Psychological factors are rather less important than in women, and social factors are different and of less importance. Basically this is because the needs of reproduction can be satisfied by the man by the simple act of ejaculation into the vagina. There is no absolute needs to make provision for offspring, though the social desirability of children having two parents and of fathers being responsible for mother and children do in most cultures apply constraints.

The pleasure of the male, like that of the female, can be experienced at different levels. There is satisfaction at being found sexually acceptable and in a loving relationship a pleasure at being able to elicit a sexual response. There is pleasure during the excitement stage and the intense visceral sensation of orgasm at the time of ejaculation. As in the woman this is accompanied by a loss of sensory awareness, a merging of personality with that of the partner, followed by a relaxation as deep as the climax was intense.

The foregoing description of human sexual response is given in the most general terms. The individual variations in both psychological and physiological response are almost incredible. Provided this is remembered and care taken to elicit the normal pattern of response in any partnership, this understanding of the normal response serves as a satisfactory basis for the appreciation of the commoner sexual problems.

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Hospital Topics

Identification of High Risk Labours by Labour Nomogram

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Summary

The labour stencil representing the expected cervimetric progress of normal labour was used in 741 consecutive spontaneous labours to identify high-risk labours which needed oxytocic stimulation. Uterine contractions were stimulated if progress extended two hours past the nomogram, which resulted in shorter labours, fewer instrumental deliveries and caesarean sections, and babies with higher Apgar scores than in those dysfunctional labours which were not stimulated. According to the protocol used 36% of primigravid and 13% of multigravid labours needed acceleration. The remaining patients did not need any oxytocic interference during the first stage. This selection of patients is important to prevent a major obstetric advance being abused and discredited at a time when the profession and public are questioning the safety of active labour.

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Introduction

Oxytocic stimulation of inert labour has become accepted obstetric practice; it results in shorter labour, a decreased incidence in caesarean section and second-stage instrumentation, and improved maternal and neonatal conditions at the end of labour.[1-3] Some workers[4] have used partograms to achieve these aims. Philpott's partogram[5] aids the recognition of abnormal labour by clarifying recordings, and can indicate the correct timing of oxytocic stimulation by the use of "alert lines" and "action lines" based on cervical dilatation. These lines were constructed from data obtained from the slowest 10% of African primigravidae. Friedman's sigmoid curve of labour[6] is a valuable pictorial representation of normal labour progression, but it is inadequate for the management of individual patients because it starts at the undefinable time of the onset of labour at zero centimetres and the latent period is of varying length. These factors obscure the position of an early assessment of cervical dilatation along the slope.

The confusion surrounding the time of onset of labour can be resolved by using the time of admission in labour as the starting point.[3 7] In a large study of normal spontaneous labour no patients entered hospital at a dilatation of zero centimetres, and 63% of normal primigravidae and 86% of normal multigravidae entered hospital at a cervical dilatation of 3 cm or more when the latent phase had been completed.[8]

Using the patient's admission as the reference point, we have constructed curves showing cervical dilatation times of normal labour for varying dilatations on admission. These data have been converted into a stencil to be used in conjunction with graphic records to give an early indication of patients with inert labour.[9] A retrospective evaluation of this nomogram showed that it could separate patients with normal labour from high-risk patients with dysfunctional labour destined to result in an abnormal outcome.[10] We report here a prospective study of the routine clinical use of the labour nomogram in two centres.

Patients and Methods

A total of 741 consecutive spontaneous labours with a cephalic presentation were studied in Birmingham Maternity Hospital (September 1973-March 1974) and Nottingham City Hospital (December 1973-April 1974); 349 (47·1%) of the patients were primigravidae, and 392 were multigravidae, and 677 (91·1%) were white, 44 Asian, and 19 black. The protocol in all cases was as follows: (*a*) patients in labour were examined on admission and the cervical dilatation charted at zero time on the partogram. The labour stencil was then used to draw, in pencil, the expected cervimetric progress from zero time to the 10-cm mark. If the patient's progress was maintained to the left of this nomogram line the labour was considered to be normal and oxytocic stimulation withheld; (*b*) if the patient's progress was more than two hours to the right of the nomogram line a vaginal examination was performed to exclude malpresentation and perform an amniotomy if this had not already been done. Stimulation with an escalating dose of intravenous oxytocin (Syntocinon; from 2 mU/min) or intravenous prostaglandin E_2 (from 0·6 μg/min) was performed. During stimulation the fetal heart was monitored and stimulation was continued so long as there was adequate progress in the absence of fetal distress. This was rarely for more than six hours; (*c*) patients who were self-admitted in labour with cervical dilatation under 2 cm were managed without reference to the nomogram until a cervical dilatation of 2 cm or more was reached. The nomogram was drawn from that time and oxytocic stimulation begun if progress was delayed two hours to the right of the nomogram line.

