POSTURE IN OBSTETRICS *

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Stimulated by a most interesting paper on the "Significance of Posture in Obstetrics" by the late Dr. Albert F. A. King of Washington, I began in 1909 the study of its effect in the different stages of labor. Up to that time I had been in the habit of having my patients grasp the foot of the bed or the back of a firm chair with both hands, and then during the pain squat down so that the knees pressed against the side of the uterus and the entire weight of the contents of the uterus was directed on the dilating cervix. In the more intelligent class of patients this was comparatively easy to accomplish, but in the less intelligent and highly nervous type, they either refused to assume the position or sank down on the floor. It therefore came to me that if I could provide a suitable chair I would gain my point of bringing the weight of the uterine content so that it would exert its force to the best advantage in dilating the cervix and parturient canal.

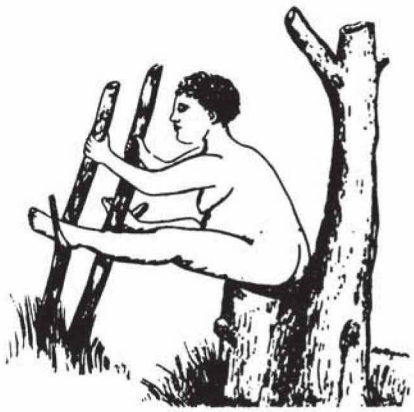

Fig. 1.—Primitive obstetric chair used by native African women. (This and the following eight illustrations are taken from G. T. Witkowsk's "Histoire des accouchements chez tous les peuples," 1887.)

Before beginning the construction of this first chair I looked up the literature on the subject and found it so interesting that I shall give a brief abstract of what I found.

The antiquity of the obstetric chair, according to the opinion of Fugelmann, is that the earliest possible reference to it in our possession dates back to Moschion, a Greek physician of the second century. Comments on the use of the obstetric chair are scattered through the writings of several Greek physicians, such as Aetamidoe, Aëtius, Toranus of Ephesus, and Paulus of Aegina. The latter states that the time has come for the mother to be placed on the chair when palpation has shown the uterus to be open and when the infant is about to be born.

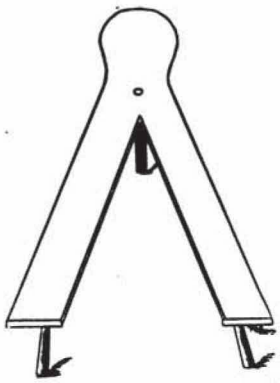

Fig. 2.—Chair after model of Savonarole, 1747.

Fig. 3. — Obstetric chair used in Oriental countries.

Fig. 4.—Obstetric chair of Deventer, 1800.

Until its reappearance in the middle ages, there is a gap in the history of the obstetric chair, which is again

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encountered in the writings of Albertus Magnus, in the thirteenth century.

Eucharius Rhodion relates that the midwives of France and Germany had special seats, rather low, with an empty space to allow the child's passage, and a rounded support to receive the back of the extended mother. This chair was packed and stuffed with linen from behind, for after the patient had taken her seat, the midwife was to have free space to do her work on either side of the seat. Since the middle of the sixteenth century, this chair was in common use in Germany, but was not recommended for stout women, for whom the kneeling posture was considered more desirable.

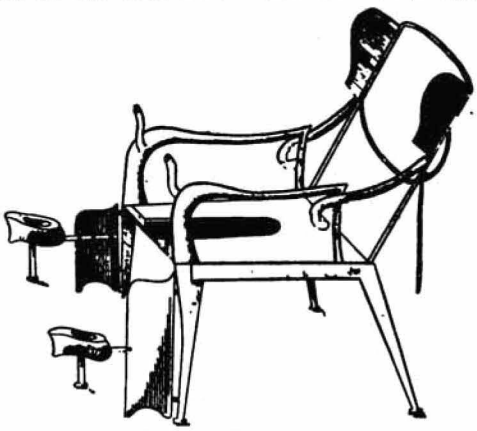

Fig. 5.—Stein's model.

