

Cazeaux to be normally about twice the length of the second. This is probably under the mark, and I believe Joulin to be nearer the truth in stating that the first stage should be to the second as four or five to one, rather than as two to one. Often when the first stage has been very prolonged, the second is terminated rapidly.

The practitioner is constantly asked as to the probable length of labor, and the uncertainty of this should always lead him to give a most guarded opinion. Even when labor is progressing apparently in the most satisfactory manner the pains frequently die away, and delivery may be delayed for many hours. In the first stage a cervix that is apparently rigid and unyielding may rapidly and unexpectedly dilate, and delivery soon follow. In either case, if the practitioner has committed himself to a positive opinion he is apt to incur blame, and it is far better always to be extremely cautious in our predictions on this point.

Period of the Day at which Labor Occurs.—A somewhat larger proportion of deliveries occur in the early hours of the morning than at other times. Thus West¹ found that out of 2019 deliveries, 780 took place from 11 P.M. to 7 A.M., 662 from 7 A.M. to 3 P.M., and 577 from 3 P.M. to 11 P.M.

CHAPTER II.

MECHANISM OF DELIVERY IN HEAD PRESENTATIONS.

Importance of the Subject.—It is quite impossible to over-estimate the importance of thoroughly understanding the mechanism of the passage of the fetus through the pelvis. This dominates the whole scientific practice of midwifery, and the practitioner cannot acquire more than a merely empirical knowledge, such as may be possessed by any uneducated midwife, or conduct the more difficult cases requiring operative interference, with safety to the patient or satisfaction to himself, unless he thoroughly masters the subject.

In treating of the physiological phenomena of labor it was assumed that we had to do with an ordinary case of head presentation, the description being applicable, with slight variations, to presentations of other parts of the fetus. So in discussing the mechanical phenomena of delivery, I shall describe more in detail the mechanism of head presentations, reserving any account of the mechanism of other presentations until they are separately studied. Head presentation is so much more frequent than that of any other part—amounting to 95 per cent. of all cases—that this mode of studying the subject is fully justified; and, when once the student has mastered the phenomena of delivery

¹ Amer. Med. Journ., 1854.

in head presentations, he will have little difficulty in understanding the mechanism of labor when other parts of the fetus present, based, as it always is, on the same general plan.

Mode of Recognizing the Position of the Head by its Sutures and Fontanelles.—In entering on this study we come to appreciate the importance of the sutures and fontanelles in enabling us to detect the position of the foetal head, and to watch its progress through the pelvis; and unless the *tactus eruditus* by which these can be distinguished from each other has been acquired, the practitioner will be unable to satisfy himself of the exact progress of the labor. Nor is this always easy. Indeed, it requires considerable experience and practice before it is possible to make out the position of the head with absolute certainty; but this knowledge should always be aimed at, and the student will never regret the time and trouble he spends in acquiring it.

At the commencement of labor the long diameter of the head lies in almost any diameter of the pelvic brim, except in the antero-posterior, where there is not space for it. In the large majority of cases, however, it enters the pelvis in one or other of the oblique diameters, or in one between the oblique and transverse; but until it has fairly passed through the brim, it more frequently lies directly in the transverse diameter than has been generally supposed. Hence obstetricians are in the habit of describing the head as lying in four positions according to the parts of the pelvis to which the occiput points; the first and third positions being those in which the long diameter of the head occupies the right oblique diameter of the pelvis, the second and fourth those in which it lies in the left oblique. Many subdivisions of these positions have been made, which only complicate the subject, and render it more difficult to understand.

Four Positions Described.—The positions, then, of the foetal head after it has entered the brim, which it is of importance to be able to distinguish in practice, are:

First (left occipito-anterior, occipito-læva anterior, O.L.A.). The occiput points to the left foramen ovale, the sinciput to the right sacro-iliac synchondrosis, and the long diameter of the head lies in the right oblique diameter of the pelvis.

Second (right occipito-anterior, occipito-dextra anterior, O.D.A.). The occiput points to the right foramen ovale, the forehead to the left sacro-iliac synchondrosis, and the long diameter of the head lies in the left oblique diameter of the pelvis.

Third (right occipito-posterior, occipito-dextra posterior, O.D.P.). The occiput points to the right sacro-iliac synchondrosis, the forehead to the left foramen ovale, and the long diameter of the head lies in the right oblique diameter of the pelvis. The position is the reverse of the first.

Fourth (left occipito-posterior, occipito-læva posterior, O.L.P.). The occiput points to the left sacro-iliac synchondrosis, the forehead to the right foramen ovale, and the long diameter of the head lies in the left oblique diameter of the pelvis. The position is the reverse of the second.

