

TWIN PREGNANCY

(A Review of 500 Cases)

by

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Introduction

Twin pregnancy opens up a fertile field for discussion and study of all the possible obstetric complications and abnormalities that can occur in a parturient. Despite great advances in the improvement of foetal and maternal morbidity, multiple pregnancy still presents formidable hazards to both mother and foetus.

Material

The present study comprises an analysis of 500 consecutive twin deliveries in Cama and Albless Hospitals, from January 1959 to June 1965. Pregnancies under 28 weeks' duration are not included. Various aspects of twin pregnancy are covered in this series, with special attention to foetal morbidity and mortality.

Incidence

Since a total of 46,703 patients delivered in the hospital during the same period, the incidence of twin deliveries was 1 in 90. The vast majority of patients belonged to low socio-economic status. Table I shows that the incidence coincides with the

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Western figures. The incidence of twin pregnancy differs from country to country, depending upon the race and socio-economic condition.

TABLE I
Incidence

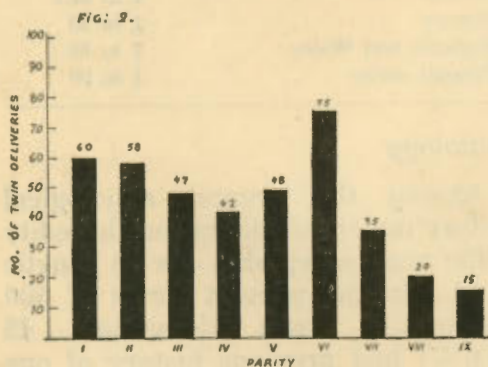
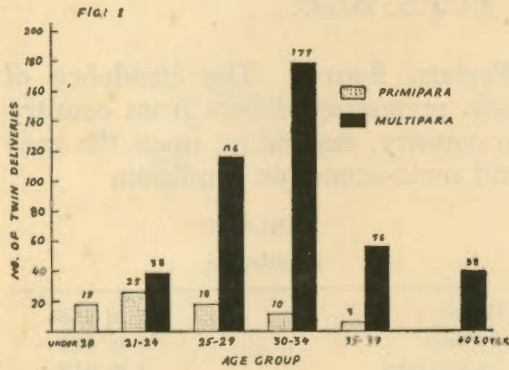
Russia	1 in 41.8
Sweden	1 in 81.6
Switzerland	1 in 84.5
France	1 in 99.7
Nigeria	1 in 20
England and Wales	1 in 84
Present series	1 in 90

Aetiology

Among the several aetiological factors under consideration, heredity is the most acceptable one on genetic basis. In the present series of 500 consecutive twin deliveries, 48 (9.6%) had previous history of one or more twin deliveries. One patient, aged 30 years, had had five twin pregnancies. Two other cases had four previous twin deliveries.

Age: This fact of significant correlation between maternal age and twinning frequency was known to Mathews Duncan as early as 1866. Maternal age at delivery is shown in Fig. 1. In primiparae, the largest group was composed of females aged 20-24 years, while in multiparae it was 30-34.

Effect of parity: High incidence in Nigeria and other Eastern countries can be explained by the large sized average family. As shown in Fig. 2, 75 primiparae (including patients who had had one or more abortions) and 425 multiparae delivered twins in the present series.



The study of Waterhouse, Strandkov, Guttamacher and many others has shown that the frequency of single-ovum twinning is almost wholly independent of heredity, race, maternal age and parity, while the incidence of double-ovum twinning is strongly influenced by all four factors.

Michael Cox (1963) has shown the effect of stature, malaria, climate and nutrition also, on the incidence of

twins in Nigeria. In the present series, this study could not be made owing to improper and inadequate records of history of some patients.

Diagnosis

Amongst 500 twin deliveries in the present series, 372 were registered cases and 128 were admitted as non-registered cases. Diagnosis during antenatal period often poses a problem which is clarified by radiological means. In some cases, the condition is missed antenatally and appears as a surprise to the concerned obstetrician. Antepartum diagnosis was made in 352 of the total 500 cases, and was confirmed by x-ray of abdomen in only 135 cases. The fallacy in diagnosis was noted in many other series also like Guttmacher, Kohl, Michael Cox, Waterhouse. Farrell (1964) gave very high incidence (94.7%) of antepartum diagnosis of twin pregnancies in those who attended the antenatal clinic, and attributed this unprecedented figure to the availability of radiographic plates.

