

MOULDING SCORE—A USEFUL GUIDE FOR FOETAL WELL BEING

by

(Mrs.) N. P. SHILOTRI

and

(Mrs.) S. P. PANAT

SUMMARY

The modified scoring system which assesses the moulding score at all the three sutures (rather than any two sutures) can be a better estimate of head compression due to pressure against the bony pelvis exerted on all sides of the vertex. It enable to study moulding in objective manner in terms of numerical score which removed the vague terminologies like 'severe' 'excessive'. This assessment made periodically alerts one to the amount of stress and strain undergone by the foetal skull and also the time period in which progressive changes are noted. This method does not require special equipment and is safe, simple and easy enough to be understood and followed by the medical personnel working at rural centres so that early decision of transferring the patients to speciality centres can be taken.

Introduction

Labour is the interplay of the adaptation of foetal skull to the maternal pelvis, uterine contractions influencing the process. Under pressure of the uterine contraction the foetal skull bones overlap each other in order to reduce the diameter of the skull and also the area enclosed by the vertex. Doubtless this is helpful in cases of borderline cephalopelvic disproportion where it can help to give a successful vaginal delivery. However, excessive moulding may as well be injurious to the health of the foetus as it can cause serious intracranial haemor-

rhage and cerebral anoxia. Eastman and Kohl (1962) while studying obstetric background of cerebral palsy stated that mechanical trauma may cause brain injury not only through the medium of cerebral haemorrhage but also as a result of pressure exerted by bony pelvis on malleable skull with compression of blood vessels and resultant cerebral ischaemic hypoxia.

In this study we have attempted to establish a simple clinical method based on the 'score of moulding', by palpating sutures during labour so as to discriminate between normality and impending abnormality.

From: Department of Obstetrics & Gynaecology, Byramjee Jeejeebhoy Medical College & Sassoon General Hospitals, Poona-411 001.

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Material and Methods

This work represents a detailed study of 96 patients assessed in labour at

Sassoon Hospitals, Pune from March 1980 to March 1982.

examination moulding was assessed at lambdoid, sagittal and coronal sutures.

The two groups of cases studied were:

The degree of moulding was described as:

(1) Normal spontaneous labour with	as:	
(+) One plus	Score 1	Closure of suture line
(++) Two plus	Score 2	Reducible overlap
(+++) Three plus	Score 3	Irreducible overlap

vertex presentation, a baby weighting at least 2500 gms.

(2) Cases of borderline cephalopelvic disproportion for trial of labour, occipitoposterior position with failure of rotation, referred cases of obstructed labour, prolonged second stage i.e. all cases with evident or anticipated cephalopelvic disproportion were essentially included to study mainly the pelvic factor operating on the foetal skull; cases having pre-eclampsia, multiple pregnancy, abnormal presentation, preterm and postterm labour, APH were excluded, thus avoiding majority of causes contributing to foetal distress.

On admission the patient's detailed history was taken and a careful examination was carried out giving particular attention to height of the fundus, presentation, position, foetal hear sunds, part of the vertex noted in 'fifths' (Crichton's method) to ensure that the perceived descent is a true descent and not merely a reflection of moulding. Progress of labour was noted by judging the character, frequency and duration of uterine contractions and on vaginal examination done 2 hourly to note the dilatation effacement, presence of caput and moulding, position and station of head, and assessment of pelvis. The amount of moulding was noted as per the modification of the Philpot (1979) system of score of moulding which helps in comparing the extent of moulding from one vaginal examination to another. On vaginal

The degree of moulding at cocipitoparietal, parietoparietal and frontoparietal sutures were summed up to give a score which can be a maximum of 9. The score was assessed on admission at the end of the first stage, at the end of the second stage and immediately after birth to confirm the findings in labour. In cases of caesarean section findings in the latest vaginal examination just before caesarean were taken. The maximum score of observation was taken for calculations.

The foetal outcome was assessed noting one minute APGAR score (an index of asphyxia and need for assisted ventilation). A neonatal follow up was done for 7 days to assess neurological damage to the baby. In the event of death a post-mortem was carried out.

The Choice of Method

Though the measurement of foetal skull diameter by intrapartum ultrasonogram forms the best method to judge the amount of moulding, the nonavailability of the facility round the clock in labour room made us to resort to the clinical method.