The labour stencil was always present in the labour suite together with a coding card which was completed by one of the clinicians (J.S., D.R.C., R.R.S.). The protocol was recommended to rather than imposed on the staff, and in most cases it was adhered to though in 42 cases it was disregarded due to a "feeling" that labour was progressing normally. These patients served as useful controls.

The patients fell into the following four nomogram groups: group 1, patients whose cervimetric progress remained to the left of or on the nomogram for their admission dilatation; group 2, patients whose cervimetric progress passed to within two hours to the right of their nomogram. These patients were not normally stimulated; group 3, patients who were stimulated when their cervimetric progress reached two hours past the nomogram. If stimulation was delayed up to four hours past the nomogram they were still included in this group; group 4, patients whose management was not performed according to protocol. They either had no oxytocic stimulation or were stimulated more than four hours after the nomogram line had been crossed. Patients were also grouped according to their cervical dilatation on admission: 178 women had a dilatation of 0-2 cm, 348 of 3-4 cm, 130 of 5-6 cm, and 85 of 7-9 cm.

Results

Altogether 159 patients had augmentation of labour by oxytocics, oxytocin being used in 117 and prostaglandin E_2 in 42 patients. Of the 159 113 were primigravidae and 46 (11·7%) were multigravidae. Though 156 primigravid labours and 70 multigravid labours crossed the nomogram, only 125 (36%) and 50 (13%) respectively crossed two hours over the line to a point when the protocol indicated the need for stimulation.

The lengths of the first and second stages of labour are shown in table I, and these lengths are related to the admission cervical dilatation in table II. The "observed 1st stage" describes the time from admission in labour to full dilatation. Altogether 607 (82%) patients had a normal vaginal delivery, 56 (7·6%) had low-cavity forceps delivery, and 35 (4·7%) were delivered by the vacuum extractor, 33 (4·4%) by mid-cavity forceps, and 10 (1·4%) (9 primigravidae and 1 multigravida) by caesarean section. The mode of delivery in each group is shown in the diagram and details of labour in table III. There were no stillbirths, neonatal deaths, or babies with cerebral damage. The mean birth weight was 3300 g with no significant difference in either the admission or the nomogram subgroups.

Apgar Scores.—One-hundred-and-sixteen babies had an Apgar score of 7 or less at one minute, 56 being born to primigravidae and 60 to multigravidae. All babies born by caesarean section had a one-minute Apgar score of 7 or less. The five-minute Apgar scores are more informative and low scores were found in 14 babies born to primigravidae and four born to multigravidae. Of the primigravid labours two were to the left of the nomogram, eight were to the right and stimulated (four by oxytocin and four by prostaglandins),

TABLE I—*Mean Lengths of First and Second Stages in Patients according to Nomogram Groups*

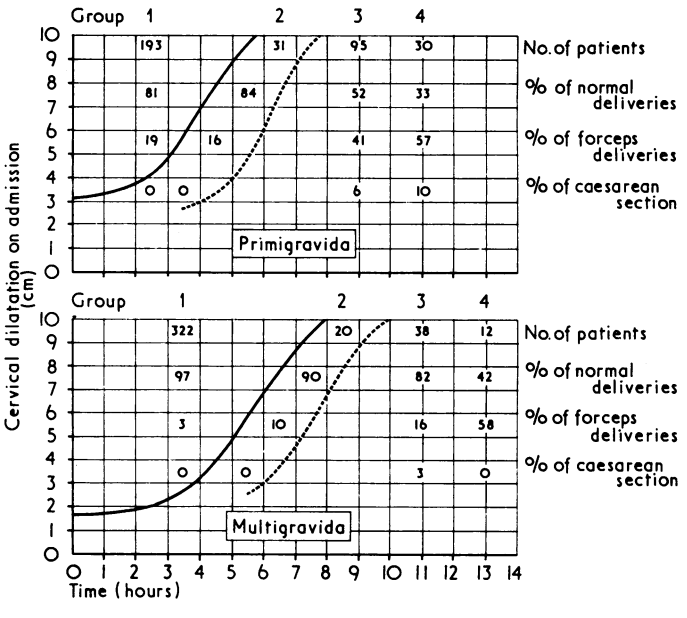
	Primigravidae				Multigravidae			
Group:	1	2	3	4	1	2	3	4
No. of patients ..	194	30	95	30	322	20	38	12
Observed 1st stage (h)	4·1	7·5	11·2	12·2	2·9	7·0	11·3	13·3
2nd stage (min) ..	40	40	52	51	19	18	21	23