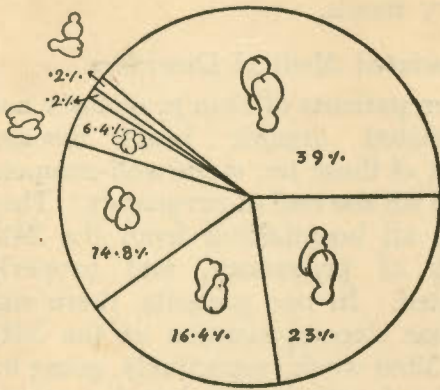
Eastman (1958) states, it sometimes happens that the first intimation, which the physician has of the presence of twins, is afforded by the unusually large size of the uterus after the expulsion of the first child. This is more likely when the patient is first seen during labour with powerful uterine contractions.

Presentation

All possible combinations of positions for two foetuses were found. The incidence is shown in Fig. 3.

Most commonly, both the foetuses presented by vertex, and the least

FIG. 3.



VERTEX + VERTEX : 195 CASES : 39%
 VERTEX + BREECH : 115 CASES : 23%
 BREECH + VERTEX : 82 CASES : 16.4%
 BREECH + BREECH : 74 CASES : 14.8%
 BREECH + TRANSVERSE : 32 CASES : 6.4%
 TRANSVERSE + BREECH : 1 CASE : 0.2%
 TRANSVERSE + TRANSVERSE : 1 CASE : 0.2%

common lies were: transverse + breech, and both in transverse lie.

Complications During Pregnancy

Hydramnios, premature onset of labour, anaemia, pre-eclampsia, accidental haemorrhage, placenta praevia, and hypertension are common in twin pregnancy as compared to single pregnancy as shown in Table II.

Hydramnios: This complication was found in 10.5% of twin pregnancies in the present series as compared to 0.8% in single births during the same period. In 60.4% cases of hydramnios with twins, cardio-respiratory embarrassment occurred as diagnosed by usual means.

Out of 52 cases with hydramnios,

TABLE II
Material Complications

Maternal complication	In	
	In twins %	singletons %
Hydramnios	10.5	0.8
Anaemia (below 60% Hb.)	52.4	40.6
Toxaemia	37.2	12.2
Accidental haemorrhage	1.20	0.9
Placenta praevia	2.0	1.4
Uterine inertia	5.0	2.8
Cord prolapse	1.5	0.2
Transverse lie	3.8	0.36
Compound presentation	2.4	0.4
Post-partum haemorrhage	11.25	2.5
Manual removal of placenta	4.4	0.82

28 were monozygous twins and 24 were dizygous — showing that hydramnios is commoner in monozygous twins than in dizygous ones. Out of 122 cases of monozygous twins, 28 had hydramnios, while among 350 cases of dizygous twins, only 24 had associated hydramnios. Remaining 28 cases of twins were not labelled either as monozygous or dizygous.

Anaemia: A haemoglobin level below 12 gms.% at any stage of pregnancy was found in 64.6% in twins as compared to 48.2% incidence in singletons during the same period. One hundred and forty-two cases (28.4%) were severely anaemic, haemoglobin being less than 45%. Most of the anaemic patients responded to iron and folic acid. Higher incidence of anaemia in twin pregnancy is due to increased utilisation of folic acid by the twins and increased requirements.

Toxaemia: One hundred and eighty-six (i.e. 37.2%) had toxaemia (including 2 with eclampsia). This incidence is nearly 3 times more fre-

quent than the incidence of toxæmia for single births (12.2%). Out of 186 cases, 20 had severe pre-eclampsia (12%).

Accidental haemorrhage: Six patients (i.e. 1.2%) had accidental haemorrhage in the present series as compared to incidence of 0.9% in singletons during the same period. All these patients were subjects of pre-eclampsia.

Placenta praevia: Ten cases had placenta praevia in this series giving the incidence of 2%, as opposed to 1.4% in single pregnancies. This increased incidence of placenta praevia is due to larger placenta in twin pregnancy.

Premature labour: If the birth weight below 2000 gms. be taken as indication of prematurity, 274 babies were born prematurely, giving the incidence of 27.4 per cent.

