

A CONSIDERATION OF 1,446 PERSISTENT OCCIPUT POSTERIOR CASES.

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By persistent occiput posterior position is meant a vertex presentation in which the occiput does not rotate anteriorly spontaneously, hence the term includes both those labors that are accomplished by spontaneous delivery with the face to the pubes and the occiput to the perineum and those which require for their termination some obstetrical maneuver on the part of the accoucheur. It is to be added that the phrase, occiput posterior, includes all those in which the sagittal suture lies in either oblique diameter of the pelvis, as well as those few cases, occurring principally in deformed pelvis, delivered with the sagittal suture in the antero-posterior diameter of the pelvis. The apparent repetition of terms in the following account is thought necessary for the sake of clearness.

In the 46,700 confinement numbers on the records of the Hospital, after eliminating the unobserved labors and the cases of abortion, there remain 41,800 observed cases of labor at or near term. The 4,900 cases charted as "not observed" are those cases of labor that are admitted to the wards well advanced in the second stage, or post partum, and on the outdoor service, particularly those cases in which the child is born before the arrival of the physician.

In these 41,800 observed labors of all positions and presentations there are 1,446 cases of persistent occiput posterior, or 3.46 per cent. This percentage varies in different reports. Tweedy, in the last report of the Rotunda Hospital in Dublin states that there were thirty-three persistent occiput posterior positions in 4,172 cases, or 0.8 per cent., while Edgar found eighty cases in 2,200 labors, a percentage of 4.04. The figures of Tweedy evidently refer to the number of cases actually born O. P., as they are similar to those once published by Dewees, who cites in a series of 20,517 labors, 201 cases born with the occiput posterior, or 0.98 per cent. The percentage in the present series of cases actually born O. P. is 2.42.

According to the descriptions in the histories, 96 out of each 100 labors begin as vertex presentations,

and 20 of these begin with the occiput in the right or left posterior position. In investigating a point raised by Voorhees as to the relative frequency of the third and fourth positions, it is found that the ratio of the right and left posterior positions is 18 to 1 in the cases that rotate anteriorly spontaneously during labor, while in the persistently posterior cases the ratio is 4 to 1. This emphasizes the fact that the right posterior position of the occiput is more likely to rotate anteriorly than the left. These figures seem to be fairly accurate inasmuch as the majority of the cases were under observation through the greater part of the first stage. Gillespie puts the percentage of primary R. or L. O. P. positions at 16 to 20 per cent.

Of the twenty out of each hundred labors that start with the occiput posterior, sixteen, or 80 per cent., rotate anteriorly, and are so delivered, while the remaining three to four remain posterior, and are either so delivered, or are assisted or delivered by some maneuver of the attendant. As will be seen only one of the three to four persistent occiput posterior cases, or one in one hundred labors of all kinds, require correction and delivery by artificial means with the posterior occiput as an indication. Thus out of the 1,446 cases of persistent occiput posterior position, 1,013 were born spontaneously with occiput posterior and the face to the pubes. Varnier gives figures showing that 30 out of 35 persistent O. P. cases are spontaneously delivered. Williams, on the other hand, states that in persistent O. P. cases, spontaneous labor is out of the question unless the child is very small.

In the remaining 433 cases artificial assistance was demanded. Thus forceps were used 286 times; podalic version 100 times; manual correction alone sufficed 25 times, while craniotomy was done 22 times.

In this paper an attempt will be made to briefly discuss

(1.) The relative values, in the spontaneously delivered O. P. cases, of the three classical factors of labor, i. e., the size of the pelvis, the size of the fetal

body, and the strength of the uterine contractions.

(2.) Special observations on the mother's age and para, the membranes, cord and perineum.

(3.) The methods of employment of forceps, version, manual correction, and

(4.) The fetal and maternal mortality of these various procedures.

The pelvis is described in a general way in a majority of the cases. In 74 per cent. the measurements are evidently those of a roomy pelvis, in 23 per cent. it is of moderate size, and in 3 per cent. it is small. The varieties of the deformity vary greatly, no one type prevailing. The outlet is moderately contracted in 22 per cent. of the cases, and is described as small in one per cent. The perineum is usually described as relaxed or as previously lacerated. Gosset holds that the resistance of the pyriformis and the soft structures rotate the occiput forward, and that if there is not sufficient resistance it passes downward into the hollow of the sacrum. All agree that the resistance of the pelvic floor and perineum in a progressing labor is the most important factor in anterior rotation.