TABLE II—*Mean Lengths of First and Second Stages in Patients in Each Nomogram Group according to Patients' Dilatations on Admission*

Admission Dilatation (cm)	Observed 1st Stage (h)				2nd Stage (min)			
	1	2	3	4	1	2	3	4
				Primigravidae				
0–2	6·5	9·6	13·6	15·6	32	43	49	48
3–4	4·2	6·9	9·6	10·8	43	37	53	52
5–6	2·7	4·0	6·0	7·0	48	44	49	0
7–9	1·2		6·0	8·5	31		96	70
				Multigravidae				
0–2	4·9	9·5	13·1	14·1	15	19	14	31
3–4	3·5	7·0	10·8	12·8	23	13	26	23
5–6	1·8	5·0	8·8	8·8	19	18	35	9
7–9	0·9	2·8	5·5	6·3	11	18	13	8

TABLE III—*Maternal and Fetal Characteristics of Labour in 349 Primigravidae and 392 Multigravidae according to Nomogram Groups*

	Primigravidae				Multigravidae			
Group:	1	2	3	4	1	2	3	4
No. of patients ..	193	31	95	30	322	20	38	12
No. of normal deliveries	156	26	50	10	311	18	31	5
No. of instrumented deliveries	38	4	39	17	11	2	6	7
No. of mid-cavity rotations	1	2	8	5	1		2	1
No. of caesarean sections			6	3			1	
Mean Apgar score (1 min)	8·9	9·4	8·4	8·0	9·0	8·9	8·9	8·3
Mean Apgar score (5 min)	9·8	9·6	9·5	9·0	9·9	9·6	9·9	9·7
No. of Apgar scores <7 (5 min) ..	2	1	7	4	3			
Mean observed 1st stage (h)	4·1	7·5	11·2	12·2	2·9	7·0	11·3	12·3
No. of observed 1st stages >12 hours..	0	0	34	14	0	0	13	6
Mean 2nd stage (min)	40	40·3	51	51	19	18	21	23
No. of 2nd stages >60 min	30	4	29	14	34	4	9	2
Admission cervical dilatation (cm) ..	3·9	3·2	2·8	3·1	4·5	3·5	3·1	3·3
Admission head level (fifths)	2·4	2·9	3·0	2·9	2·6	3·0	3·4	3·2
Heights (cm) ..	160	161	160	162	161	160	158	160
Birth weight (g) ..	3200	3200	3400	3400	3400	3300	3300	3300
No. of epidurals ..	8	2	30	5	14	3	9	3



Cervimetric progress in relation to each group and modes of delivery.

and four should have been stimulated, being in group 4. There were three normal deliveries, seven caesarean sections, and four forceps deliveries, none requiring rotation. None of the primigravid low five-minute Apgar scores showed the aberrant cervimetric pattern of prolonged latent phase, but eight showed the pattern of primary dysfunctional labour and two had secondary arrest.[6] The mean first stage was 4·1 hours in the four multiparous patients who delivered babies with low five-minute Apgar scores. They were all normal deliveries; three were in group 1, and the other in group 4 had an observed first stage of 9·5 hours.

Oxytocics.—A critical comparison of the use of oxytocin and prostaglandins for augmentation of labour has been made.[11] In our study the outcome for multigravid patients was similar regardless of the type of oxytocic used though differences were seen in the primigravid patients (table IV). Out of 82 primigravidae stimulated with oxytocin 49 delivered their babies without instrumentation though only 12 of the 31 patients stimulated with prostaglandins did so. Two of the patients stimulated with oxytocin had a caesarean section compared with four of the 31 patients augmented with prostaglandins. The mean first and second stages were longer and the Apgar scores lower in the group stimulated with prostaglandin E_2.