Management of Pregnancy

One hundred and thirty cases were admitted to the hospital in the third trimester, out of which 25 went into premature labour (19%). In 370 cases who continued routine household work, the labour started prematurely in 169 cases, the incidence being 46%, thus proving the advantage of bed-rest in cases of twin pregnancy, which coincides with Eastman and McDonald's views.

Since anaemia is so common in multiple pregnancies, iron was prescribed routinely to all patients and, in addition, folic acid to the anaemic patients in this series of twin pregnancies.

If the patients were uncomfortable owing to abdominal distension, sedatives were given at bed-time. The

patients were asked to take small feeds at frequent intervals instead of heavy meals.

Associated Medical Disorders

Ten patients of twin pregnancy had associated organic heart disease. Eight of these ten were well-compensated till the end of pregnancy. They were all hospitalized from the 24th week of pregnancy, and properly sedated. In two patients, there was cardiac decompensation at the 30th and 32nd week respectively, going into the fourth grade, but by proper digitalisation, rest, morphia and oxygen, they reverted back to the second grade and continued pregnancy till the end in the same grade.

Management of Labour

The conduct of labour in twin pregnancy is an excellent test of the obstetrician's acumen, skill, judgement and patience. Many complications like uterine dysfunction, malpresentations, cord prolapse, post-partum haemorrhage are significantly increased.

In most of the cases, the first stage was conducted as usual. However, if labour began several weeks prematurely or if the foetuses were judged to be very small when at term, no sedatives were used during labour. The labour was conducted similar to that with a single premature foetus.

Table II gives the comparative figures between the complications in twin labours and single labours.

In case of cord prolapse, one is more reluctant to do caesarean section in twins than otherwise but the prognosis is usually more favourable since the infants are smaller and com-

pression is ordinarily not so complete.

Transverse lie is much commoner in twin pregnancy, especially of the second twin, as compared to single pregnancy as shown in Table II, but the prognosis is much better, owing again to the smaller size of the babies. The management of this complication will be described later in this paper. There were 19 cases of transverse lie, giving an incidence of 3.8%.

Compound presentation, too, though commoner in twin pregnancy, hardly changes the prognosis for the worse, owing to smaller size and hence the easy delivery of the foetus. The treatment, like in single labour, is to push up the hand or foot, but the small presenting part of a small foetus usually slips out of the fully dilated cervix. If the foetus was of normal size, forceps was applied after pushing up the hand or foot, or if it was a breech the leg was pulled down after pushing up the hand.

Management of second twin: Argument continues unabated on whether the second twin is at greater risk than the first. Confusion arises because of conflicting reports from various prominent centres. There is also dispute about the management of the second twin, particularly as to the best delivery interval.

In the present series, in almost all cases of twin pregnancies which were diagnosed before the birth of the first of twins, the accoucheur was present during labour. As soon as the first foetus was delivered, after clamping the cord at two places, the lie of the second foetus was judged by abdominal examination. In case it was not longitudinal, the lie was corrected

to a longitudinal one by external version if possible. The sac of the second twin was then ruptured artificially, and patient made to bear down. If it was not possible to correct the lie by abdominal manipulation, internal podalic version was performed and the baby extracted as breech before the fully dilated cervix had chance to re-form. Some believe in performing internal or external cephalic version and applying the forceps or vacuum extractor for the delivery of the second twin. In either case, pressure on the fundus should be administered to engage the presenting part and to propel it downwards rapidly through the birth-canal which has so recently dilated.

A comparative review between Bender's and the present series is tabulated in Table III to show the in-

TABLE III
Interval between 1st and 2nd twin

Interval	Bender %	Present series %
Less than 15 minutes	60.0	54.6
15 - 30 minutes	25.0	37.4
31 - 60 minutes	11.5	6.8
More than 1 hour	3.5	1.2

cidence of various time-intervals between the first and second twins. In more than half the cases, the second twin was delivered 15 minutes after the first one. Most of the second twins delivered within 30 minutes. The longest interval encountered was 9 hours in a case where first of the twins was a premature still-birth weighing 1 lb., which escaped through 3/4th dilated cervix, following which the patient had uterine inertia.

Percival (1959) recommends that intervention should be avoided for at least 30 minutes in the absence of foetal distress or bleeding, since gentleness at delivery is important and a prolonged interval does not increase foetal mortality. Tow (1959) concluded that it was expedient, while the cervix was still fully dilated immediately after the first delivery, to rupture the membranes and deliver the second twin from a potentially dangerous situation. The findings from the present series and those of Little and Friedman suggest, however, that there is a safe minimum as well as safer maximum delivery interval.