The relative frequency of these positions has long been, and still is, a matter of discussion among obstetricians. According to Nægele, to

whose classical essay we owe the greater part of our knowledge of the subject, the head lies in the right oblique diameter in 99 per cent. of all cases. More recent researches have thrown some doubt on the accuracy of these figures, and many modern obstetricians believe that the second (O.D.A.) position, which Naegle believed only to be observed as a transitional stage in the natural progress of the third (O.D.P.) position, is much more common than he supposed. This question will be more fully discussed when we treat of the mechanism of occipito-posterior delivery, and, in the meantime, it may serve to show the discrepancy which exists in the opinions of modern writers, if we append the following table of the relative frequency of the various positions,¹ copied from Leishman's work:

	First position (O.L.A.)	Second position (O.D.A.)	Third position (O.D.P.)	Fourth position (O.L.P.)	Not classified.
Naegle	70.00	29.00	1.00
Naegle, Jr.	64.64	32.88	2.47
Simpson and Barry	75.45	0.29	22.98	0.98	
Dubois	79.83	2.87	25.06	0.62	
Murphy	63.23	16.18	16.18	4.42	
Swayne	88.36	9.79	1.04	2.8	

Here it will be seen that all obstetricians are agreed as to the immensely greater frequency of the first (O.L.A.) position—the only point at issue being the relative frequency of the second (O.D.A.) and third (O.D.P.).

Various explanations have been given of the greater frequency with which the head lies in the right oblique diameter. By some it is referred to the natural tendency of the back of the foetus, as shown by the experimental researches of Höning and other writers, to be directed, in consequence of gravitation, forward and to the left side of the mother in the erect attitude, and backward and to her right side in the recumbent. The explanation given by Simpson was that the head lay in the right oblique diameter in consequence of the measurement of the left oblique being more or less lessened by the presence of the rectum. When the rectum is collapsed, indeed, the narrowing of the diameter is slight; but it is so often distended by fecal matter—sometimes, when constipation exists, to a very great extent—that it may readily have a very important influence in determining the position of the fetal head.

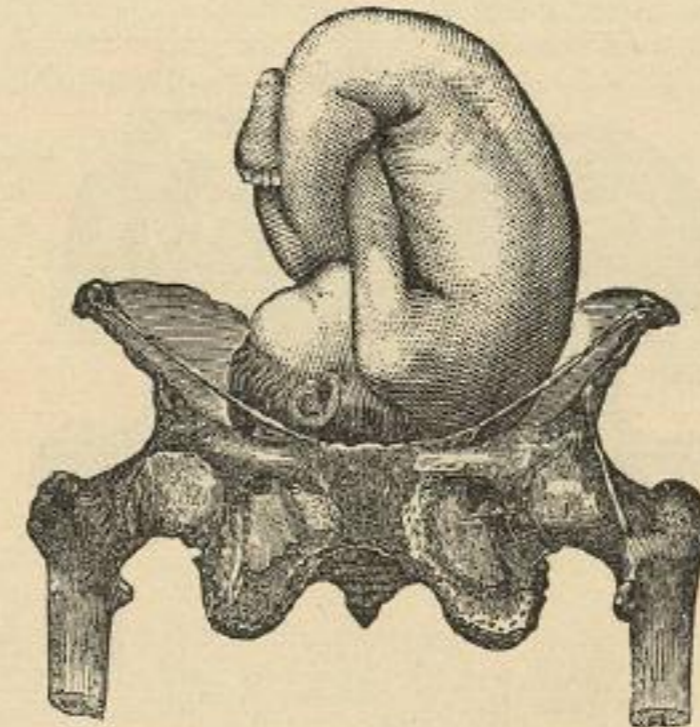
In describing the mechanism of delivery, it will be well for us to concentrate our attention on the first (O.L.A.), or most common, position, dwelling subsequently more briefly on the differences between it and the less common ones.

Description of the First Position.—In this position, when the head commences to descend, the occiput lies in the brim pointing to the left ilio-pectineal eminence, the forehead is directed to the right sacro-iliac synchondrosis, and the sagittal runs obliquely across the pelvis in the right oblique diameter. The back of the child is turned toward the left side of the mother's abdomen, the right shoulder to her

¹ Leishman's System of Midwifery, p. 341.

right side, the left to her left side (Fig. 101). If a vaginal examination be now made (the patient lying in the ordinary obstetric position), and the os be sufficiently open, the finger will impinge upon the protuberance of the right parietal bone, which is described as the "presenting part," a term which has received various definitions, the best of which is probably that adopted by Tyler Smith, viz., "that portion of the fetal head felt most prominently within the circle of the os uteri, the vagina, and the ostium vaginae, in the successive stages of labor." If the tip of the examining finger be passed slightly upward, it will feel the sagittal suture running obliquely across the pelvis, and, if this be traced downward and to the left, it will come upon the triangular posterior fontanelle, with the lambdoidal sutures diverging from it. If the

FIG. 101.



