ABNORMAL LABOR

J. A. CALENDINE M.D.

Abnormal Labor

By

L. A. CALKINS, M.D.

Department of Gynecology and Obstetrics
University of Kansas Medical Center
Kansas City, Kansas

CHARLES C THOMAS · PUBLISHER
Springfield · Illinois · U.S.A.

CHARLES C THOMAS · PUBLISHER
BANNERSTONE HOUSE
301-327 EAST LAWRENCE AVENUE, SPRINGFIELD, ILLINOIS, U.S.A.

Published simultaneously in the British Commonwealth of Nations by
BLACKWELL SCIENTIFIC PUBLICATIONS, LTD., OXFORD, ENGLAND

Published simultaneously in Canada by
THE RYERSON PRESS, TORONTO

Library of Congress Catalog Card Number: 57-12539

Printed in the United States of America

ABNORMAL LABOR

Publication Number 325

AMERICAN LECTURE SERIES®

A Monograph in

AMERICAN LECTURES IN OBSTETRICS
AND
GYNECOLOGY

Edited by

E. C. HAMBLEN, B.S., M.D., F.A.C.S.
Professor of Endocrinology
Associate Professor of Obstetrics and Gynecology
Duke University Medical Center
Durham, North Carolina

FOREWORD

It is our purpose, in this little publication, to present the various problems encountered in parturition. It is hoped that, by thus describing these variants and abnormalities in compact form, this little volume may serve as ready reference when trouble arises. For the common disturbances we shall analyze our own experiences as well as reflect the opinions and conclusions of students of these problems. For the rare complications we must rely, perforce, on the collected experience of others.

We have, for several years, wanted to present something of this sort but have felt we could not effectively do it until we had the background presented in *Normal Labor*.[1] Now that we have the normal base for comparison we shall try to see how each abnormality differs from the normal, both qualitatively and quantitatively, and deduce a sound rationale for its management.

Since etiology remains obscure in many situations, and since certain abnormalities do not lend themselves to accurate quantitation, we must adopt methods proven safe by experience, and proceed cautiously on an empiric basis. Fortunately empiricism is no longer so prominent in our present day therapy.

CONTENTS

ABNORMAL LABOR

PART I

FIRST STAGE OF LABOR

SINCE the first stage of labor is almost exclusively a matter of uterine activity any deviation from the normal must be largely the result of abnormal powers. Reynolds,[2, 4] Caldeyro,[3] and others have shown that in normal labor there is a **characteristic pattern of uterine function.**

a. The uterus maintains a basic intramnionic pressure of 8 mm. of mercury.
b. Periodically the uterus contracts sufficiently to raise this pressure to somewhere between 40 and 70 mm. of mercury and then relaxes again to its basic pressure.
c. These contractions occur at regular intervals of some three minutes (Caldeyro, "4 per 10 minutes").
d. They begin in the fundus, usually near one or the other uterine cornu, and spread in peristaltic fashion over the uterus progressively diminishing in force as they pass downward.

Each of these four characteristics of normal uterine activity is subject to variations which may be slight, less often moderate, and occasionally very marked. The wider divergences may so interfere with the progress of labor as to constitute an abnormality. This is particularly true when two or more of the characteristics are at fault.

These features of uterine activity were established by sensitive strain gauges, amnionic sac puncture with pressure recordings, intramuscular balloons, and intrauterine catheterizations. The apparatus employed is very expensive, quite bulky, and the methods are not without certain dangers. Every day clinical use is therefore not practicable.

Clinical examination and observation cannot possibly approach the accuracy of the above methods but one can, without great effort or too much experience, improve his acuity of observation and judgment.

a. Mild variations in **basic intrauterine pressure** cannot be detected by palpation. The marked increases noted in placental ablation and some hydramnios patients are readily recognized. With increased awareness of this feature and continued training of his sense of palpation, one can considerably widen his ability to judge basic uterine tone.

b. We have, for many years, taught that one can determine **intensity of uterine contractions** quite satisfactorily for practical purposes. The uterus is palpated at the height of a contraction at a point not over the body of the baby. The amount of force necessary to indent the uterus at this point and time is, of course, directly proportional to the intrauterine pressure. Comparison of this uterine wall consistency, or resistance, with that noted between contractions, has enabled us to designate those contractions as good, fair, poor, or very poor, and thereby predict the progress of labor. It is necessary to palpate five or six consecutive contractions as **the weakest contraction in such a series enables the most accurate judgment of the progress to be expected.**

c. The time honored method of noting the **interval** from the beginning of one contraction to the beginning of the next is still very satisfactory. What has not been understood by all physicians is that **when these intervals vary, the labor can be expected to progress in consonance with the longest interval, and not with the usual one.** While long intervals are often

associated with weak amplitude this is not always so. Moreover, short intervals do not necessarily indicate good intensity.