Interference: Table IV shows the comparison between interferences carried on in the first and second twins in the present series during their deliveries.

TABLE IV
Interferences during delivery

Interferences	First twin	Second twin
External version	—	30
Internal podalic version	—	7
Breech extraction	3	25
Forceps deliveries	4	7
	For both twins	
Caesarean section	3	1

Caesarean section in twin pregnancy: The early history of caesarean section in twin pregnancy suffers from some lack of clarity which beclouds the whole history of the operation. Guttmacher and Kohl, by studying 140 cases of caesarean section in twins, concluded that:

- (1) Since a twin gestation does not impose a special threat to or

strain on integrity of a lower segment scar, there is no need to schedule a repeat caesarean section with twins, earlier than one would schedule with a single foetus.

- (2) Twins per se are almost never the reason for a primary caesarean section, one more complicating factor being the indication. The exceptions to this statement are, the very rare condition of locked twins, and the even rarer condition of term-sized conjoined twins.

In a nut-shell, the indications for caesarean section in twins will be — first twin lying transverse, placenta praevia, or pure obstetric indications like major degree of cephalo-pelvic disproportion.

In this series, four cases underwent caesarean section, which need special mention. Three of these were carried out before delivery of the first twin. In one case, both the foetuses were lying transverse, as confirmed by plain x-ray of the abdomen. The second case was admitted as an emergency, with accidental haemorrhage, with no evidence of foetal heart-sounds. The diagnosis of concealed accidental haemorrhage was made while twin pregnancy was missed. As the general condition deteriorated after artificial rupture of membranes and pitocin augmentation, the patient was taken up for caesarean section, when the twin gestation was detected. In the third case, first of the twins was lying oblique and the second as breech.

In the case where caesarean section was performed for second twin, the

first foetus, weighing $4\frac{1}{2}$ lbs. delivered spontaneously after which the sac of the second twin was ruptured, artificially as is done in most of the cases. Though the pelvis was moderately contracted, normal vaginal delivery for the second twin was expected, but as the vertex failed to enter the brim and since there was evidence of foetal distress, caesarean section was performed with the birth of a six pound baby.

Post-partum Haemorrhage

The ordinary hazards of the third stage — the unwelcome trinity — post-partum haemorrhage, adherent placenta, and post-delivery shock — are enhanced in multiple pregnancy.

There were 45 cases of post-partum haemorrhage in the present series, giving an incidence of 11.25 per cent, which is much higher than the incidence of the same hazard in single pregnancy (2.5 per cent) during the same period of study.

The placenta was removed manually in 22 cases, giving an incidence of 4.4 per cent as opposed to incidence of 0.82% in single pregnancy. This high incidence may, in some cases, be due to the active retention of placenta by the closure of cervix as methergin is routinely given with the delivery of the second twin.

Maternal morbidity

Amongst the 500 consecutive twin deliveries of the present series, the maternal morbidity was as follows:—

Maternal mortality

Two patients expired out of the 500 cases in the present series. The case histories, in short, are as under:—

TABLE V
Maternal Morbidity

Puerperal pyrexia	24
Severe anaemia	22
Gaping of episiotomy wound ..	4
Puerperal pyelitis	8
Infective hepatitis	1

(1) Mrs. M. K., aged 26 years, para 5, with 4 previous full-term normal deliveries — all alive — delivered mono-ovular twins on 20th June 1963. After the delivery of the first twin, membranes of the second sac were ruptured. The second twin, which was presenting as breech, was delivered within 20 minutes of the birth of the first foetus. As the placenta did not separate within the next 20 minutes, and the patient started bleeding profusely, the placenta was manually removed. In spite of oxytocics, and 4 blood transfusions, the patient could not be resuscitated and expired 4 hours after delivery — due to atonic post-partum haemorrhage.

The second case — Mrs. V. M., was a case of severe anaemia who developed jaundice prior to delivery — of non-obstructive type. After the delivery, this patient expired due to slow trickling type of post-partum haemorrhage.

The incidence of maternal mortality in the present series comes to 1 in 250.