Attitude of child in first position (O.L.A.). (After HONOR.)

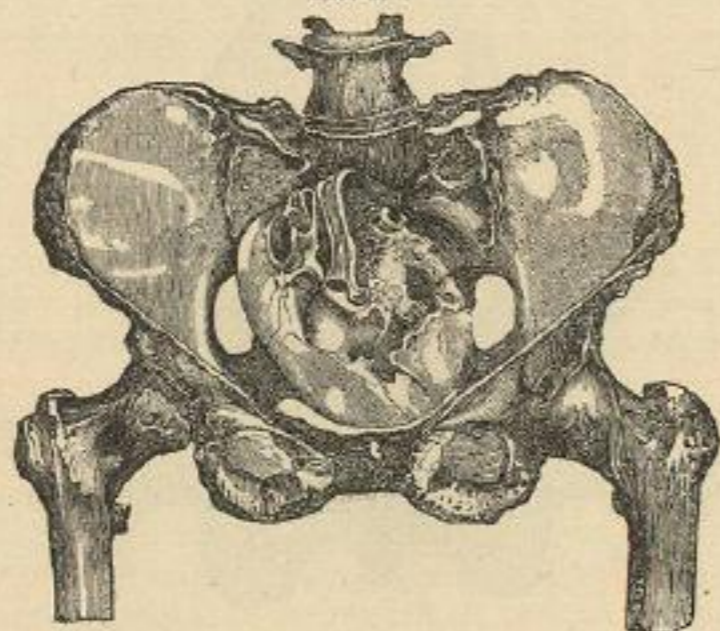
finger could be passed sufficiently high in the opposite direction, upward and to the right, it would come upon the large anterior fontanelle; but at this time that is too high up to be within reach. The chin is slightly flexed upon the sternum, this flexion, as we shall presently see, being greatly increased as the head begins to descend.

The head, at the commencement of labor, generally lies within the pelvic brim, especially in primiparæ. In multiparæ, owing to the relaxation of the abdominal parietes, the uterus is apt to fall somewhat forward, and the head consequently is more entirely above the brim, but is pushed within it as soon as labor actually commences.

Naegle—and his description has been adopted by most subsequent writers—describes the head, at this period, as lying obliquely in relation to the brim, the right parietal bone, on which the examining finger impinges, being supposed by him to be much lower than the left. The accuracy of this view has, of late years, been contested, and it is now pretty generally admitted that this obliquity does not exist, and that

the head enters the brim of the pelvis with both parietal bones on the same level, and with its bi-parietal diameter parallel to the plane of the inlet (Fig. 102). Naegele's view was adopted, partly because the finger always felt the right parietal protuberance lowest, and partly because it was at that point that the "*caput succedaneum*," or swelling observed on the head after delivery, was always formed. Both arguments are, however, fallacious; for the right parietal bone is the part which would naturally be felt lowest, on account of the oblique position of the pelvis to the trunk; while, with regard to the *caput succedaneum*, it has been conclusively proved by Duncan that it does not form on the point most exposed to pressure, as Naegele assumed, but on the part of the head where there is least pressure—that is, the part lying over the axis of the vaginal canal.

FIG. 102.



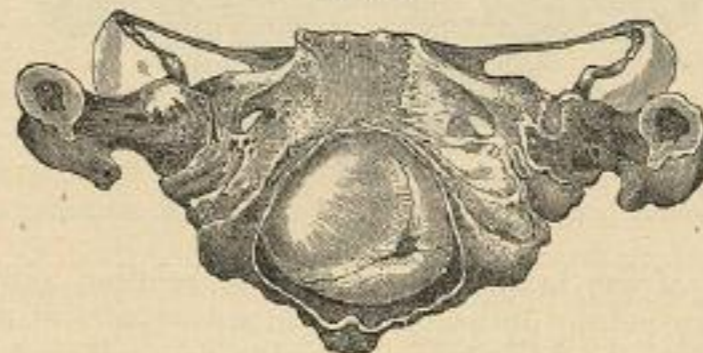
First position (O.L.A.): Movement of flexion.

Division of Mechanical Movements into Stages.—In tracing the progress of the head from the position just described, obstetricians have been in the habit of dividing the movements it undergoes into various stages, which are convenient for the purpose of facilitating description. It must be borne in mind that these are not evident and distinct stages, which can always be made out in practice, but that they run insensibly into one another, and often occur simultaneously, or nearly so, in rapid labor. They may be described as: 1. *Flexion*. 2. *First movement of descent*. 3. *Levelling or adjusting movement*. 4. *Rotation*. 5. *Second movement of descent and extension*. 6. *External rotation*.

