

THE OCCIPITOPosterIOR POSITION

A METHOD OF MANAGEMENT, WITH AN ANALYSIS OF 976 CASES

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THE continued high fetal mortality, maternal injury, and morbidity in the delivery of the occipitoposterior position is, I believe, sufficient justification for this communication.

Many indeed, have been the methods advocated for the management, more particularly of the so-called impacted cases; but their effect in the reduction of fetal mortality, maternal injury, and morbidity have been disappointing.

The frequency of any obstetric abnormality will always vary in different countries and even in different parts of the same country.

The posterior occiput is no exception; various authorities show an incidence as high as 29.8 per cent, and our own incidence is 13.8 per cent of vertex cases.

Discussion of the frequency is of little value, as it is conceded by all to be the most common obstetric anomaly and is responsible for a high fetal wastage and greater maternal injury than almost any other condition.

In the analysis of 976 cases of occipitoposterior position during a period of six years, observed at the Royal Victoria Hospital, primiparas and multiparas show an almost equal ratio (513 to 463).

The right occipitoposterior was almost twice as frequent as the left (619 to 357), but by no means in the proportion that is usually quoted (Williams 5 to 1).

The large number of normal pelves (864) and conversely the small number of pelvic contractions (112, or 11.6 per cent) as determined by the usual methods of pelvimetry, were quite unexpected. While of the pelvic contractions the flat pelvis was almost twice as frequent as the funnel, the actual number is too limited to draw any definite conclusions.

Besides, although all types of pelvic contractions are usually quoted as an etiologic factor in the production of posterior positions, external pelvimetry alone, or combined with internal estimation, frequently does not, and cannot reveal the true type. Even the x-ray examination of the parturient pelvis has not altogether proved of the help that was hoped for it.

Although the work of Thoms on x-ray pelvimetry, and more recently that of Caldwell and Malloy on male stigmas, point out certain important facts which may possibly explain the frequency of posterior positions of the occiput and even their cause, nevertheless, both of these authorities show a somewhat different type of pelvis: the former, the transversely contracted (quoting 20 cases), and the latter, the funnel or masculine type. Thoms states that a high assimilation is of frequent occurrence, and associated with it there is a shortening of the transverse diameter. With this view, many authorities are in accord.

Fabre and Trillat (in 1920) from x-rays of 12 pelves, all of which showed sacralization of the fifth lumbar vertebra, coined the term, pelvis with anteroposterior diameter predominating, or, in other words, a high assimilation. Seven of these were delivered as occipitoposteriors.

They state that "this has the relation of cause and effect, and this special form of superior strait is the principal cause of occipitoposterior." Thoms says that "not only are such pelves associated with occipitoposterior, but lesser degrees of transverse contraction, whether due to assimilation, male type of pelvis, or unnamed causes, are definitely associated with primary and persistent occipitoposterior." He concludes that the shape and type of pelvis is the most potent cause of primary occipitoposterior position. Caldwell states that "male stigmas in the female pelvis tend to limit pelvic capacity. This is manifested in the type of sacrosciatic notch." There is a definite relation between type of notch and internal diameter of the true pelvis.

"Variations in the size and shape of the notch are associated with a change in sacral inclination and so diminution of pelvic capacity. Given a normal notch, all internal diameters are decreased." This limitation of pelvic capacity is prone to occur in the portion of the pelvis posterior to the ischial spines.

"With the male type of notch, the sacrum moves forward in the pelvis, decreasing the length of the sacrospinous and sacrotuberous ligaments. [That is, the distance between the sacrum and tuberosities and ischial spines.] This decrease means taut, unresistant tissues, increasing the difficulties in labor, rotation may fail to occur or posterior positions more frequent with fixation of the head, or arrest in this unfavorable position."