The Newborn

Weight: There is less relative difference in lengths than in weights between the single and twin foetuses. This means that the twin is a thin child at birth. Further, it is a child which is viscerally more mature than the weight would indicate. As Table V suggests, a twin has a slight survival advantage but not a 500 gm. advantage as believed by Englehorn.

In the present series, no significant difference was found between the size

TABLE VI
Survival rates for single and multiple gestations (born alive)

Birth weight (in gms.)	Single		Multiple	
	No.	% survival	No.	% survival
401 - 1000	186	1.07	43	2.9
1001 - 1500	248	22.0	60	33.0
1601 - 2000	498	54.0	157	65.9
2001 - 2500	3894	92.0	447	94.2
2501 and over	31498	96.0	228	88.0
Total	36338	89.90	935	86.8

of male and female twins, though it is believed by some that the male twin is larger than the female twin.

Congenital malformations: Thirty cases had congenital malformations in one or both twins, giving an incidence of 6% as opposed to an incidence of 2.8% in single pregnancy. The incidence of congenital malformations is believed to be higher in mon-ovular than in bin-ovular twins, but no significant difference was noted in the present series.

Perinatal Mortality

Table VII shows the gross perinatal mortality in the present series as compared to various other series.

The following are various factors affecting perinatal mortality in twin pregnancies:

(i) **Zygoty:** As shown in Table VII, monozygous twins are in greater danger than dizygous ones.

TABLE VII
Gross perinatal mortality

Authorities	In twins	In singles
	%	%
Bender	11.0	2.2
Potter and Cruden	13.8	4.4
Record, Gibson and McKeown	15.2	3.9
Joseph	34.4	8.2
Guttmacher and Kohl	13.3	?
Ferguson	9.27	2.19
Present series	18.0	4.2

(ii) **Pre-eclampsia:** One hundred and eighty-six patients (with 372 foetuses) had pre-eclampsia and foetal loss in this group was 40 (10.7%).

(iii) **Twin pregnancy diagnosed at delivery:** Sixty patients (12%) were diagnosed as having twin pregnancy, after delivery of the first twin. In 29 of these, one or both infants were lost, all being under 30 weeks'

TABLE VIII
Zygoty of twins with number of infants lost

	Monozygous	Dizygous	Not known	Total	
				No.	% loss
No. of infants delivered	244	704	52	1000	
No. of infants lost	70	102	8	180	18.0

gestations. On one occasion methergin was given with delivery of the first twin because of failure to diagnose twins.

(iv) *Cord prolapse*: This was found on 5 occasions with the first twin (1%), one being a stillbirth. Ten cases had cord prolapse during the delivery of the second twin (2%). The hospital incidence of cord prolapse during the years under review was 1.2% and the foetal mortality was 28%, excluding twins. In the twin series, the mortality rates were: 20% for the first twin and the same for the second. This low mortality in twin pregnancy is because of:

- (a) Close supervision during labour and especially.
- (b) the policy of rupturing the second amniotic sac soon after the first infant is delivered.
- (c) possibility of prompt delivery if a prolapsed cord is found after the first infant has been delivered.

(v) *Birth weight*: As was to be expected the mortality rate fell as the weight of either first or second twin increased, the critical weight apparently being 2000 gms.

Summary

(1) Study of 500 cases of twin pregnancy during the years 1959 to June 1965 is reviewed and compared with course of pregnancy and delivery of singletons.

(2) No definite conclusion could be arrived as regards the aetiology of twin pregnancy.

(3) Binovular twins are commoner than uniovular twins.

(4) The incidence of hydramnios, premature onset of labour, anaemia, accidental haemorrhage, placenta praevia, abnormal presentations, post-partum haemorrhage, and manual removal of placenta was higher in twin pregnancy than in single pregnancy.

(5) Prematurity is the major cause of foetal loss and could be reduced by rest from 30 weeks or earlier to 36 weeks.

(6) The second twin is at greater risk from asphyxia and trauma, but skilled obstetric assistance at delivery will reduce mortality.

(7) Early controlled delivery of second twin is advocated with rupture of membranes after 5 minutes and delivery completed within 20 minutes.

(8) The birth weight appears to exert a profound influence on foetal survival and the critical level with regard to foetal survival appears to be 2000 gms.

(9) Congenital malformations were commoner in twins than in singly born children.

(10) Various factors affecting the perinatal mortality are discussed.

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