1. *Flexion*. The first movement of the head consists of a rotation on its bi-parietal diameter, by which the chin of the child becomes bent on the sternum, and the occiput descends lower than the forehead. By this there is a clear gain of at least a half-inch, for the occipitobregmatic diameter ($3\frac{1}{2}$ inches) becomes substituted for the occipitofrontal ($4\frac{1}{2}$ inches). (Fig. 102.)

The movement is most marked when the pelvis is narrow, and in some cases of pelvic deformity it takes place to an extreme degree; while, in unusually large and roomy pelves, it occurs to a very slight extent, or not at all. The reason of this flexion is twofold. Solayres and the majority of obstetricians explain it by saying that the expulsive force is communicated to the head through the vertebral column, and inasmuch as the head is articulated much nearer the occiput than the sinciput, the resistance being equal, the former must be pushed down. This is, doubtless, the correct explanation of the flexion *after* the membranes are ruptured; but, before that happens, the ovum is practically a bag of water, which is equally compressed at all points by the uterine contraction, and is pushed downward through the os *en masse*, the expulsive force not being transmitted through the vertebral column at all. Under such circumstances flexion is probably effected in the following way: the head being articulated nearer the occiput than the forehead, and being equally pressed upon from below

FIG. 103.

First position^[1] (O.L.A.): Occiput in the cavity of the pelvis. (After Hodge.)

by the resisting structures, the pressure is more effectual on the forehead—consequently that is forced upward, and the occiput descends. This explanation would also hold good after the rupture of the membranes, and probably both causes assist in effecting the movement.

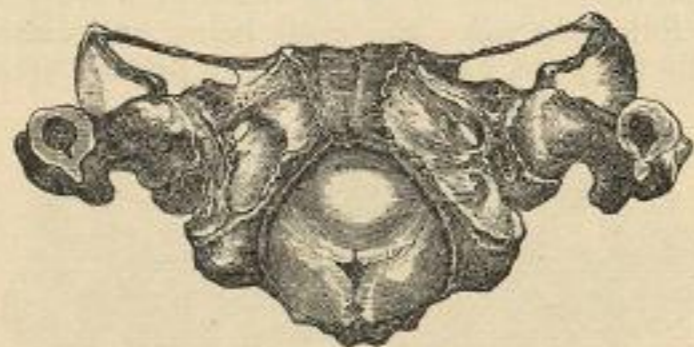
2 and 3. *Descent and levelling movement*. The movements of *descent* and *levelling* may be described together. As soon as the head is liberated from the os uteri, it descends pretty rapidly through the pelvis, until the occiput reaches a point nearly opposite the lower part of the foramen ovale (Fig. 103), and the sinciput is opposite the second bone of the sacrum. A levelling movement now occurs, the anterior fontanelle comes to be more easily within reach, more on a level with the posterior, and the chin is no longer so much flexed on the sternum. This change is due to the fact that the anterior end of the ovoid experiences greater resistance than the posterior, and as soon as this resistance counterbalances and exceeds that applied to the latter, the sinciput must descend. The right side of the head also descends more than the left from a similar cause, so that the head becomes, as it were, slightly flexed on the right shoulder. This obliquity of the head on its transverse diameter in the lower part of the pelvis has been denied

[¹ This represents the second position (O.D.A.).—Ed.]

by Küneke,¹ who maintains that the head passes through the entire pelvis in the same position as it enters the brim; that is, with both parietal bones on a level, so that the point of intersection of the transverse and antero-posterior diameters of the pelvis would correspond with the sagittal suture. There is, however, good reason to believe that in the lower half of the pelvic cavity the head is not truly synclitic, as Küneke describes, but that the right parietal bone is on a somewhat lower level than the left.

4. *Rotation.* The movement of *rotation* is very important. By it the long diameter of the head is changed from the oblique diameter of the pelvic cavity to the antero-posterior diameter of the outlet (Fig. 104), or to a diameter nearly corresponding to it, so that the

FIG. 104.



First position (O.L.A.): Occiput at outlet of the pelvis. (After HODGE.)

long diameter of the head is brought into relation with the longest diameter of the pelvic outlet. This alteration almost always takes place, and may be readily observed by the accoucheur who carefully watches the progress of labor. Various explanations have been given of its causes. The one most generally adopted is, that it is due to the projection inward of the ischial spines, which narrow the transverse diameter of the pelvic outlet. As the pains force the occiput downward, its rotation backward is prevented by the projection of the left ischial spine, while its rotation forward is favored by the smooth bevelled surface of the ascending ramus of the ischium. Similarly the ischial spine on the opposite side prevents the rotation forward of the forehead, which is guided backward to the cavity of the sacrum by the smooth surface of the sacro-ischiatic ligaments. These arrangements, therefore, give a screw-like form to the interior of the pelvis; and as the pains force the head downward they are effectual in imparting to it the rotatory movement which is of such importance in adapting it to the longest measurement of the outlet.