An obstetric chair built after the model of Rhodion's chair was recommended by Rueff in Switzerland ("De Conceptu et Generatione Hominis," 1554). Many years later, this book was translated into English, "For the General Good and Benefit of this Nation":

Let the stoole be made compassewise, underpropped with four feet, the stay of it being behind bending backward, hollow in the midst, covered with a blacke cloth underneath, hanging down to the ground, by that means that the laboring woman may be covered and other women sometimes apply their hands in any place, if necessity requires. Let the stoole be furnished and covered with many cloths and clouts at the back and other parts, that the laboring woman receive not hurt, or the infant anywhere, strongly kicking and striving because of the pains, stirrings and motions of the mother.

Fig. 6.—Obstetric chair.

Favorable mention of the obstetric chair is also made by Ambroise Pare, who in his "Œuvres" (1564) points out that its usefulness should not be underrated:

The chair should not be higher than two feet above the floor. The pregnant woman reclines in it on her back, so that her inspirations are free. The sacrum and coccyx are exposed and in no way separated. The same is true for the pubes, the thighs being spread apart, which moreover facilitates the manipulations of the midwife seated in front of the pregnant woman. A cushion should be placed in the hollowed back of the chair, and some padding under the thighs to contribute to the woman's comfort.

The seventeenth century finds the obstetric chair installed in an honorable place in the center of medical erudition. As an auxiliary in childbirth, Jacques Duval (1612) recommends a chair of moderate height, 1½ to 2 feet, open both in front and behind, so that the midwife has unhindered access to the parturient woman. This chair should have a sloping pillow, on which the patient can recline at ease and rest during the intervals between her pains; it should be upholstered or stuffed with cushions, so that the seat and thighs are comfortable. In front of the chair should lie a large cushion for the woman to kneel on when the pains begin; she may rest her hands on the chair and clasp it tightly while she holds her breath, thereby endeavoring to push the child down.

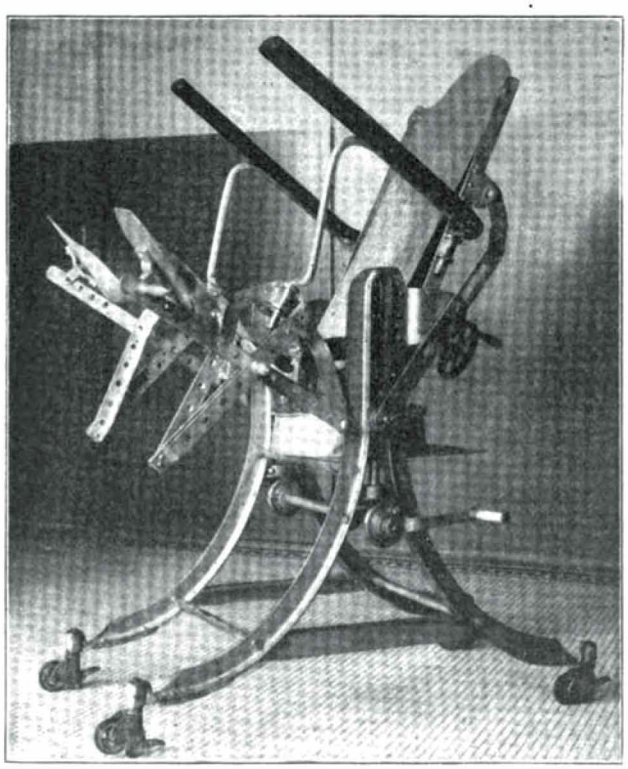

Fig. 7.—Operating chair.

The obstetric chair was frequently employed by Flemish women in Belgium, in the eighteenth century, and the leading accoucheurs vied with one another to construct a chair of their own invention. The model of Dr. Herbiniant, about 1780, was distinguished by a foot board attached to the chair by leather straps, and

a woolen insert which could be fitted into the concavity of the obstetric chair, after this had served its particular purpose. In Holland, the employment of the obstetric chair was at one time so entirely customary that this useful article formed part of the outfit for all fairly well equipped brides. Englishwomen, in the eighteenth century, made use of a specially constructed wooden chair, with a seat scooped out in front, to facilitate the passage of the child.