While accepting the work of both of these authorities as of great importance, and admitting that on certain clinical grounds the weight of evidence is in favor of both views, as both types of pelves are frequently associated with posterior positions, how may one explain the fact that in many occipitoposterior positions in which the head has not entered the pelvis, or cannot enter with the occiput behind, a change to the anterior position allows of easy descent? It is not a question of disproportion necessarily, for that is most frequently only apparent. Convert the posterior occiput to an anterior one and its entrance into the pelvis readily occurs. If the pelvis was the only factor in the causation, alteration of the position of the occiput should not make such a decided, in fact often spectacular, difference to its descent. Again, it is not entirely the loss of flexion which prevents

descent, for in many instances, flexion is well preserved. May the true etiologic factor not lie in the uterus itself? With the placenta on the anterior wall, the child's back would more readily accommodate itself to the unoccupied posterior portion of the uterine cavity. This has frequently been proved by cesarean section. Again, with the development of the uterus from two müllerian tracts, one-half may develop to a greater extent than the other, thus allowing of accommodation of the fetus readily to the more developed side. A summary of maternal injury, morbidity, and fetal mortality throughout the whole series of 976 deliveries shows that as regards maternal results, the cervix suffered injury in 33 cases, 3.3 per cent, necessitating repair. It is necessary to state in regard to maternal injuries, that it is a rule of the clinic that after any operative procedure, the cervix must be exposed and any tear of half an inch or more sutured, an essential reason for the apparently high percentage of injuries. There were 71 complete tears. Among these cases of complete tears were included those in which the sphincter was torn partially, or completely through, whether involving the anal mucosa or not. This interpretation has been taken throughout the entire series, because experience has shown that occasionally even though the anus escaped injury, or the sphincter was only partially lacerated, the devitalization of tissue subjacent to the sphincter may have been such that necrosis occurs, with a subsequent sinus into the anus and infection in the perineum. True, these usually heal eventually without the necessity of a secondary repair, but from a practical point of view, they may as well have involved the anus. Maternal morbidity occurred in 249 cases or 24.4 per cent.

The standard of morbidity used was a single rise of temperature to 100.6° F., occurring during the puerperium after the first twenty-four hours. Fetal deaths were 44, or 4.5 per cent, and included stillborn and those that died during the first two weeks of life.

Monstrosities and macerated, as well as nonviable babies up to six and a half months have been excluded because their loss is in no way due to the position.

An analytical study of these cases of occipitoposterior position shows that failure of rotation is a primary factor in the causation of fetal mortality and maternal morbidity. Throughout the entire series of both spontaneous and operative delivery this fact is evident.

What then are the chief causes of failure of rotation and should such occur, what method can we adopt as conducive to the best results?

The common causes of failure of rotation are imperfect flexion, an inadequate uterine force, a poorly developed or relaxed pelvic floor, and the inability of the fetal trunk—the back and so the shoulders—to move forward toward the symphysis, for so long as the shoulders are prevented from rotating, so long must the rotation of the occiput fail.

This is a frequent cause of failure of rotation in attempts at either manual or forceps rotation of the occiput in the pelvis, inasmuch as, on the removal of the hand or forceps, the occiput immediately swings back to its original position.

The cause of failure of rotation of the shoulders is commonly found to be an internal contraction ring, situated around the child's neck, or just in front of the shoulders, and is the lower border of the active uterus. Our opinion regarding the situation and frequency of these rings is in conformity with the experience of Sidney Smith in the Brooklyn Hospital series.

It is evident that any method aiming at operative delivery which fails to take cognizance of this fact must necessarily meet with many difficulties, or even failures.

I therefore add my plea to those of the writers who have advocated early interference in occipitoposterior positions, because, at least two very frequent causes of failure of the head to advance, namely, imperfect flexion and the development of an internal contraction ring, will be eliminated or rendered less likely.

On the basis of the analysis of these cases as regards maternal and fetal results, I shall endeavor to describe the method which above all others, except spontaneous anterior rotation and birth, has proved in my hands and those of the members of the Staff to be productive of the best results.