By most of the German obstetricians the influence of the ischial spines and of the smooth pelvic planes in producing rotation is not admitted. They rather refer the change of direction to the increased resistance the head meets from the posterior wall of the pelvis, and from the perineal structures. Whichever part of the head first meets this resistance, which is much greater than that of the anterior part of the pelvis, must necessarily be pressed forward; and as, in the large

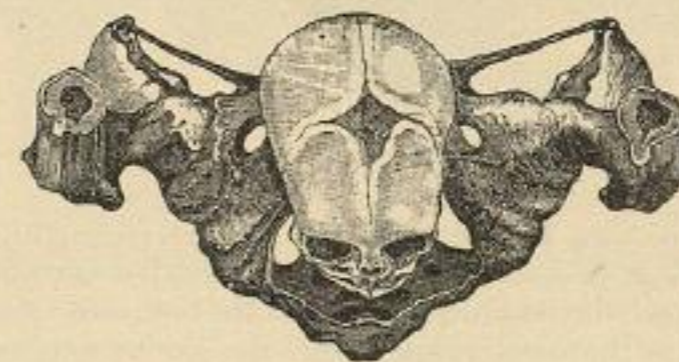
¹ Die vier Factoren der Geburt, Berlin, 1869.

majority of cases, the posterior fontanelle descends first, it is thus pressed forward until rotation is effected. This view has the advantage of accounting equally well for the rotation in occipito-posterior as in occipito-anterior positions, the former of which, on the more ordinarily received theory, are not quite satisfactorily explicable. It does not follow that the smooth surfaces of the pelvic planes are without influence in favoring the rotation. On the contrary, they doubtless greatly facilitate it; and it is probable that both these agencies operate in producing anterior rotation of the occiput.

In some rare cases the head escapes rotation and reaches the perineum still lying in the oblique diameter. Even here, however, rotation is generally effected, often suddenly, just as the head is about to pass the vulva, and it is very rarely expelled in the oblique position. The movement at this stage may be explained by the perineum, which is attached at its sides, and grooved in its centre; to the hollow so formed the long diameter of the head accommodates itself, and is thus rotated into the antero-posterior diameter of the outlet.

5. *Extension.* By the process just described the face is turned back into the hollow of the sacrum; but the head does not lie absolutely in the antero-posterior diameter of the pelvic outlet, but rather in one between it and the oblique. The occiput is still forced down by the pains, and, in consequence of its altered position, is enabled to pass between the rami of the pubis, and advances until its further descent is checked by the nape of the neck, which is pressed under and against the arch of the pubes. By this means the occiput is fixed, and, the pains continuing, the uterine force no longer acts on the occiput, but on the anterior part of the head, which is now pushed down and

FIG. 105.



First position (O.L.A.): head delivered. (After HODGE.)

separated from the sternum. This constitutes *extension*. As the head descends, the soft structures of the perineum are stretched, and the coccyx pushed back so as to enlarge the outlet. The pains continue to distend the perineum more and more, the head advancing and receding with each pain. As the forehead descends, the sub-occipito-bregmatic, the sub-occipito-frontal, and the sub-occipito-mental diameters successively present; the occiput turns more and more upward in front of the pubes (Fig. 105), and, at last, the face sweeps over the perineum and is born.

The mechanical cause of this movement may be readily explained.

As soon as the occiput has passed under the arch of the pubes, and is no longer resisted by the anterior pelvic walls, the head is subjected to the action of two forces: that of the uterine pressure acting downward and backward; and that of the resistance of the posterior walls of the pelvis and the soft parts acting almost directly forward. The necessary result is that the head is pushed in a direction intermediate between these two opposing forces—that is, downward and forward in the axis of the pelvic outlet.

In addition to the slight obliquity which exists as regards the direct relation of the long diameter of the head to the antero-posterior diameter of the outlet at the moment of its expulsion, the head also lies somewhat obliquely in relation to its own transverse diameter, so that, in the majority of cases, the right parietal bone is expelled before the left.

6. *External rotation.* Shortly after the head is expelled, as soon as renewed uterine action commences, it may be observed to make a distinct rotatory movement, the occiput turning to the left thigh of the



Fig. 106.
External rotation of head in first position (O.L.A.). (After HODGE.)

mother, and the face turning upward to the right thigh (Fig. 106). The reason of this is evident. When the head descends in the right oblique diameter the shoulders lie in the opposite or left oblique diameter, and, as the head rotates into the antero-posterior diameter, they are necessarily placed more nearly in the transverse. As soon as the head is expelled the shoulders are subjected to the same uterine force and pelvic resistance as the head has just been, and they are acted on in precisely the same way. Consequently they too rotate, but in the opposite direction, into the antero-posterior diameter of the outlet, or nearly so, just as the head did, and as they do so they necessarily carry the head with them, and cause its external rotation.

