

STAR GAZING FETUS — A CRITICAL REAPPRAISAL OVER 15 YEARS (1974-1988)

GAUTAM ALLAHABADIA • VIVEK PATKAR • AMEET PATKI • G.M.NIYOGI • P.R.VAIDYA

ABSTRACT

Over 15 years (1974-1988), a total of 770,376 babies have delivered at the Lokmanya Tilak Municipal General Hospital. 2230 (3.16%) have been breech presentations. The authors have reviewed 1128 patients, out of the 2230 in whom an X-ray and/or USG examination was done antenatally. Some degree of deflexion was seen in 54 fetuses (4.7%) out of the 1128 under study, 14 of these 54 fetuses were classified as "Star Gazing" (1.24%). The etiologic factors, mode of delivery and perinatal outcome alongwith a review of literature completes this paper.

Introduction

Among the factors leading to the increased perinatal mortality rate associated with breech presentation, relatively little attention has been given to hyper extension of the fetal head. The potentially fatal deflexion can be distinguished from benign grades of deflexion by measuring the angle which usually appears in either the cervical vertebrae or the cervicothoracic junction. The term hyperextension of the fetal head or "Star Gazing Fetus" should be reserved only for those rare cases where the deflexion angle is

greater than 90 degrees. There have been a variety of interpretations concerning the significance of hyperextension of the aftercoming head in a "Star Gazing fetus". Some authors have considered this to be rare, insignificant and transitory, while others have felt it to be common, persistent and significant. Possible etiologic factors include multiparity, multiple pregnancies, fetal anomalies, tumours of the fetal neck, cord around the neck and uterine leiomyoma (Henrik Caterini et. al. 1975). A review of literature reveals however, that in approximately 75% of reported cases, no etiologic factor is mentioned which compares with our study (Table 7). Behrmann(1962) and Caterini

*Department of Obstetrics and Gynaecology
L.T.M.G.H. and L.T.M.M.C, Sion, Bombay 22.*

1975 suggested that spasm or congenital shortening of the suboccipital extensor muscles of the neck may be the most common etiology of "Star Gazing Fetuses". The diagnosis can be determined prior to delivery only by X-ray or USG and is frequently an unexpected finding. This is in itself an indication for routine X-ray or USG evaluation of every patient in labour with breech presentation. Since the hyperextended head may flex prior to the onset of labour, X-rays are most useful if taken during early labour. If present during labour, hyperextension may be expected to persist until delivery. Ballas and Toaff (1976) (1978) suggested a simple radiologic criterion for classification of deflexion attitude. Four grades of fetal deflexion were defined - I, well flexed fetal head; II, mildly deflexed head, analogous to military position; III, extended head, with a deflexion greater than military position, but equal to or less than 90 degrees and IV, hyperextended head, with a deflexion angle greater than 90 degrees.

Material and Methods

The authors have reviewed the labour records at the Lokmanya Tilak Municipal General Hospital over 15 years (1974-1988). There were a total of 70,376 deliveries in this period. 2230 (3.16%) of these have been breech presentations. Only 1128 out of the 2230 breech presentations had an X-ray and/or USG examination done antenatally or in early labour (50.59%) (Table I). The patients included primis and multis, booked and emergency cases in the age group of between 17 yrs and 27 yrs. X-rays, AP and lateral views and in a few cases an USG examination was done in 1128 patients. Radiologic assessment of the fetal head attitude,

TABLE I
LOKMANYA TILAK MUNICIPAL
GENERAL HOSPITAL (1974-1988)

<i>Incidence</i>	<i>No. of Patients</i>	
Total number of Deliveries	70,376	
Breech Presentations	2,230	(3.16%)
Antenatal X-ray Abdomen and/or USG Examination	1,128	(50.59%)
Some degree of Deflexion	54	(4.7%)
"Star Gazing Fetus"	14	(1.24%)

degree of extension, type of delivery and the outcome were recorded. The angle of extension (E) is angle between main axis of cervical vertebrae and upward extension of main axis of thoracic vertebrae. The fetal outcome was evaluated by 1 and 5 minutes Apgars. Follow-up of the babies has been there till discharge. An analysis was done with recommendation and compared with similar series in a review of literature.

