

# STUDY OF INFLUENCE OF ENGAGEMENT OF FETAL HEAD IN PRIMIGRAVIDAE ON THE ONSET AND OUTCOME OF LABOUR:

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## SUMMARY

One hundred and seventy six primigravidae were studied prospectively and found to have the fetal head engaged at the onset of labour only in 27 cases (15.34%). It was correlated with age, marriage conception interval, height of the patient, position of the fetus and its birth weight. 80% of patients with engaged head delivered within 14 days and 52% within 7 days. While all patients in engaged group had spontaneous vaginal delivery in unengaged group 9.4% required caesarean section and 3.36% required outlet forceps/ventouse.

### Introduction

Traditionally 'engagement' of fetal head is said to take place usually by 36 weeks of gestation and should remain well engaged from that date onwards (Percival 1980).

Engagement has been defined as passage of biparietal diameter of fetal skull through the plane of the pelvic inlet. The sign of a high head at term in primigravidae is not a welcome finding and calls for investigations as to possible causes (Ian Donald 1979).

While 55.2% of primigravida had unengaged head at the time of onset of labour in Stipp's series (1969), 50% entered labour with unengaged head in the study by Weeks and Flynn (1975). In India Sharma and Soni (1978) and

Gosh and Chaudharin 1980) found that 50% and 43.4% of primigravidae entered labour with engaged fetal head respectively, while Chogtu and Khanum (1977) reported that 95% of Kashmiri women entered labour with unengaged head.

With a view to find out the incidence of engagement of fetal head in primigravidae at the time of onset of labour, frequency distribution of duration of gestation at first reported engagement and to see the effect of engaged and unengaged fetal head on the onset and outcome of labour the present elaborate and prospective study was carried on.

### Material and Methods

This analysis is based on prospective study of 176 primigravidae attended the antenatal clinic in General Hospital attached to Industrial Complex at Neyveli, selected at random. Cases who were not sure of their dates or with irregular

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cycles or unrelated complications and those delivered at home were omitted.

Criteria of engagement followed was abdominal palpation of one pole or small portions of both poles of the fetal head and on vaginal examination, station of the lower most part of the vault at or below the level of ischial spines. This corresponds to 2/5 or less of head being above the brim as described by Philpott and Castle (1972).

All cases included in the study were examined weekly from 36 weeks of gestation till delivery. At each visit they underwent complete obstetric examination with particular attention to engagement of head. Routinely at the end of 38 weeks assessment of pelvis and cephalopelvic disproportion were done. Subsequently internal examination was restricted to those where the head was suspected to be engaged since last examination. Suspected cases of disproportion had one erect lateral view X-ray of pelvis.

When they were admitted for labour, time of onset of labour, time and mode of delivery, condition and weight of the baby at birth were recorded in particular.

**Results and Observations**

Out of 176 primigravidae studied the fetal head was found to be engaged at the

time of onset of labour only in 27 (15.34%) cases.

Table I shows the frequency distribution of the time of first engagement of the head amongst those who had engaged head before onset of labour. The highest incidence of engagement for the first time i.e. 4.55% was at 40 weeks. Head engaged in 74.08% cases from 38 to 40 weeks and the mean time of engagement was  $39.04 \pm 1.36$  weeks or  $273.26 \pm 9.53$  days.

Pattern of engagement delivery interval in primigravidae is shown in Fig. 1. 80%

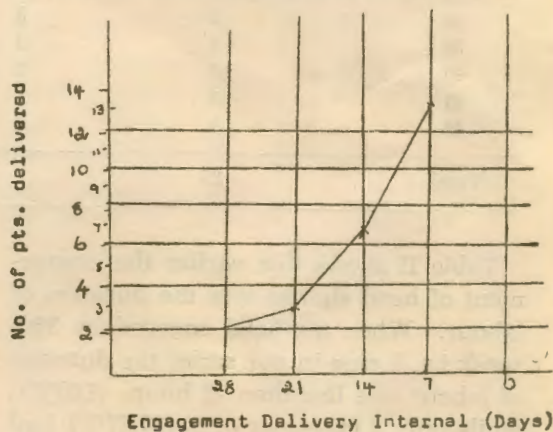


Fig. 1.

of cases delivered within 14 days of first reported engagement and 52% within 7 days. The maximum engagement delivery interval in this study was 4 weeks.

TABLE I

Frequency Distribution of First Reported Engagement of Fetal Head Before Onset of Labour

Period of pregnancy	Primigravidae with first reported engagement			
	No.	Percentage	Mean	Standard Deviation
36	1	3.7	39.04 weeks or (273.26 days)	1.36 weeks (9.53 days)
37	3	11.11		
38	5	18.52		
39	7	25.93		
40	8	29.63		
41	2	7.41		
42	1	3.7		



The observation that 80% patients delivered within 14 days, could in conjunction with other factors be of limited value for prediction of expected date of delivery.

hours is more in cases with unengaged head.