PROCEDURE

It is our custom not to interfere during the first stage of labor, except by those therapeutic methods which aim at the relief of pain. After complete dilatation of the cervix, labor is allowed to progress naturally as long as the head is advancing rapidly. Failure of the head to advance demands immediate determination of the cause and its correction. It is usual in such cases to find the membranes ruptured, the sagittal suture of the child's head lying in one or other oblique with occiput behind, or in the transverse diameter of the pelvis. Flexion of the head is, as a rule, imperfect, the head being engaged in the pelvis. There may, or may not, be undue moulding, depending on the duration of the second stage. With the whole hand in the vagina, the perineum and pelvic floor are thoroughly dilated. The entire head is carefully palpated, if necessary, to make a correct diagnosis as to the position, the degree of moulding, and the type of head. The head is dislodged completely and pushed up above the pelvic brim. The hand is passed through the cervix beyond the occiput (Fig. 1). If any resistance is encountered, such as a contraction ring around the neck, it is carefully "ironed out." The anterior shoulder is palpated and its position determined. If the shoulder appears to be directed forward, it is ignored; if the child's back is found to be directed toward the maternal back, the shoulder is carried forward as far toward the antero-posterior diameter as possible. The head is now placed so that it lies with the sagittal suture in the transverse diameter of the brim, the posterior ear resting in the palm of the hand. The back of the hand will then be lying on the promontory of the sacrum. The posterior blade of the forceps is now applied along the palm and placed exactly over the posterior ear, with the pelvic curve toward the occiput (Fig. 2). The handle of the forceps is held by an assistant to prevent slipping

during the application of the second blade. The hand is then withdrawn, and the anterior blade is carefully passed across the face of the child until it lies over the anterior ear, i.e., directly opposite the first blade (Fig. 3). There can be no possible danger of injury to the bladder during this or any subsequent part of the procedure, because all manipulations are done above the brim of the pelvis where

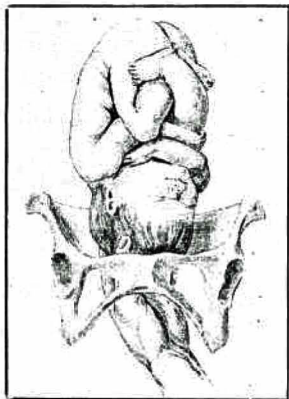


Fig. 1.

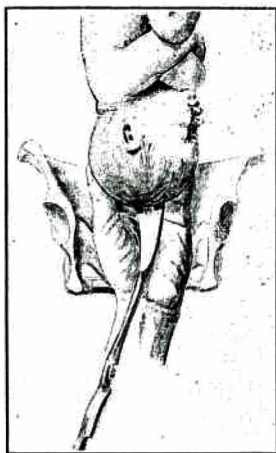


Fig. 2.

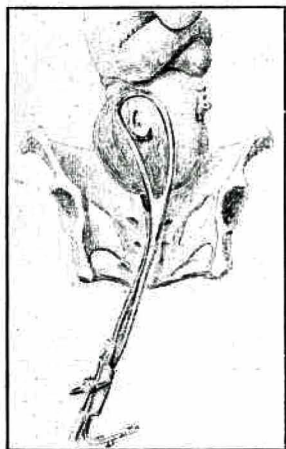


Fig. 3.

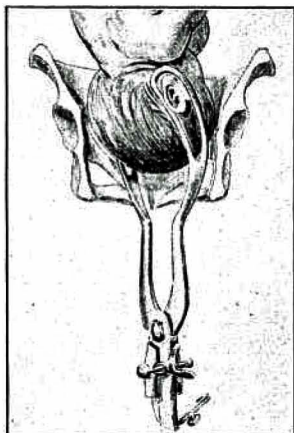


Fig. 4.

there is plenty of room. The forceps is now locked. A gentle movement of 45° rotation is now imparted to the forceps, the object of this movement being to bring the occiput to an obliquely anterior position (Fig. 4). Every step in the maneuver up to the present time is done with the head free from pelvic control. The head is now lying within the forceps at the brim of the pelvis, the sagittal suture is in relationship with one of the oblique diameters, and the occiput is obliquely anterior (Fig. 5).

