

DIFFICULTIES IN THE DIAGNOSIS OF TWIN PREGNANCY ON RADIOGRAPHY

by

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Introduction

Guttmatcher states that twins remain undiagnosed in 50% of twin-babies weighing less than 2500 gms. and 28.2% of twin-babies weighing more than 2500 gms.

The antenatal diagnosis of twins is important both to the obstetrician and to the patient. An obstetrician would like to diagnose twin pregnancies because of the increased frequency of complications during pregnancy and labour (Table I).

TABLE I

Complications	Pregnancy	
	Twin	Single
I. During Pregnancy		
Premature termination of pregnancy	44%	9%
Average duration of pregnancy in days	256	281
Average birth weight	2391 gms.	3405 gms.
Pre-eclampsia	16-24%	6-7%
Eclampsia	0-3.2%	0.0.2%
Hydramnios	3.6-10.6%	0.5%
Placenta previa	0.5- 3.5%	0.1%*
Accidental haemorrhage	1.8%	1.3%
Congenital anomalies of the fetus (not compatible with life)	2	2%
Fetal mortality (over 1500 gms.)	4.4%	1
II. During Labour		
Prolonged labour (uterine inertia)	4.0%	3.6%
Prolapse of cord	1.1%	0.25-0.28%*
	7.3%	1.5%

* overall incidence^{7, 14}.

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In mothers with twin pregnancy, incidence of anaemia and of cardio-respiratory embarrassment (due to

overdistension of abdomen) is increased. Abnormal presentation is more common in twin-babies than in single babies.

Twin pregnancy, therefore, requires special management during pregnancy and labour, e.g. external version is contraindicated in twin pregnancy; intravenous oxytocic during the delivery of the anterior shoulder of the baby, often given to

prevent the blood-loss during the third stage of labour, is hazardous in undiagnosed twin pregnancy.

So the twin pregnancy should be managed by an obstetrician in a well-equipped hospital.

Only exceptionally can twin pregnancy be diagnosed clinically. Table II shows the clinical signs of twin pregnancy as mentioned in the literature.

TABLE II

Twin pregnancy suspected by	Twin pregnancy is diagnosed by
Palpation	
1. Very large and globular uterus (D.D. hydramnios, fibroids, large baby)	1. 2 heads, 2 backs, 2 breeches or 1 back and 4 fetal poles
2. 3 fetal poles (D.D. Myoma feels like head)	
3. Sulcus in the fundus or on the anterior surface of the uterus (the sulcus may be absent in twin pregnancy; it may be present in arcuate uterus)	
4. Ahfeld's diameter (from the presenting part in the pelvis to the large pole in the fundus) more than 30 cms., because one baby cannot be this long	
5. Acute hydramnios	
Auscultation	
1. At or near term, 2 point of maximum intensity of fetal heart sounds on opposite sides of midline, one above the umbilicus and the other below it (Thompson)	1. Difference of more than 10 beats between fetal heart observed by two different persons at the same time*
2. High fetal heart rate at or near term is more suggestive of twin pregnancy than of single large baby	In suspected twin pregnancy with insignificant difference in fetal heart rates, pressure on one of the fetal skulls produces bradycardia in the fetus and thus helps diagnosis
Vaginal Examination	
1. Small presenting part in the pelvis with cervix obliterated and dilated 2 cms. or more before the expected confinement date without the evidence of labour	1. Feeling 2 distinct amniotic sacs through the os externum
3. Fetal heart sounds heard (per abdomen) and a macerated baby or a pulseless prolapsed cord is felt per vaginum	2. Palpation of 2 large parts per vaginum

* When F.H.S. of one of the babies is inaudible, electrocardiogram or stethogram¹⁹ and recorded disc of fetal heart sounds may help.

Radiology is by far the most important and accurate method of diagnosis. However, in a short interval of about 2½ months, we saw 3 cases which were diagnosed radiologically as a single pregnancy, but which delivered as twin pregnancy. Re-examination of radiographs, after the delivery of twins in these cases, failed to reveal shadows of the second fetus in each case. These cases are as follows:

Case 1

A.S., gravida V, aged 24 years, attended the antenatal clinic, Municipal General Hospital, Sion, on 26-11-56 with a history of amenorrhoea for 28 weeks. On routine examination, the fundal height was 31 cms. and the uterus appeared larger than normal for this duration of pregnancy. A provisional diagnosis of twin pregnancy was made because of the suspected two foetal heads on palpation.