The two shoulders are soon expelled, the left shoulder generally the first, sweeping over the perineum in the same manner as the face. This is, however, not always the case, and they are often expelled simultaneously, or the right shoulder may come first. The body soon follows, and the second stage of labor is completed.

Second Position.—In the second position (O.D.A.) the long diameter of the head lies in the left oblique diameter of the pelvis. On making a vaginal examination, in the ordinary obstetric position, the finger, passing upward and to the right, feels the small posterior fontanelle; downward and to the left, it feels the anterior. The sagittal suture lies obliquely across the pelvis in the left oblique diameter. The description of the mechanism of delivery is precisely the same as in the first position (O.L.A.), substituting the word left for right. Thus the finger impinges on the left parietal bone, the occiput turns from right to left during rotation. After the birth of the head the occiput turns to the right thigh of the mother, the face to the left thigh.

Third, or Right Occipito-sacro-iliac Position.—In the third position (O.D.P.) the head enters the pelvic brim with the occiput directed backward to the right sacro-iliac synchondrosis, and the sinciput forward to the left foramen ovale (Fig. 107). The posterior fontanelle is

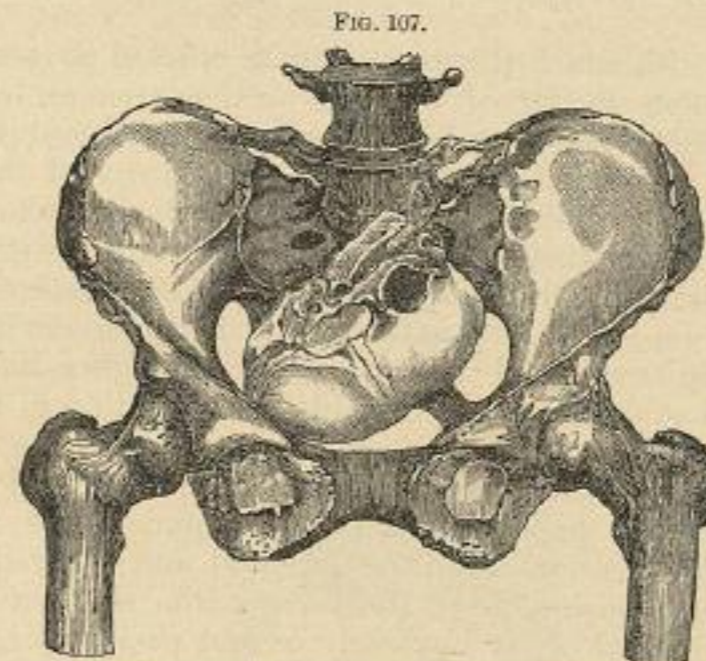


Fig. 107.
Third position (O.D.P.) of occiput at brim of pelvis.

directed backward, the anterior fontanelle forward, while the examining finger impinges on the left parietal bone. The mechanism of delivery in these cases is of much interest. In the large majority of cases, during the progress of delivery the occiput rotates forward along the right side of the pelvis, until it comes to lie almost in the antero-posterior diameter of the outlet, and passes under the pubic arch, the forehead passing over the perineum. It will be seen that during part of this extensive rotation the head must lie in the second position (O.D.A.), and the case terminates just as if it had been in the second position (O.D.A.) from the commencement of labor.

Manner in which the Occiput is Rotated Forward.—How is it that this rotation is effected, and that the sinciput, occupying the position of the occiput in the first position (O.L.A.), should not be rotated forward to the pubes as that is? This, no doubt, may be explained by the fact that the uterine force transmitted through the vertebral column

causes the occiput to descend lower than the sinciput, so that in most cases, in making a vaginal examination, the posterior fontanelle can be readily felt, while the anterior is high up and out of reach. The head is, therefore, extremely flexed, and so descends into the pelvic cavity, until the occiput, being now below the right ischial spine, experiences the resistance of the pelvic floor, opposite the right sacro-ischiatic ligament, by which it is directed forward. The forehead is, at this time, supposing flexion to be marked, too high to be influenced by the anterior pelvic plane. Pressure continuing, the occiput rotates forward, the forehead passes around the left side of the pelvis, and labor is terminated as in the second position (O.D.A.).

The period of labor at which rotation takes place varies. In the majority of cases it does not occur until the head is on the floor of the pelvis, for it is then that resistance is most felt; but the greater the resistance, the sooner will rotation be produced. Hence it is more likely to occur early, when the head is large and the pelvis comparatively small.