A lumbar epidural block was used in 74 patients (10%), being elective in the hour after admission in 29. Forty-five primigravidae and 29 multigravidae had an epidural block (table III).

TABLE IV—*Characteristics of Dysfunctional Labour in Patients stimulated by Oxytocin and Prostaglandin E_2*

	Para 0		Para 1	
	Oxytocin	PGE_2	Oxytocin	PGE_2
No. of patients	82	31	35	11
No. of normal deliveries	49	12	28	9
No. of instrumental deliveries	31	15	6	2
No. of caesarean sections	2	4	1	
Mean Apgar score (1 min)	8·8	7·4	9·1	9·0
Mean Apgar score (5 min)	9·6	9·3	9·9	10
Mean observed 1st stage (h)	10·6	13·4	10·6	11·8
% of observed 1st stages over 12 h	30	63	23	44
Mean 2nd stage (min)	51	57	17	27
Admission cervical dilatation (cm)	2·9	2·4	3·2	3·4
Admission head level (fifths)	2·9	2·9	3·5	3·4

Discussion

In our protocol the choice of two hours as the correct time of stimulation was arbitrary but seemed to be satisfactory, as a normal vaginal delivery occurred in 81% of primigravidae and 96% of multigravidae whose cervimetric progress kept to the left or up to two hours past the nomogram. In primigravidae the incidence of forceps delivery was doubled when progress exceeded this point before labour was stimulated but was quadrupled if oxytocics were withheld or given too late. The caesarean section rate in the unstimulated primigravidae was 10% compared with 7% in the dysfunctional labours which were stimulated and nil in those patients whose progress remained to the left or strayed up to two hours past the nomogram. The unstimulated patients had a longer first stage and more patients had a prolonged second stage and delivered babies with low Apgar scores than in groups 1, 2, or 3.

These differences in outcome occurred even though the patients in group 4 were admitted in more advanced labour with a greater cervical dilatation and lower head level than those in group 3 and were judged by the obstetrician to be in reasonably normal labour not requiring any oxytocic help. The outcome in the multigravid patients similarly shows the penalty of non-stimulation of dysfunctional labour, with a forceps rate of 3% in group 1, 16% in the stimulated group (with one caesarean section), and 58% if stimulation was withheld.

This method of separation of normal and dysfunctional labour is of great clinical importance at a time when the profession and the public are seriously questioning the wisdom of planned delivery and interference with natural labour. Liston and Campbell[12] concluded that oxytocic stimulation of labour was dangerous without stating the indications for or the timing of stimulation or the length of labour or the mode of delivery. Our results also show that stimulated labours result in babies with lower Apgar scores than normal labours, but it is wrong to attribute this to the use of the oxytocics because the dysfunctional labours, selected by the same cervimetric criteria, that were not stimulated had a much less favourable outcome. The use of the labour stencil allows patients to be protected from the indiscriminate use of oxytocics as well as from the ravages of prolonged labour.

O'Driscoll *et al.*[13] stimulated 55% of primigravidae and Philpott and Castle[3] 11%. In our study 36% of primigravidae and 13% of multigravidae crossed two hours past the nomogram to enter a high-risk category. These patients needed augmentation of labour with oxytocics and careful observation of the fetal heart rate and intrauterine pressure. Such a definite policy of acceleration of labour, which also indicated patients who were in normal labour and did not need stimulation, had simplified intrapartum management. The correct timing of stimulation is now based on measurement rather than guesswork, which is so often based on a perfunctory interpretation of the quality of the uterine contractions by the examining hand with further information from very occasional vaginal examinations.

The high degree of acceptance of the labour nomogram by the midwifery staff was pleasing. The midwives showed a greater involvement in labour, enthusiastically searching out those showing early evidence of inertia and requiring stimulation. The labour stencil also has application in domiciliary midwifery. An analysis of consecutive referrals of patients in prolonged labour[14] showed that the nomogram indicated the correct time of referral to a specialist unit, and in one patient, who delivered normally soon after admission, a normal active phase from 3 cm would have been recognized and a normal delivery expected.

The partogram is a major advance in modern obstetrics, being appropriate for all labours. In our prospective study of spontaneous labour the recognition of high-risk labour was aided by the routine use of the labour stencil for both primigravid and multigravid labours. Stimulation of labour solves far more problems than it creates but it is essential that careful selection of patients should take place to prevent this major obstetric advance being abused and discredited.

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The labour stencil is produced by Rocket of London, Watford.

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