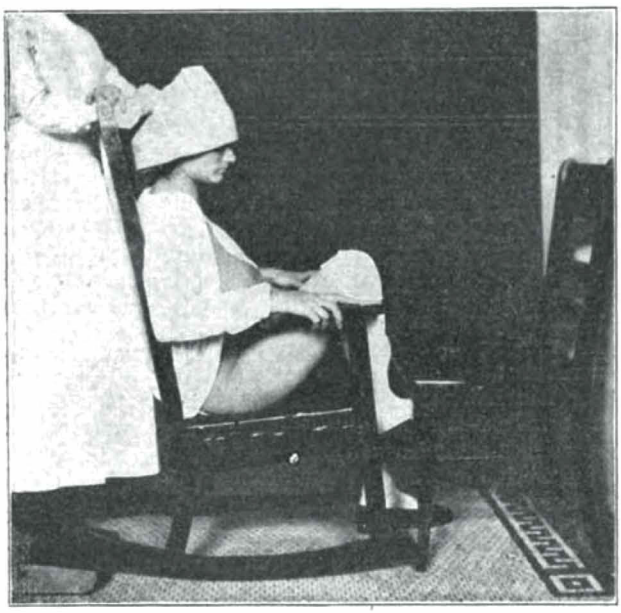

Fig. 8.—Rocking chair.

From an originally simple piece of furniture, the obstetric chair was developed, in the eighteenth century, into more complicated contrivances by Deventer, whose so-called perforated chair was at one time very popular. This adjustable but somewhat clumsy chair was even provided with an arrangement to keep the occupant's feet warm, by means of hot ashes and sand bags. Heister, in the eighteenth century, recommended the use in labor of seats analogous to Rhodion's obstetric chair. Stark, in 1791, advocated a model devised by himself. Stein, in Marburg, Germany, toward the end of the eighteenth century, extolled a rather complicated structure, of his own invention, which had separate parts united by hooks and hinges so that it could be taken entirely apart. All the pieces, including the pads, could be packed in a medium sized chest, to be carried about or sent to a distance. This chair could be adjusted at different heights, by means of iron bars held in place with screws. It was provided with arm pieces or handles, and had a sloping footboard. The entire arrangement was such that the flexed legs of the seated or reclining occupant of the chair necessarily formed an acute angle with the thighs, thus enabling her to move and propel an extraordinary weight with a minimum expenditure of strength.

In the Western hemisphere the obstetric chair gradually fell into disuse, although it survived some time in rural communities of various countries. At the present writing, the nations of the East are its patrons, and it is found in Japan, China, Greece, Turkey and also Syria, Egypt and Palestine. In the last named country, according to Engelmann, it is still an honored institution, often seen in the humble form of an old fashioned armchair. In Syria, all self-respecting midwives own their obstetric chairs, built on the plan of a rocking chair, with arms and a seat scooped out in front, about 2 feet above the rockers, and cut out in a semicircle. The women of the Orient are also delivered in a special chair, the separate parts of which fold up like ordinary folding chairs. Among the wealthy these seats are made of ebony and inlaid with mother of pearl. The midwife does her work kneeling in front of the parturient woman. Among the modern Egyptians, the midwife makes use of a chair which is covered with a shawl or an embroidered napkin; and some flowers of the Henna tree, or roses, are tied with an embroidered handkerchief to each of the upper corners of the back; thus ornamented the chair is conveyed before the midwife to the house.

In several villages of Africa, a delivery chair is found, consisting of a block of wood which rests against a tree, at a height of about 3½ feet above the ground. Two stilts are driven into the ground on either side to serve as foot rests, and the woman makes her efforts at expulsion while taking a firm hold of the ends of the stilts with both hands. It would seem to the author that this might almost be taken as the type of the primitive chair. Thus it is seen that for many centuries the use of some sort of device for maintaining the upright posture has been used throughout the world. With the introduction of forceps the necessity of posture was gradually lost sight of, so that at the present time but little is said in its favor, and the pendulum has swung so far to the other extreme that we are in danger of having our women all delivered by operative procedure of one sort or another. Forceps and other operations are resorted to daily by many practicing obstetrics with but little more reason than that the patient has been in labor longer than appears necessary.