d. Clinical estimation (on any given observation) of peristaltic action or of **contraction gradient** is subject to considerable uncertainty. This is particularly true in early labor. When the discomfort experienced by the patient is greater than one would expect from the palpation findings, one should suspect localized activity rather than the rhythmic and peristaltic gradient. Later in labor coincident palpation of the cervix will clearly indicate the presence of an interrupted or reversed gradient.

All these things considered we can, with a fair degree of accuracy, either determine or strongly suspect most of the clinical variants. Observation of a series of five or six contractions is usually necessary and some patients must be observed over a period of several hours.

False labor (lightening pains) is probably a more or less normal transitional phase between the Braxton Hicks contractions of late pregnancy and the onset of true labor. It is mentioned here because of the frequent difficulty of differential diagnosis between it and very mild early labor. We know of no way to make this decision promptly in all patients. A moderate dose of morphine or dermerol (not usually given in markedly premature patients) will frequently stop false labor but will no more than retard true labor. We very much prefer not to stimulate the uterine contractions until confident that true labor exists. We hear of many Cesarean Sections being done after prolonged efforts to stimulate false labor have failed to result in any real progress.

Mild early labor is not too well understood because so many of these patients wait for twelve to twenty-four

hours before calling the physician. The contractions are weak and at infrequent intervals. It is not of importance if followed later by better contractions so that the whole labor does not become prolonged. In not a few of these patients, the change over to better contractions may be quite abrupt and readily recognized by the patients ("These pains are different"). It is often difficult to know whether the early "prodromal" period should be counted as part of the labor. Many physicians do not. We have always counted it unless there has been an interval of no contractions. This has resulted in a higher incidence of prolonged labor in our clinic.

Prolonged labor is the most common aberrant of the strictly normal process. Its etiology and clinical course are still not too well understood. Recent studies have moderately increased our understanding of causes and management. The older teaching that uncomplicated prolonged labor was (a) not dangerous to mother or baby, and (b) required only proper sedation and maintenance of fluid intake is still, in general, true. Certain important modifications of this, rather too trite, dictum can now be made. Slow, or seemingly absent, progress in labor is apparently due to:

1. Low amplitude contractions.
2. Irregular interval.
3. High basic tone.
4. Lack of proper gradient.
5. Firm Cervix.
6. Combinations of these.

1. **Low Amplitude contractions** (20-30 mm. of mercury) is the most frequent type of variant. While present in a large proportion of all labors in the very early stages one expects an increase, sometimes rather abruptly but often

more gradually, as labor progresses. Failure of this increase cannot be thoroughly explained until the etiology of the onset of labor is better understood. This variant is definitely not dangerous to either mother or baby. The "loss of time" by the attendant and the mental exasperation of the patient (and her mother-in-law) remain the only problems. The older choice between sedation for labors not definitely established (or for "fatigue" of later stages) and stimulation for definitely established labors, was very sound. The upright position and the application of properly fitted abdominal binders remains good therapy but these methods are not uniformly successful. We have found that provided the labor is definitely established and provided the physician is willing to remain constantly at the bedside, one can get better results with intravenous pitocin. The dosage for this purpose should be kept very low. We usually put 4 minims in 500 cc. of 5% glucose solution and start with about 15 drops per minute. This allows the prompt recognition of the overly sensitive patient detected by constant palpation of the uterus and the administration can be stopped when as little as 0.01 minim of the pitocin has been given. Occasionally it is necessary to increase the dosage to 30 drops per minute to establish satisfactory contractions. One should be very cautious about increases above this level.

2. **Irregular intervals** of contractions present a different problem. It is necessary to observe at least five or six consecutive contractions as the intervals may be highly variable. We find that the longest interval in any such series is the best measure of what to expect in the way of progress. We have usually been unable to say that labor was definitely established when any interval is ten minutes or more regardless of the degree of dilation present. Lesser degrees of interval variation may well be present in

established labor. Variation in amplitude is usually associated with variation in interval and the management is much the same as for low amplitude alone. One difference is commonly noted. If pitocin is to be exhibited, a somewhat larger dosage is often necessary. We start with the same 15 drops per minute and very gradually and cautiously increase this as seems necessary. Often 60 to 70 drops are required—possibly more toward the end of labor. We particularly like to have good contractions in the second stage in order to properly condition the uterus for the third stage.