The method of serial X-rays during labour and of the infant immediately after birth is not only cumbersome but might also prove to be hazardous to the foetus which in case of severe asphyxia may not be in a condition to be shifted to the radiology department.

As the spring effect of compression of head by maternal passage disappears

rapidly after the first hour of life, this clinical method applicable during labour proved to be useful.

This method of objective assessment in terms of numerical score removes terminologies like 'severe', 'excessive' which are subject to much personal variations. The modification of assessing at all three sutures gives a better estimate of head compression due to pressure against bony pelvis on all sides of vertex.

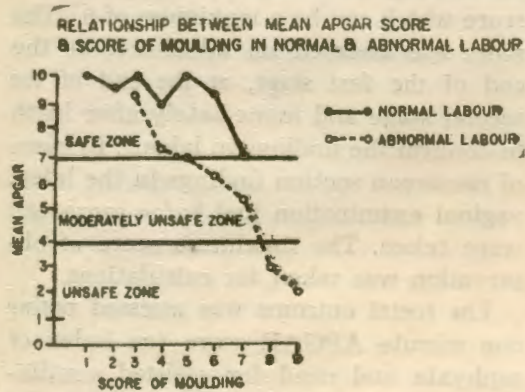


Fig. 1

Discussion

The occult cephalopelvic disproportion has always mystified an obstetrician. In a case of borderline cephalopelvic disproportion, a golden mean between an unwarranted LSCS and 'watchful expectancy' stretched to extreme limits has to be found out. In our study, an attempt has been made to find out a clinical method to detect early obstruction with special reference to increase in moulding along the course of labour.

On correlating the moulding score to one minute APGAR (Table I) a significant negative relationship is seen i.e. as score of moulding increases, APGAR falls indicating severe asphyxia. From observations of moulding scores for normal labour group the maximum allowable

TABLE I

Relation of Score of Moulding to the APGAR Score

Score of moulding	APGAR at the end of one minute		
	0-4	5-7	8-10
1-3	0	0	2
4-6	5	8	10
7-9	13	5	2

Correlation Coefficient: -0.78

$t = 8.17$ on 43 d.f.

This 't' value is highly significant at 1% level of significance.

moulding with excellent neonatal outcome was calculated which indicates the optimum head compression a foetus can sustain without any demonstrable asphyxia. A 95% confidence limit for normal healthy babies with APGAR above 7 was 6.3 which can be clinically taken as 6.

TABLE II

Relation of Mean Moulding Score to APGAR Score

	APGAR > 7	APGAR ≤ 7
Normal labour	3.3	7*
Abnormal labour	5.2	7

* Based on a single observation.

Table III indicates relation of mean APGAR to score of moulding. On plotting the observations in graphical manner, a striking result is seen that most of the cases (75%) in unsafe zone had moulding score more than 7. Willson and Philpot (1979) in their study of head compression on human cerebral function showed that 44% foetuses with head compression with acidaemia showed electrocerebral silences indicating diminished cerebral activity. In our study, 20% of babies with severe moulding showed

TABLE III
Relation of Mean APGAR Score to Score of Moulding

Score of moulding	Normal labour		Abnormal labour	
	No. of cases	Mean APGAR	No. of cases	Mean APGAR
1	1	10	—	—
2	21	9.67	—	—
3	4	10	2	9
4	7	8.41	4	7.25
5	1	10	7	7
6	6	9.17	12	6.17
7	1	7	8	5.38
8	—	—	3	3
9	—	—	9	2.44

neurological affection in the form of bulging frontanelle, convulsions, squint etc. The postmortem of a baby with score 9 showed middle and posterior cranial fossa haemorrhage (2.22%).

Conclusions

1. The modification of Philpot's scoring system definitely helps in the assessment of moulding.
2. The moulding score compatible with favourable neonatal outcome is 6.
3. If the score exceeds 7, the foetus is in grave danger and immediate action is necessary to terminate the labour.

References

1. Eastman, N. J. and Kohl, S. G.: *Obstet. Gynec. Survey*, 17: 459, 1962.
2. Philpot, R. H.: *Recent Advances*, 13: 142, 1979.
3. Wilson, P. C. and Philpot, R. H.: *J. Obstet. Gynec. Brit. C'wealth*, 86: 266, 1979.

Note: This being a pilot study of the problem of moulding, no comparable Indian data was available for correlation and comparison of results.