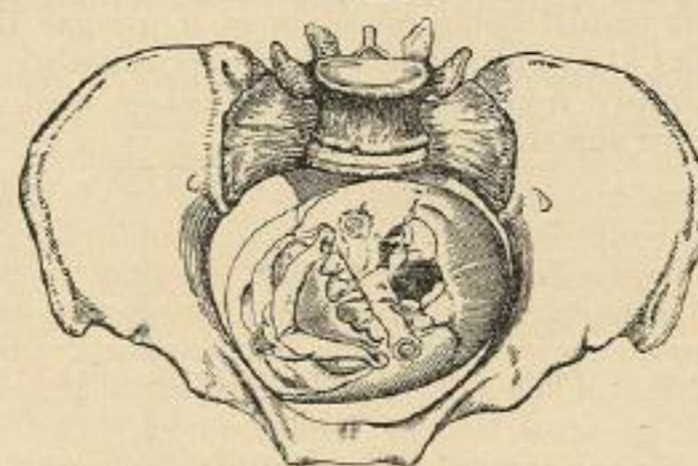
The facility with which this movement is effected obviously depends upon the complete flexion of the chin on the sternum, by which the anterior fontanelle is so elevated that its rotation backward is not resisted by the inward projection of the left ischial spine, and the occiput is correspondingly depressed. If, however, this flexion is not complete, and the anterior fontanelle is so low as to be readily within reach of the finger, considerable difficulty is likely to be experienced. In many such cases rotation is still eventually effected, but in others it is not; and the labor is then terminated with the face to the pubes, but at the expense of considerable delay and difficulty. According to Dr. Uvedale West, of Alford, who devoted much careful study to the subject, this termination occurs in about 4 per cent. of occipito-posterior positions. When it is about to happen the anterior fontanelle may be felt very low down, and sometimes even the forehead and superciliary ridges. The uterine force pushes down the occiput, the sinciput being fixed behind the pubes, which it obviously cannot pass under, as does the occiput in the first position. The sinciput, therefore, becomes more flexed and pushed upward, while the resistance of the pelvic floor directs the occiput forward. The perineum now becomes enormously distended by the back part of the head, and is in great danger of laceration. The occiput is eventually, but not without much difficulty, expelled. A process of extension now occurs, the nape of the neck being fixed, as it were, against the centre of the perineum, the expelling force now acting on the forehead, and producing rotation of the head on its transverse axis. The forehead and face are thus protruded, and the body follows without difficulty.

It is said that, in a few exceptional cases, where the anterior fontanelle is much depressed, the labor may terminate by the conversion of the presentation into one of the face, the head rotating on its transverse axis, the forehead passing to the posterior part of the pelvis, and the chin emerging under the pubes. It is obvious, however, that this change can only occur when the head is unusually small, and it must of necessity be extremely rare.

Reference has already been made to Naegele's views as to the rarity of the second position (O.D.A.), and to his opinion that cases in which the occiput was found to point to the right foramen ovale were only transitional stages in the rotation of occipito-posterior positions. Such an assumption, however, is unwarrantable, unless the case has been watched from the very commencement of labor. Many perfectly qualified observers have arrived at the conclusion that second positions (O.D.A.) are far more common than Naegele supposed; and in the table already quoted (page 280) it will be seen that while Murphy estimates the second (O.D.A.) and third (O.D.P.) as being equally frequent, Swayne believes the second (O.D.A.) to be much more common than the third (O.D.P.). It is probable that the weight of Naegele's authority has induced many observers to classify second (O.D.A.) positions as third (O.D.P.) positions in which partial rotation has already been accomplished. My own experience would certainly lead me to think that second (O.D.A.) positions are very far from uncommon. The question, however, must be considered to be in abeyance, until further observations by competent authorities enable us to decide it conclusively.

Fourth, or Left Occipito-sacro-iliac Position.—The fourth position (O.L.P.) is just as much the reverse of the second as the third is of the first. The occiput points to the left (Fig. 108) sacro-iliac synchondrosis, and the finger impinges on the right parietal bone. The mechanism is precisely the same as in the third position (O.D.P.), the rotation taking place from left to right.

FIG. 108.



Fourth position (O.L.P.) of occiput at pelvic brim.

Formation of the Caput Succedaneum.—The formation of the caput succedaneum has been already alluded to. This term is applied to the cedematous swelling which forms on the head, and is produced by effusion from the obstruction of the venous circulation caused by the pressure to which the head is subjected. It follows that the size of the swelling is in direct proportion to the length of the labor. In rapid deliveries, in which the head is forced through the pelvis quickly, it is scarcely, if at all, developed; while after protracted labor it is large and distinct, and may obscure the diagnosis of the position, by

preventing the sutures and fontanelles being felt. Its situation varies according to the position of the head: thus, in the first (O.L.A.) and fourth (O.L.P.) positions it forms on the right parietal bone, in the second (O.D.A.) and third (O.D.P.) on the left; and we may therefore verify, by inspection of its site, the accuracy of our diagnosis.