Observations and results

In our series 54(4.7%) of the fetuses under study had some degree of deflexion. 14 (1.24%) out of those 54 fetuses had a deflexion angle greater than 90 degree. These were the 14 "Star Gazing Fetuses" who were studied. Table II shows that frank breech presentation was the most common presentation (492 cases; 43.61%). An important observation is that 9 out of the 14 "Star Gazing Fetuses" were also found in the frank breech category. Of the 14 "Star Gazing fetuses", 4 (28.57%) were delivered vaginally. The Caesarean section rate was 71.43% (Table III). There were 10 Primis (71.43%), out of a total of 14 patients (Table IV), 3 babies had dislocated cervical vertebrae with cord transection after apparently easy vaginal deliveries and 1 baby died of meningeal haemor-

TABLE II
DIFFERENT CATEGORIES OF
BREECH PRESENTATION

	No.	%
Frank	492	(43.61%)
Complete	369	(32.71%)
Incomplete	267	(23.68%)
Total	1128 *	(100 %)

* - Patients who had an X-ray and/or USG.

TABLE III
"STAR GAZING FETUS"

Mode of Delivery	No.	(%)
Vaginal Delivery	4	(28.57%)
Caesarean Section	10	(71.43%)
Total	14	(100 %)

TABLE IV
MOTHERS OF "STAR GAZING FETUSES"

Obstetric Status	No.	(%)
Primis	10	(71.43%)
Second Gravida	3	(21.43%)
Third Gravida	1	(7.14%)
Total	14	(100%)

TABLE V
SUMMARY OF FETAL RESULTS

Delivery	No. of Living cases	Dead	A	B
Vaginal	4	—	4	3 1
Abdominal	10	10	—	—

A-Cord transection with dislocated cervical vertebrae
B-Meningeal Haemorrhages

TABLE VI
STAR GAZING FETUS

Etiological Factors	No. of cases	(%)
Fetal Malformation	1	7.14%
Uterine Malformation	1	7.14%
Cyst of Fetal Neck	1	7.14%
Cord around Neck	3	24.42%
None	8	54.16%
Total	14	(100%)

TABLE VII
PERSISTENCE OF HYPEREXTENSION
AFTER BIRTH

Duration of Persistence	No. of Babies
4 Weeks	1
6-10 Days	1
1-5 Days	3
12 Hours	5
Total	10

rhage. All the 10 babies delivered by Caesarean section had good Apgars (Table V). The one apparent etiologic factor among our 14 patients was cord around neck in 3 (Table VI). In addition, premature rupture of membranes occurred in 11 of our patients. It is difficult to explain the interrelation between premature rupture of membranes and deflexion of the after-coming head. 5 of the "Stargazers" had persistence of the hyperextension for a period of 12 hours. 1 had persistent hyperextension for 4 weeks, but eventually all assumed a normal attitude before discharge (Table VII). We could follow-up only one baby and she is now 4 years old with no neurological deficit. Analysis of the 14 cases and also analysis of the reported experiences of the others clearly confirms that abdominal delivery results

in fewer fetal deaths resulting from traumatic delivery (Table VIII). In the group of 1128 patients who were X-rayed the perinatal mortality was 28%, while in the group of 1102 patients, not X-rayed, the perinatal mortality was 43%. This clearly underscores the fact that an X-ray should be taken of all breech presentations to determine the attitude of the head as well as to evaluate pelvic adequacy.

mately proved to be mongols; of 15 films, 7 showed some type of abnormal posture, which in 4 was cervical hyperextension and breech presentation. The same authors also found 8 "Stargazing fetuses" in 4130 consecutive radiographs (0.19%) and 3 of these 8 had Down's syndrome. In our series, none of the "stargazing fetuses" had Down's Syndrome. Among the factors favouring caesarean section for breech

TABLE VIII
REVIEW OF LITERATURE (STAR GAZING FETUS)

Author	No. of cases	Method of Delivery		Outcome	
		Vaginal	Abdominal	Baby Living	Baby Dead
Ballas and Toaff	20	11	9	12	8
Caterini et. al.	7	2	5	7	—
Wilcox H.H	11	7	4	9	2
Present Authors	14	4	10	10	4

Discussion

The etiology of the hyperextended head is obscure. Behrmann (1962) and Caterini (1975) attributed it to hypertonicity of the extensor muscles of the neck and this view is supported by the fact that the head can remain in extension for some time after delivery as in our series. If the hyperextension developed long before birth, the dura and ligaments of the posterior side of the cord would probably be foreshortened and hence prone to damage when flexion of the fetal head occurs during vaginal delivery.

An important relation to be kept in mind is an apparent association between the "Stargazing fetus" and Down's syndrome. Russel and Aird (1976) reviewed prenatal radiographs of fetuses who ulti-

presentation are borderline pelvic capacity, excessive fetal size, dysfunctional labour, prematurity and as indicated by our study and a review of literature, hyperextension of the fetal head. We recommend an abdominal X-ray for all breech presentations. If hyperextension of greater than 90 degrees is found, caesarean section is the best course.

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