The radiographic examination (Fig. 1)

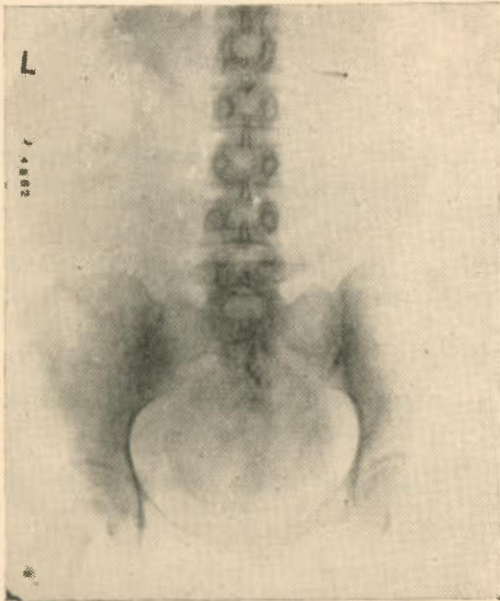


Fig. 1
Case 1.

done on 6-12-56 showed a large homogeneous opacity in the abdomen indicating hydramnios. A careful search for the twin pregnancy was made and a part of skeleton of only a single fetus was seen. The head of the fetus was in the pelvis and it appeared that there was hyper-extension of the neck. No other feature of note was seen on the radiographic examination.

The patient was admitted on 30-1-57 for breathlessness which was supposed to be due to hydramnios. She was relieved of her symptoms with rest in bed. But the symptoms recurred on 6-2-57 and a high rupture of membranes was done and 3½ pints of fluid were removed.

Patient had no pains for 24 hours and a pitocin drip (5 units of pitocin in 500 c.c. of 5% glucose solution given at the rate of 10 drops a minute) was started; the patient delivered twins within 1½ hours afterwards.

The birth weight of the babies was 4 lbs. 8 ounces and 4 lbs. 9 ounces respectively. Both babies were alive and went home on the 11th day after delivery with the mother. On the third day after the delivery an abdominal sterilization was done because of multiparity.

Case 2

K.I., gravida V, aged 30 years, was admitted in the Municipal General Hospital on 4-3-1957 with labour pains and with a history of amenorrhoea for 38 weeks.

On routine examination the fundal height was 35 cms., the uterus was tense and fluid thrill was present; hydramnios was suspected. The fetal parts could not be felt distinctly nor were the fetal heart sounds heard clearly.

On routine radiographic examination (Fig. 2), a single fetus was seen in the pelvis with head presentation and extended lower extremities. The approximate radiographic fetal maturity was about 26 weeks and there was considerable enlargement of the uterus for this size of the fetus and the duration of pregnancy. It was thought that this was due to hydramnios.

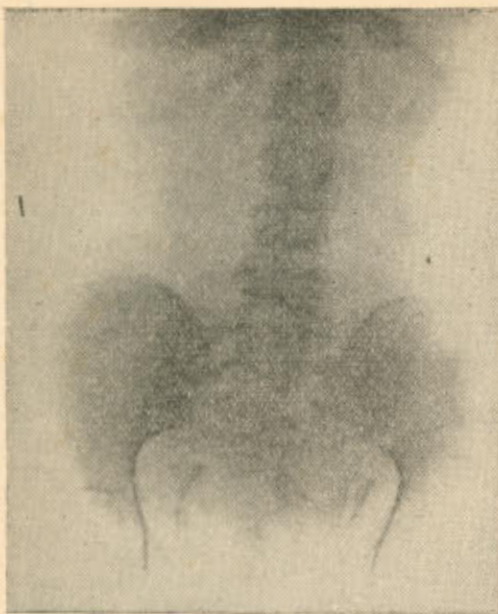


Fig. 2
Case 2.

P.V. examination revealed two finger dilatation of the cervix which was effaced. The bag of membranes was intact and hence high rupture of membranes was done with a Drew-Smythe catheter. One hundred and twenty ounces of liquor amnii were removed. The patient delivered within about 15 minutes. The first baby weighing 1 lb. 8½ ounces was delivered with vertex presentation. It died within 45 minutes after birth. The second baby was delivered within another five minutes; this was a female weighing 1 lb. 4 ounces and died on the third day after delivery. The radiographs of these babies were taken and it was noticed (Fig. 3) that the degree of ossification in skeletal bones was the same in both the babies. The ossification centres for calcanei were seen in both and the centres for talus were not seen in either of the babies. The fetal maturity in both these babies was considered to be about 26 weeks of intra-uterine life. The puerperium was normal and the patient was discharged on the fourth day after delivery.