As to the fetal elipse, there were 81 babies or about 8 per cent. that were premature or under six pounds in weight; the average "normal" occurrence being in our experience 2.35 per cent. Thus it is seen that an undersized child is not so apt to rotate as one of normal size, while on the other hand there was a much greater number than normal, of cases of moderate macrosomia among the artificially assisted O. P. cases. The measurements of the fetal head are interesting. A comparison of the average measurements computed from the heads of 751 babies delivered spontaneously O. P. is presented with the measurements of a standard fetal skull recently adopted by the American Gynecological Society.

Normal Diameters (Amer. Gyn. Soc.)	O. P. Diameters.
Occipito-mental .....13.0 cm.	13.3 cm.
Occipito-frontal .....11.5 "	11.3 "
Suboccipito-bregmatic 9.5 "	9.9 "
Bi-parietal 9.5 "	9.0 "
Bi-temporal 8.0 "	7.1 "
Trachelo-bregmatic 8.0 "	10.1 "

Normal Circumferences (Edgar).	O. P. Circumferences.
Occipito-mental .....38 cm.	36.7 cm.
Occipito-frontal .....35 "	34.2 "
Suboccipito-bregmatic .....28 "	32.2 "

It will be seen that these heads differ from the normal in being flattened from side to side, a decrease occurring in the biparietal and bitemporal diameters, and an increase in the suboccipito- and trachelo-bregmatic diameters. The occipito-mental and occipito-frontal measurements are practically not affected. Although the head is flattened laterally, the anterior portion of the vertex is so much raised by the increase in the vertical measurements that the suboccipito-bregmatic circumference is enlarged by 4.2 cm. These measurements are taken after the moulding has mostly disappeared, still it is impossible to ascertain absolutely whether their variations from the normal are the cause or effect of the failure of rotation. The fact that the changes are much more marked in the larger heads is suggestive that they are rather the effects of the moulding attendant upon the posterior delivery. Probably the most interesting fact in connection with the study of the fetal heads is the discovery that in 71 per cent. of heads delivered spontaneously face to pubes that were so observed there was *no caput*.

The following is a comparison between the various types of vertex presentations with regard to the frequency of caput formation:

	Caput absent or slight.	Medium or marked.
Anterior positions.....	60 per cent.	40 per cent.
Posterior, rotating to anterior....	41 " "	59 " "
Persistent O. P., spontaneously delivered.....	71 " "	29 " "

It is suggested that from some peculiarity of the scalp or of its blood supply in a certain proportion of cases a caput does not readily form and such heads are particularly liable to fail in being acted upon by the forces of rotation.

As to the strength of the uterine contractions, in the spontaneous deliveries the first stage pains are noted as strong in half of the cases and as moderate in most of the remainder, only 7 per cent. being described as weak or irregular. In the second stage the pains were strong in 83 per cent. of the labors and moderate in the remainder. The average time of labor was 16 hours, the first stage occupying 14 hours and 40 minutes, and the second stage 1 hour and 35 minutes. Varnier reports in 400 cases of posterior occiput positions the time of labor to be 3 hours and 16 minutes to 1 hour and 50 minutes longer than in

600 O. A. cases, according as the case was a primipara or a multipara. It might be noted here that the proportion of primiparæ was somewhat less than in all of our admissions, which is one primipara to five multiparæ.

Considering together the para and the age of the mothers. Of spontaneously delivered, persistently O. P. cases, 72 per cent. were para V to VI and averaged 31.2 years. Thirteen per cent. were para II and averaged 24.6 years, while 12 per cent. were primiparæ and averaged 22 years. Of the cases requiring artificial assistance to complete delivery, 75 per cent. were of average para VI and averaged 33 years of age; 7 per cent. were para II and averaged 26.4 years; and 18 per cent. were primiparæ, and averaged 23.7 years of age.

Concerning the rupture of the membranes in normal labor, in 6,272 observed vertex occipito-anterior presentations, the rupture is described as follows:

Ruptured first stage: 1,776 times.

Ruptured second stage: 5,496 times.

It is seen that in but one-fourth of the cases did the membranes rupture in the first stage, and of these 1,776 cases, 363 were ruptured artificially, so that spontaneous rupture in the first stage occurs in one-fifth of normal vertex cases. The rupture of the membranes was observed in 804 of the spontaneously delivered occiput posterior cases, as follows:

	Ruptured first stage.	Ruptured second stage.
Artificially	42	158
Spontaneously	306	298
	<u>348</u>	<u>456</u>

This shows that the membranes rupture early in posterior cases about five times as frequently as with occiput anterior cases, a point in diagnosis that is very suggestive as pointed out recently by Geddes. In the cases that went on to forceps twice as many were found with ruptured membranes in the first stage as in the second.