With traction, the head is once more brought down into the pelvis (Fig. 6). It is astonishing the ease with which the head descends on to the pelvic floor and delivery is accomplished.

Usually in this method, the head is brought down in the opposite oblique diameter to that which it originally occupied, i.e., the R. O. P. will be brought down after rotation as an R. O. A., the L. O. P. as an L. O. A. (the left hand being used in right position and vice versa).

Criticism of the method on the basis that completely dislodging the head from pelvic control increases the danger of prolapse of the cord, or hand, or, that a high forceps, or a forceps operation on the floating head is done, is exaggerated. Although admitted on theoretical grounds that the cord may prolapse, this complication did not occur in a single instance, for with the hand already controlling the head in the lower uterine segment, the cord could readily be kept from prolapsing dur-

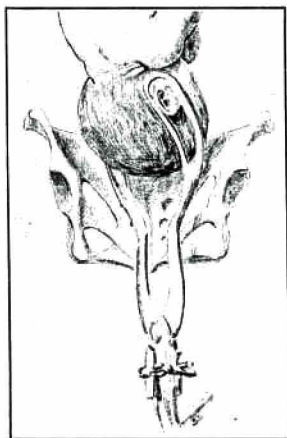


Fig. 5.

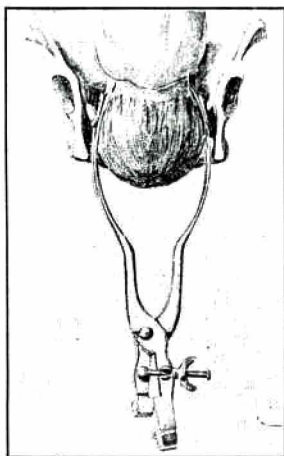


Fig. 6.

ing the application of the blades. Even in the event of such an accident, it would not necessarily endanger fetal life to any great extent, subsequent delivery being accomplished in all cases with facility.

Again, before its displacement the head was engaged and had undergone moulding in the pelvis. To dislodge it entirely and bring it down once more into the pelvis in a corrected position is in no manner similar to the high application of forceps to a head that had never entered the pelvis.

The maneuver in our hands has proved absolutely safe and eminently successful. A reference to the fetal mortality throughout the entire series of cases is the best evidence of its value.

No other method of delivery has given us comparable results. The two fetal deaths occurring during this method of delivery represent the gross mortality. Both could have been avoided. One was a pri-

vate patient of my own, a primipara in whom there was a marked degree of disproportion due to a generally contracted pelvis and a large baby. Cesarean section was advised before the onset of labor and refused. The other death occurred as the result of a prolonged labor of eighty hours, and the baby had a failing heart.

RESULTS

In the 976 cases of occipitoposterior positions spontaneous birth occurred in 392 or 40.1 per cent. Among these spontaneous deliveries, anterior rotation and birth occurred in 284 or 72.4 per cent; all the pelves were normal as regards pelvimetry. There were no cervical injuries, but in spontaneous birth, the cervix is not exposed unless bleeding occurs. There were no complete tears. The morbidity was 18.6 per cent. There were no maternal deaths, but a fetal loss of 2 or 0.7 per cent, both of which were due to intracranial injury, hemorrhage, and tentorial tears. The remaining spontaneous births, 108 or 27.6 per cent, remained persistently posterior and were born as "face to pubes." These showed a marked increase in both fetal mortality and maternal morbidity, the latter being 33 or 30.5 per cent. The fetal mortality was 6 or 5.5 per cent.