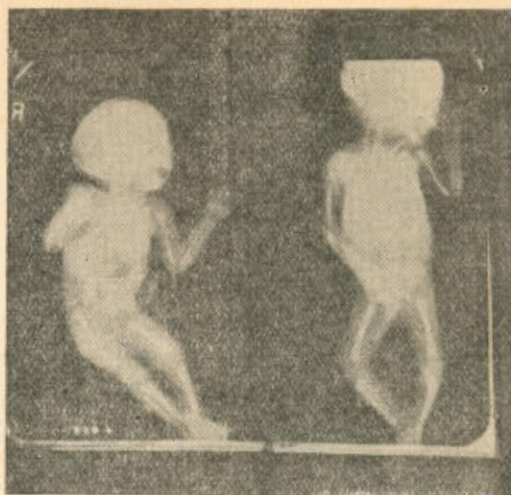


Fig. 3
Case 2 — Radiograph of the twins after birth.

Case 3

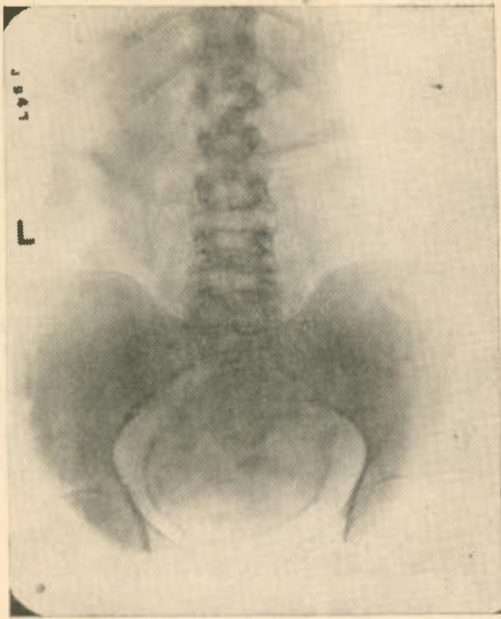
R.D., gravida VII, aged 35 years, was admitted for labour pains in Municipal General Hospital, Bombay, on 15-3-1957 with a history of amenorrhoea for 38 weeks.

A radiograph was taken for gravid uterus because of suspected hydramnios (Fig. 4). A single fetus was seen of approximately 36 weeks of maturity. The patient delivered two babies on the same day. One was a normal female baby weighing 4 pounds 7 ounces and the other was a monster (Figs. 5A and 5B) weighing 1 pound 10 ounces. The radiographs of the gravid uterus and the monster (after delivery) are shown in Figs. 4 and 6 respectively.

Discussion

The fallacies in the diagnosis of twin pregnancy by radiological examination do not seem to be unknown, but they are not widely appreciated.

Apart from a faulty technique in radiography, the following are the possible explanations of errors in the radiological diagnosis of twin pregnancy.



Case 3.
Fig. 4



Fig. 5A
Case 3 — Photograph to demonstrate the surface anatomy of the monster.



Fig. 5B
Case 3.



Fig. 6
Case 3 — Radiograph of the monster (after delivery).

(1) During radiography, the exposure time is 1 to 3 seconds, depending upon other factors; during this period, the fetus has enough time to move about in the uterine cavity. The fetal movements are faster, if there is relative anoxia. The fetus can move more freely in the uterus in presence of hydramnios.

(2) In cases of hydramnios, the large quantity of fluid itself produces more tissue thickness and produces generalised haziness or ground-glass background. Fetal shadow is, therefore, poorly defined. This is a handicap as twin-babies are, on an average, smaller than those of single pregnancy and hence have less ossification of fetal bones. The haziness

due to hydramnios is especially marked in a film which is slightly underexposed.

(3) Well - pronounced partial shadows of several ribs may be mistaken for the second spine running parallel, or calcified fibromyoma of the uterus may be mistaken for the fetal head.

(4) The film may not be large enough to include the whole of the abdomen, so one head may be missed in the radiograph.

(5) Rarely, the twins may be superimposed on each other.