An ordinary mistake which has been made by obstetricians is to regard the caput succedaneum as formed at the point where the head has been most subjected to pressure; while, in fact, it forms on that part which is most unsupported by the maternal structures, and where the swelling may consequently most readily occur. Therefore, in the early stages of the labor, it always forms on the part of the head which lies in the circle of the os uteri; while in subsequent stages, it forms on that which lies in the axis of the vaginal canal, and eventually is most prominent on the part that is first expelled from the vulva.

Alteration in the Shape of the Head from Moulding.—A few words may be said as to the alteration in the form of the fetal head which occurs in tedious labors, and results from the moulding which it has undergone in its passage through the pelvis. The smaller the pelvis, and the greater the pressure applied to the head during delivery, the more marked this is. The result is, that in vertex presentations the occipito-mental and occipito-frontal diameters are elongated to the extent of an inch, or even more, while the transverse diameters are lessened, from compression of the parietal bones. This moulding is of unquestionable value in facilitating the birth of the child. The amount of apparent deformity is very considerable, and may even give rise to some anxiety. It is well to remember, therefore, that it is always transient, and that in a few hours, or days at most, the elasticity of the soft cranial bones causes them to resume their natural form. The caput succedaneum also disappears rapidly; therefore no amount of deformity from either of these causes need give rise to anxiety, or call for any treatment.

CHAPTER III.

MANAGEMENT OF NATURAL LABOR.

ALTHOUGH labor is a strictly physiological function, and in a large majority of cases might, no doubt, be safely accomplished without assistance from the accoucheur, still medical aid, properly given, is always of value in facilitating the process, and is often absolutely essential for the safety of the mother and child.

Preparatory Treatment.—The management of the pregnant woman before delivery is a point which should always receive the attention of the medical attendant, since it is of consequence that the labor should come on when she is in as good a state of health as possible. For this

purpose ordinary hygienic precautions should never be neglected in the latter months of gestation. The patient should take regular and gentle exercise, short of fatigue, and if the weather permit, should spend as much of her time as possible in the open air. Hot rooms, late hours, and excitement of all kinds should be strictly avoided. The diet should be simple, nutritious, and unstimulating. The state of the bowels should be particularly attended to. During the few days preceding labor the descent of the uterus often causes pressure on the rectum, and prevents its evacuation. Hence it is customary to prescribe occasional gentle aperients, such as small doses of castor oil, for a few days before the expected period of delivery. Some caution, however, is necessary, as it is certainly not very uncommon for labor to be determined rather sooner than was anticipated, in consequence of the irritation of too large a purgative dose. The state of the bowels should always be inquired into at the commencement of labor, and, if there be any reason to suspect that they are loaded, a copious enema should be administered. This is always a proper precaution to take, for a loaded rectum is a common cause of irregular and ineffective uterine action; and even when it does not produce this result, the escape of the feces, in consequence of pressure on the bowel during the propulsive stage, is always disagreeable both to patient and practitioner.

The dress of the patient during pregnancy may be here adverted to; for much discomfort may arise, and the satisfactory progress of labor may even be interfered with, from errors in this respect.

After the uterus has risen out of the pelvis the ordinary corset which most women wear is apt to produce very injurious pressure; still more so when attempts are made to conceal the increased size by tight lacing. After the fourth or fifth month, therefore, the comfort of the patient is much increased by wearing a specially constructed pair of stays with elastic let into the sides and front, so that they accommodate themselves to the gradual increase of the figure. Such are made by all stay-makers, and should be worn whenever the circumstances of the patient permit. Failing this, it is better to avoid the use of the corset altogether, and to have as little pressure on the uterus as possible; although many women cannot do without the support to which they are accustomed. To multiparæ, especially if there be much laxity of the abdominal parietes, a well-fitting elastic abdominal belt is often a great comfort. This is constructed so that it can be tightened when the patient is walking and in the erect position, when such support is most required, and readily loosened when desired.

Necessity of Attending to the First Summons.—It is hardly necessary to insist on the necessity of the practitioner attending immediately to the first summons to the patient. It is true that he may very often be sent for long before he is actually required. But, on the other hand, it is quite impossible to foresee what may be the state of any individual case. By prompt attention he may be able to rectify a malposition, or prevent some impending catastrophe, and thus save his patient from consequences of the utmost gravity.

The practitioner should always be provided with the articles which he may require. The ordinary obstetric cases, containing one or two