An analysis of these spontaneous births shows that the maternal morbidity and the fetal mortality rises in proportion to the failure of anterior rotation, even though labor may progress fairly satisfactorily and natural birth occur.

It is a moot question whether the higher fetal death rate in the "face to pubes" is due to prolongation of labor, or to other factors, such as imperfect flexion, or to those causes which prevent anterior rotation, such as excessive moulding and distortion of the head with a large caput, for it is undoubtedly true that whenever anterior rotation fails labor is likely to be prolonged.

In addition, the same factors which prevent forward rotation of the occiput are probably responsible for the occiput turning backward into the hollow of the sacrum.

Undoubtedly, the cause of fetal death resultant upon labor is intracranial injury, as has been proved by Holland, Ehrenfest, and many others, as well as in our own experience. About 80 per cent of all fetal deaths in the clinic go to autopsy.

The total operative cases were 584 or 59.8 per cent of the whole series, primiparas 65 per cent, multiparas 37 per cent. The right position was more frequent than the left in about the same proportion as the parity.

Pelvic contractions played an apparently large factor, occurring in 102 cases or 17.4 per cent, with the funnel type constituting the minority. Nevertheless, many of the generally contracted variety were also of the funnel type.

The number of maternal injuries, cervical and complete tears, commands attention, being 33 or 5.6 per cent of the former and 68 or 11.6 per cent of the latter.

In 157 low forceps operations there were no cervical tears, but 12 complete tears, 6 of which occurred in "face to pubes" birth, or expressed in another way, 45 low forceps operations delivering as "face to pubes," resulted in 6 complete tears. The definition of the term "complete tear" given at the beginning of this paper, explains to some extent the high incidence.

There were 37 morbid cases, or 23.5 per cent, 2 maternal deaths neither of which was due to the position or operation. One patient had placenta previa and died on the fourteenth day postpartum of sepsis; the child survived. The other patient with an eclampsia had a bag induction but died the second day postpartum; the child also died. Both of these were "face to pubes" births. There were four fetal deaths or 2.4 per cent.

The maternal morbidity in the operative series is 27.5 per cent, 163 cases in 584 deliveries. The apparently high morbidity is to be explained by the rigidity of the standard used and already defined, and because the great majority of these cases showed only a single rise of temperature to 100.6° F. Under any other standard, such as the British Medical Association, the morbidity would be below 10 per cent.

One might expect a higher morbidity rate in operative procedures than in spontaneous birth. In fact, the "higher up" in the generative tract one goes, the more likelihood of infection, is the usual dictum. Yet, this is not necessarily true, because of numerous other factors.

The low forceps operation was responsible for almost as high a morbidity (23.5 per cent) as any of the forceps methods. True, it is much greater than the spontaneous anterior rotation and birth, which was 18.6 per cent. Nevertheless, spontaneous "face to pubes" birth showed a morbidity of 30.5 per cent. The most likely reason for this is the natural tissue devitalization associated with an anomalous position, and the prolongation of labor which is usually present in the "face to pubes."

Operative procedures, therefore, within certain limitations should tend to diminish the morbidity risk rather than increase it.

In the classical midforceps operation there were 209 cases of which 168 had normal pelves and 41 contracted pelves, represented by an almost equal number of the three main types (flat, generally contracted, and funnel).

The cervix was injured 11 times, of which 7 occurred when the head was delivered in an anterior position and 4 in "face to pubes" delivery.

There were 39 complete tears or 18.6 per cent, of which 17 or 21.1 per cent occurred in "face to pubes" birth.

Maternal morbidity was 58 or 27.2 per cent, of which 22 or 30.9 per cent occurred in "face to pubes" birth and 36 or 26.0 per cent in anterior rotation and midforceps delivery.

There was 1 maternal death (0.4 per cent), a patient with acute exudative fibrinous endocarditis, who died on the fifth day; the child also died. Fetal deaths, 16, or 7.6 per cent.