The above fallacies can be avoided by the following methods (Table III):

TABLE III

Source of fallacy in diagnosis of twins by radiography	Suggested method to circumvent the fallacy
1. Non-inclusion of the whole of the uterus	Using a large X-ray film (17" x 14") which should be positioned properly in relation to the uterus
2. Overlapping of fetuses	Two views—postero-anterior —lateral
3. Excessive fetal movements	(a) Compression of the uterus due to prone position of the mother, or by a compression band if only supine view could be taken (b) Deep inspiration or oxygen administration just prior to radiography
4. Haziness due to hydramnios	(a) In P.A. view, baby will be nearer the X-ray plate than in A.P. view (b) In P.A. view, some fluid will be displaced laterally
5. (a) Partial shadows of ribs mistaken for the second spine (b) Calcified fibromyoma of the uterus mistaken for the second fetal head	Demonstration of well-defined shadows of the spines in connection with those of the heads

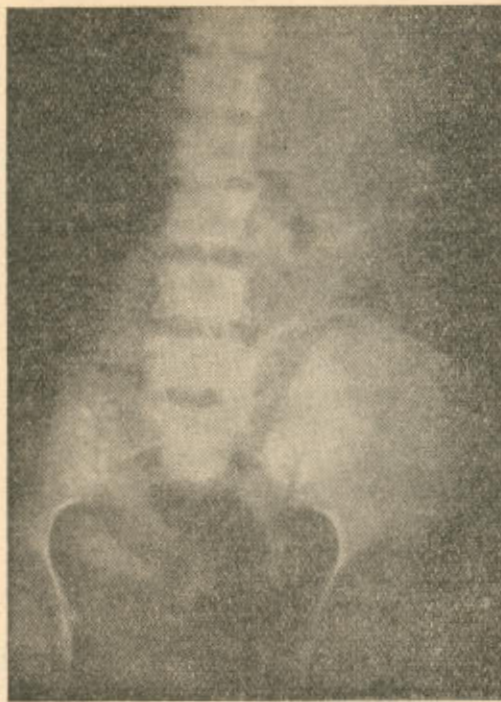
Exposing large films so as to include the whole abdomen and taking two views: (i) the postero-anterior view with the patient in prone position, and (ii) a lateral view will circumvent most of the above fallacies. Asking the mother to take deep inspiration and expiration or giving oxygen to the mother before holding the breath during the exposure would ensure oxygen saturation of the maternal blood and hence good oxygenation of fetal blood, as the fetal movements are more frequent and faster in poor oxygenation of the blood.

Above all, it is important to remember that though radiology is a useful aid to the clinician, it has its fallacies. So, when a clinician strongly suspects twin pregnancy in spite of the radiologist's report of single pregnancy, the clinician should ask for a repeat radiological examination, and the radiologist should look for the fallacies in the method of radiography.

This point is illustrated by the following case:

P.H., a fourth gravida, was admitted with a history of amenorrhoea of 36 weeks, edema of legs and headache. On obstetric examination, her uterus was tense and the presentation could not be made out per abdomen, so a radiograph of the fetus was taken (fig. 7). The radiograph showed one fetus presenting by breech; in addition, there was another shadow which looked like a calcified tumour (fibroid) or a fetal head.

A repeat radiological examination (Fig. 8) left no doubt as to the diag-



Case 4.
Fig. 7

nosis of twin pregnancy.

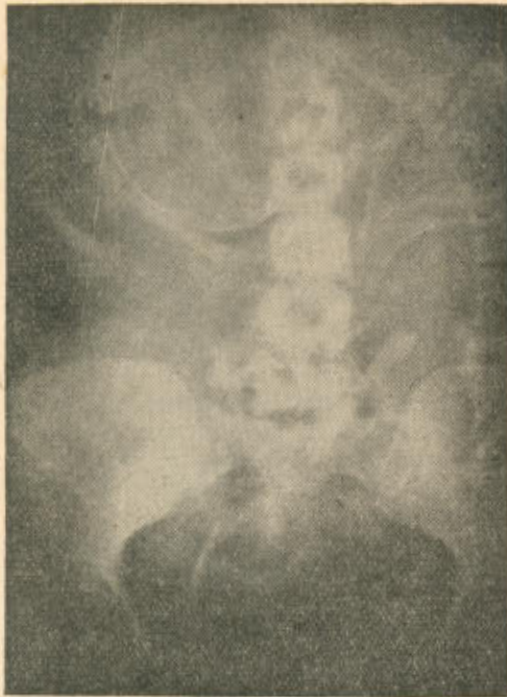
The patient delivered 2 male babies weighing 3 lb. 6 oz. (still-born) and 3 lb. 5 oz. (live-born).

Summary

(1) The importance of antenatal diagnosis of twin pregnancy is stressed, and the relative values of clinical signs are mentioned.

(2) Some of the fallacies in radiological examination have been pointed out and methods to circumvent them have been suggested.

(3) Four cases of twin pregnancies where the radiological examination showed single pregnancy have been reported.



Case 4.
Fig. 8

Acknowledgment

We thank our Chiefs, Dr. B. V. Aroskar, Dr. G. M. Nerurkar, and our Superintendent, Dr. S. V. Joglekar for permitting us to use the hospital records.

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