer study for this population group before any such major alteration in management is recommended.

Multiple pregnancy can be a cause of much delight but is still too often a cause of unexpected tragedy. It should not be regarded as a variant of normal pregnancy but rather as an abnormal pregnancy requiring high-risk monitoring throughout the third trimester by serial ultrasound assessment.

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