The Scanzoni operation was done 67 times, contracted pelves being present in 15 of these cases.

There were 6 cervical tears or 8.9 per cent and 10 complete tears, 14.9 per cent.

Thus it is evident that in forceps procedure—the Scanzoni operation and the method already described—the morbidity was almost the same, being 25.3 per cent and 26.1 per cent respectively.

The classical midforceps operation after anterior rotation had occurred, showed a morbidity rate of 26.0 per cent; in fact, the three chief forceps operations gave equivalent morbidity percentages, while, if anterior rotation failed and delivery occurred as "face to pubes," the rate was 30.9 per cent. It is therefore obvious from this analysis that "face to pubes" birth, whether spontaneous or operative, increases the morbidity hazard remarkably.

The high forceps operation was responsible for a morbidity of 55.5 per cent and a fetal death rate of 11.1 per cent.

FETAL DEATHS

A comparison of the various operative methods in relation to fetal death reveals some striking results.

In the low forceps operation, there were 4 fetal deaths, i.e., 4 deaths in 157 cases, or a wastage of 2.48 per cent. In spontaneous anterior rotation and midforceps, there were 138 cases with 12 fetal deaths, or 8.6 per cent. Midforceps and "face

to pubes," 71 cases, with 4 fetal deaths, 5.6 per cent. The Scanzoni operation, or its modifications, 67 cases, with 5 fetal deaths, 7.46 per cent. The author's method, 107 cases with 2 fetal deaths, or 1.8 per cent. High forceps, 27 cases with 3 fetal deaths or 11.1 per cent. Version and extraction, 17 cases, with 6 fetal deaths or 35.7 per cent.

It is therefore evident that the gross operative fetal mortality is much higher than that in spontaneous birth as a whole, being 6.1 per cent in the former to 2.04 per cent in the latter, yet if anterior rotation failed and delivery occurred as "face to pubes," the fetal wastage is almost the same, 5.5 per cent (face to pubes).

This failure occurred in 27.5 per cent of the total spontaneous labors. Again, the proportion of spontaneous to operative birth is approximately 3 to 5. Failure of anterior rotation is therefore a primary factor in fetal wastage and accordingly demands prompt correction. The longer correction is delayed, the greater the fetal risk. In fact, there is a correlation between the duration of labor and the fetal death rate. The average duration of labor in the operative series terminating in fetal death, was fifty hours, whereas the average duration in successful results was thirty-one hours. The average duration in spontaneous labor with fetal death was twenty-three hours.

CONCLUSIONS

1. The apparently high incidence of maternal injuries is to a certain extent explainable: first, as regards the cervix, all tears whether large or small following operative delivery are repaired immediately, many such being of a very minor degree; second, the term "complete tear" is not confined to those in which the anal canal is involved, but includes all lacerations of the sphincter ani.

2. The morbidity rate is based on high standard: a single rise of temperature of 100.6° F. occurring at any time during the puerperium after the first twenty-four hours, from any cause whatsoever, without any attempt to eliminate those which were not strictly obstetrical.

3. The increased morbidity rate associated with the failure of anterior rotation whether labor was spontaneous or operative, is to be noted. In fact, "face to pubes" birth was responsible for a much higher morbidity than any other delivery, spontaneous "face to pubes" being 30.5 per cent.

4. The close similarity in the morbidity rate among all the forceps operations is instructive.

5. The best fetal results were obtained by the method especially described, being less than that in spontaneous birth as a whole.

6. Early interference in occipitoposterior positions is conducive to the best results.

7. Prolapse of the cord while a theoretical possibility did not occur once in 107 cases in which the head was dislodged from the pelvis.

8. The importance of recognizing that an internal contraction ring is a frequent cause of delay in labor and by no means an occasional occurrence.

9. A correct diagnosis is absolutely essential for success and is best obtained by freeing the head from pelvic control.