3. **High basic tone** of a marked degree is probably quite rare in the absence of other pathology. The classic example is that of marked degrees of premature separation of the placenta where the uterus is often described as "board like." Acute hydramnios is another example. Certainly moderate increases can be demonstrated in chronic hydramnios and in some instances of multiple pregnancy. Much more work is necessary in this area. What degrees of increased tone will result in sufficient uterine ischemia to be lethal to the baby is not known. That premature labor may result therefrom seems clinically certain. It is not so apparent whether labor proceeds in a normal fashion when once established. The old belief that labor is apt to be prolonged sounds plausible in that the amplitude of contractions above the increased basic tone would tend to be less. That this is actually true has not been sufficiently studied. Very certainly some of these labors are quite short.

For the present we should try to recognize this entity and this can be done with a fair degree of satisfaction. Failure of the uterus to relax well between contractions or a constant maintenance of increased tone are quite easily detected if sought for. The reason for it may well be obscure. Clinical management may well call for judicious

sedation. Certainly oxytoxics, in the present state of our knowledge, should be avoided or used with extreme caution. Ergot and its derivatives would seem more likely harmful than pituitrin. At present we do not feel safe even with pitocin. *Properly timed* artificial rupture of the membranes certainly has a place in some patients. Transabdominal tapping with polyethylene tube drainage in acute hydramnios has not, in our hands, given the good results reported by Rivett.[5]

4. **Lack of proper gradient** in contractions is not readily detectible by palpation. The rapid passage down the uterus defies palpation. One can only suspect this variant after several hours' observation of the patient and the fairly satisfactory elimination of the other variants. Our earlier efforts at therapy were quite uniformly unsatisfactory. A very limited experience with para-vertebral block has produced some good results. We are not yet in a position to make specific recommendations as to its use.

It is not yet perfectly clear whether *contraction ring dystocia,* a clinically recognizable entity, represents an exaggerated loss of gradient only or perhaps has other elements of disturbed physiology as well. It is sufficiently rare that only a very few people have claimed much experience with it. A logical explanation of its cause has not been established. Adrenalin therapy, as proposed by Rucker,[6] has been disappointing to us. Deep anesthesia has relaxed this ring just as it does the spastically contracted internal cervical os in the third stage of labor. Once relaxed we have not seen these contraction rings again develop. It is said that they may reappear when prompt delivery is not effected. The frequent development of spastic cervix following the administration of oxytoxics in the third stage may have a parallel here. We would certainly feel that a high Bandl's ring in labor contraindicates uterine stimula-

tion on this basis as well as presenting a lower uterine segment vulnerable to rupture.

5. **Firm cervix** has been of great interest to us for many years.[7,8] By this term we mean a cervix which when palpated at the height of a uterine contraction has the consistency of the ala of the nose. (A consistency more firm than this is very rare.) We have compared this with a normal consistency of that of the lip. Softer cervices than this are quite common. We have not felt that this firmness represented a structural or anatomical difference such as might be present as the result of scar following previous surgery or infection. In fact we feel we have proven quite the contrary. While it is more frequently present in primigravidas (13%) than in multigravidas (3%), it has been observed by us in many multigravid patients when not present in their previous labor or labors. It is often noted in the patient with less than adequate uterine activity, and, conceivably, might be secondary thereto—a form of reversal of gradient. Such an explanation is not entirely satisfactory in that it is rather frequently noted when the uterine contractions are apparently quite normal. Admittedly, we cannot detect minor degrees of inadequacy of uterine contractility by our methods of timing and palpation. The fact remains that when we note this apparently increased consistency of the cervix by simple palpation there will uniformly be an increase in the duration of the first stage of labor. This increase is about three hours in the primigravid and two hours in the multigravid patient where uterine activity is reasonably adequate. When uterine contractions are definitely inadequate the increase may be much more marked and definitely contribute to a truly prolonged labor. This now can become a serious matter.

In our clinic there has been no fetal mortality from trauma (intrapartum asphyxia, or postpartum intracranial