As to the effect of the position of the cord on the production of the posterior position. The cord was about the neck in 23 per cent. of the cases. This is the same percentage of occurrence as is given by Edgar in all cases. The cord was coiled about the neck and shoulder or body in five instances, and can

scarcely be given as a causative condition. Again, prolapse of the cord was no more frequent than is described as occurring in anterior cases, occurring but eleven times in the total 1,446 labors. The average length of the cord was 60 cm.

The perineum before delivery is described in the multiparæ as relaxed or as lacerated in a previous labor; in the primiparæ, as relaxed or elastic, rarely as rigid, thus accounting somewhat for the fact that it was no oftener injured than in the deliveries with the occiput anterior. After delivery the perineum is found lacerated in 15 per cent. of the spontaneous cases, in 20 per cent. of the forceps cases, and in 16 per cent. of the version cases, or in 16.6 per cent. of all persistent occiput posterior labors. This is practically the same figure as in all other cases, for in a series of 8,960 labors of all kinds the perineum was found lacerated 1,442 times or in 16.3 per cent. The worst lacerations occur in those cases in which the head is pulled through with forceps without anterior rotation being accomplished. As to the maternal mortality, in the 1,013 spontaneous labors there were 4 maternal deaths. Of these, one was due to eclampsia and one to pulmonary tuberculosis, and at the most the mortality is but 0.39 per cent., which compares favorably with the 0.357 per cent. which was the recently computed mortality in 32,000 outdoor confinements. In the 433 operative confinements there were 11 maternal deaths, forceps being used in 3 cases, version in 7, and craniotomy in 1. This is a mortality of two and a half per cent.

As to the fetal mortality. The still-birth rate in the various forms of delivery varies greatly. In the 1,013 spontaneously delivered cases there were 25 still-births or 2.7 per cent. In the 286 forceps operations there were 29 still-births or 10 per cent. Including 7 deaths in the first few days, the forceps infant mortality was 36 or 12.5 per cent. In the 100 versions the still-births numbered 29, or 29 per cent. There were also 22 craniotomies done, bringing the fetal mortality up to 105 or 7.3 per cent. Including 51 that died within the first few days, the infant mortality of all the posterior deliveries was 9 per cent. Edgar gives the mortality for the child as about 10 per cent. in persistent posterior labors. What might be called the normal still-birth rate in parturition in our experience is 3.6 per cent., or including deaths

in the first ten days, which is the usual period of observation in our cases, the infant mortality of all deliveries is 5.8 per cent. It is instructive to compare the results of the high forceps operations in posterior cases with that of version. Williams recommends version when the head is arrested at the superior strait, occiput posterior, as soon as one is convinced that spontaneous advance will not occur, provided no contra-indications are present. Brodhead prefers high forceps if the operator is at all skilled in their use. There were 84 high forceps operations for delay at the inlet with the occiput posterior. There were in these cases 13 still-births and 3 that died in the first ten days, making a total of 19 per cent. of infants lost as compared with 29 per cent. lost in the procedure of version.

An analysis of the 286 forceps operations for persistent occiput posterior positions shows the following:

84 HIGH FORCEPS OPERATIONS.

	INFANT MORTALITY.		
	Still-birth.	Died.	Cases.
Pelvic application, head rotated by combining rotation with traction and by shifting the blades frequently during the procedure....	3	2	30
Head pulled to outlet occiput posterior and there rotated anteriorly with the forceps and delivered (Scanzoni).....	4	..	19
Delivered occiput posterior, with no rotation.	5	..	18
Manual rotation above the brim, followed by application of the forceps.....	..	..	9
Pelvic application to mid-pelvis, then manual rotation, followed by reapplication to the O. A. head.....	..	..	3
Pulled O. P. to perineum, blades removed and rotation obtained by uterine contractions, combined with pressure on fundus.....	..	1	3
Head rotated anteriorly by the mere application of the blades.....	..	..	1
Head rotated by the forceps above the brim..	1	..	1
	13	3	84

139 MEDIAN FORCEPS OPERATIONS.

Combining rotation with traction, as above..	6	1	62
Scanzoni at outlet.....	3	..	26
Delivered O. P., with no rotation.....	2	..	32
Manual rotation anteriorly followed by forceps	1	1	17
Head rotated by the application of the blades .....	..	..	1
Head rotated by the use of one blade as a vectis .....	..	..	1
	12	2	139

63 LOW FORCEPS OPERATIONS.

Combining rotation with traction.....	1	..	13
Scanzoni at outlet.....	1	..	22
Manual rotation, followed by application of the blades.....	..	1	8
Delivered O. P., without rotation.....	2	1	20
	4	2	63

Though the mortality figures for the infant are somewhat indefinite, a close examination of them will show that the manual rotation is the best for the child and should always be given a thorough trial before attempting rotation with the forceps.