Relation of engagement of head to age was noted and it was found that before

TABLE II  
*Duration of Spontaneous Labour in Relation to Time of Engagement Before Labour*

Period of pregnancy	Total No. of patients in first reported engaged head at different weeks	Duration of labour			
		Less than 12 hours		More than 12 hours	
		No.	%	No.	%
36	1	1	100	0	0
37	3	2	66.67	1	33.33
38	5	3	60	2	40
39	7	3	42.86	4	57.14
40	7	2	28.57	5	71.43
41	1	1	100	0	0
42	1	0	0	1	100
Total	25				

Table II shows that earlier the engagement of head shorter was the duration of labour. When the head engaged by 36th week i.e. 1 case in our series the duration of labour was less than 12 hours (100%), while only 3 cases out of 8 (27.27%) had duration of labour less than 12 hours when the head engaged first at 40 weeks.

The duration of spontaneous labour in relation to engagement of head at the onset of labour is shown in Table III. It shows clearly that the duration of labour is definitely shorter when the head is engaged at the time of labour. The incidence of prolonged labour, more than 30

onset of labour, out of 105 patients below 20 years, 13 (12.38%) had engaged head and both the patients (100%) in the age group above 30 had unengaged head.

Relationship of height of mother to engagement of head before onset of labour was noted and it was found that engagement occurred in 10 (14.29%) out of 70 patients with height below 5 feet and 5 out of 30 (16.67%) in those with height above 5' 3" had engaged head.

Out of 27 cases with engaged head at the time of onset of labour, 24 (88.9%) had marriage conception interval less than 2 years and 1 (3.7%) had above 5

TABLE III

*Duration of Spontaneous Labour in Relation to Engagement of Head at the Onset of Labour*

Duration of Labour	Unengaged Group	Engaged Group	Total
Less than 12 hours	53 (48.18%)	13 (54.17%)	66
12-30 hours	47 (42.73%)	9 (37.5%)	56
31-48 hours	10 (9.09%)	2 (8.33%)	12
Total	110	24	

years. In unengaged group, out of 149 cases 132 (88.6%) had marriage conception interval less than 2 years and 4 (2.7%) had more than 5 years interval.

While recording birth weights of the babies it was found that average weight of the babies was higher in unengaged group (2.87 kg) than in engaged group (2.52 kg). In case of engaged group only 37.04% cases had babies weighing more than 3 kg while in unengaged group 44.97% had such babies.

engaged head at the time of onset of labour had spontaneous delivery and in the unengaged group 4 cases (2.69%) had elective caesarean section for cephalopelvic disproportion, while 130 cases (87.25%) had spontaneous delivery, 5 cases (3.36%) required outlet forceps/ventouse. Ten cases (6.71%) ended in caesarean section. Of the 10 cases of caesarean, 7 were for cephalopelvic disproportion and the rest for other indications. This is depicted in Table V.

TABLE IV  
Relationship of Engagement to Fetal Position

Engagement		Anterior	Transverse	Posterior	Total
Engaged	No.	25	2	Nil	27
Group	%	92.59%	7.41%	Nil	100%
Unengaged	No.	125	6	18	149
Group	%	83.81%	4.03%	12.08%	100%

Table IV shows the relationship between engagement of head and various fetal positions. Out of 150 cases with Occipito-anterior position, 25 (16.57%) had engaged head, and of 8 cases in transverse position 2 (25%) had engaged head and out of 18 cases with posterior position none had engaged head.

We found that in those with spontaneous onset of labour with engaged head for 1 patient (3.7%) Oxytocin was used to augmentation in unengaged group.

In this study all 27 cases (100%) with

Discussion and Conclusion

Among the primigravidae 84.66% cases had unengaged head at the time of onset of labour. This observation is in complete contrast to various reports. Shiralli and Bhatt (1961) found 80.7% of primigravidae entered labour with engaged head and Burke *et al* (1958) found that 95% cases had engaged head at the time of onset of labour.

There is no explanation for the observations in our cases at present. However,

TABLE V  
Mode of Delivery

	Total No. of Patients	Mode of Delivery					
		Spontaneous Delivery		Forceps/Ventouse		Caesarian	
		No.	%	No.	%	No.	%
Engaged	27	27	100	..	..	..	..
Unengaged	149*	130	87.25	5	3.36	10	6.71

\* Out of 149 cases 4 had (2.69%) elective Caesarian section.