There are two locations in the birth canal in which it is practical to attempt manual rotation; one is above the brim (it is rare that circumstances call for operative interference at this stage of labor), and the other is when the head is well in mid-pelvis. In other locations, fixed in the brim, fixed behind the ischial spines, or bulging on the perineum, unless the relative size of the head is small, rotation is attended with great difficulty and with danger to both the fetus and to the maternal soft parts. Anterior rotation occurs spontaneously most frequently on the pelvic floor. Gosset claims that the occiput cannot rotate forward after it passes posterior to the spines of the ischium. There are rare cases, however, in which rotation may be seen to occur with the head quite on the perineum and distending the vulva. When the delay occurs at the brim it usually means a large head with extension. Russell notes that large heads cause extension at the brim, small heads in the cavity.

The method of manual rotation of the occiput anteriorly whether followed by the use of forceps or not is usually practised in the following manner. Under light chloroform anesthesia, the left hand in R. O. P., the right hand in L. O. P. positions, is passed into the vagina, and while the assistant makes pressure on the fundus and so holds the head against the vaginal hand, flexion is secured by upward pressure on the region of the anterior fontanelle; then grasping the sides of the head, by pressing the occiput forward and the sinciput backward the head is rotated by a twisting motion of the wrist. At the same time, the other hand of the operator pushes the anterior shoulder toward and across the median line. The assistant continually maintains sufficient pressure on the fundus to prevent the child from slipping upward and away from the vaginal hand, and also aids the operator in pushing the anterior shoulder to the opposite side. Cavanaugh recommends manual rotation early. We question the propriety of this, preferring to wait and see what the natural forces may accomplish. The external assistance in the manual rotation is of great importance.

Gottchalk says that the head enters the inlet in a diameter depending upon the position of the back, and that after it is in the pelvis, it takes the largest diameter available regardless of the position of the back. Olshausen, Fehling and De Lee on the other hand contend that the body exerts much influence on the position of the head and recommend external manipulation with pressure on the anterior shoulder in rotating and holding the occiput anterior while forceps are applied.

A useful maneuver in those cases in which the head is rather closely held in the pelvis and the uterus tightly contracted against the child, is a combination of the manual rotation with the instrumental, i. e., rotating the head manually to a transverse position, then making a cephalic application of the forceps, inserting in R. O. T. position the right blade first and in L. O. T. position the left blade first and completing the rotation with the blades, employing the wide sweep of the handles.

In conclusion let it be said that all writers upon the subject insist upon a diagnosis of the position being carefully made, and the difficulty in the management of such labors frequently depends upon a hasty and incorrect diagnosis. Suggestive symptoms are:

- (1.) Early rupture of the membranes.
- (2.) Good pains with no advance of the presenting part, the pelvis being normal.

The "parchment os," as described by Geddes, i. e., thinning of the posterior lip with pendulous and oedematous anterior lip is often present.

As to the actual palpation of the sutures and fontanelles, the order of the overlapping of the cranial bones is always to be remembered, the parietals over the occipital, and the lower or presenting parietal over its fellow.

When a large caput obscures such palpation, as it frequently does in those cases seen late in the second stage, the ear is to be searched for, frequently behind the pubes, the lobe pointing to the occiput and the rough auricle away from the occiput. It is of extreme importance in any given case, to determine whether rotation will occur spontaneously, or whether assistance will be required. This is scarcely second in importance to a correct diagnosis of the position. The

signs in O. P. positions that indicate persistence of the position, are

- (1.) *Delay* in the advance of the head with strong pains, and,
- (2.) A regular *advance* of the head in mid-pelvis with gradually increasing *extension*.

This sign pointing to the impending failure of rotation was first described by West and by Leishman.

There are two distinct classes of persistent O. P. cases:

(a) Those in which there is an easy passage for the fetus, either from its small or relative size, and the course and sequela of labor compare favorably with anterior cases.

(b) Those in which artificial aid should be instituted, and that as soon as in the judgment of the accoucheur a spontaneous labor is dangerous or impossible.

While the figures deduced in this study are similar to those of other observers they seem especially interesting as being based on a large number of labors.

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