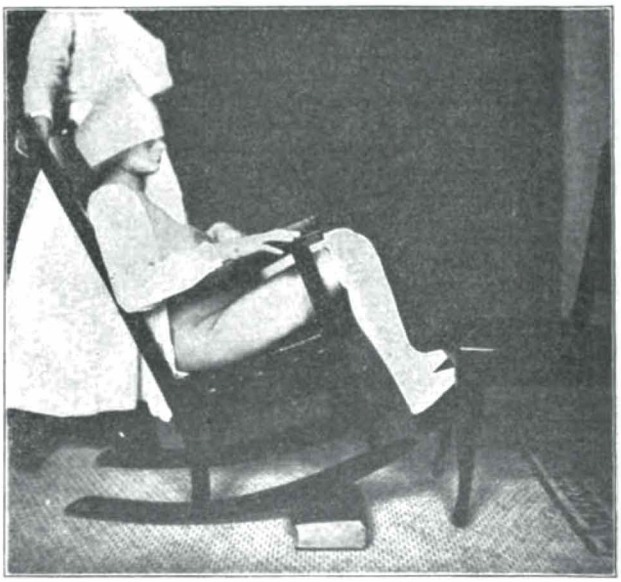

Fig. 9.—Rocking chair.

I would strongly urge that the first stage of labor be observed more carefully than it has been in the past and that obstetricians, both in hospital and private practice, exert their efforts to making this stage as short as is comfortable with perfect safety to both mother and child; for by so doing much suffering will be spared the mother, and the accoucheur will husband

his time, first by instructing the woman how to make the best use of her pains, instructing her to hold her breath and bear down when the pains are weak and ineffectual or in case of a strong rapidly recurring uterine contraction to open the mouth and use as little as possible the auxiliary muscles of expulsion. In both of these the use of posture will be of great assistance. In the weak pains the sitting posture will allow

TABLE 1.—BABIES, TWINS AND STILLBIRTHS

	Number	Babies	Twins	Stillbirths
Primiparas	282	282	5	5
Multiparas	38	27	...	1
Total	320	319	5	6

the weight of the uterine contents to bear steadily on the cervical zone, slowly dilating the parts by the force exerted by the bag of waters, whereas in the case in which the contractions are severe the patient may possibly recline to better advantage than by walking about or sitting in the chair. Again, in moderate degrees of pelvic contractions the chair will be of great advantage, allowing full dilatation to take place before the patient has become worn out by long continued efforts and the consequent thinning out of the lower half of the uterus with the not infrequent contraction of the ring of Bandl which, when carried too far, will mean an impossible delivery by normal process. Even in the second stage in old primiparas, the chair may be used to great advantage to dilate the rigid pelvic floor. Of course here the greatest care must be used not to carry it too far.

It has never been intended that the patient should be placed in the sitting posture at the beginning of labor and continued in that position, but rather that it be used to rest the expectant mother's efforts and allow the weight of the liquor amnii to do its part to the best advantage. Each case must be judged by itself, the patient going from the bed to the chair or walking about as is most comfortable for her, and yet bringing the first stage of labor to an end in the shortest time possible without risk.

A search of the textbooks on obstetrics on the subject of posture shows that the sitting posture is but little considered as an aid to labor.

Williams says:

During the first stage of labor the patient usually prefers to move about the room, and frequently is more com-

TABLE 2.—ANATOMIC CONDITIONS

	Normal Pelvis	Abnormal Pelvis	Total
Primiparas	226	56	282
Multiparas	29	9	38
Total	255	65	320

fortable when occupying a sitting position. During this period, therefore, she should not be compelled to take her bed unless she feels so inclined, and when she does so she should be cautioned against attempting to hasten labor by voluntarily bringing her abdominal muscles into play, for they have little or no effect on the dilatation of the cervix, and the effort will only serve to exhaust her strength. In the latter part of the first stage the pains generally become so severe that the patient instinctively seeks the recumbent position; but if she is still moving about the room or sitting up, she should go to bed immediately on rupture of the membranes and the beginning of bearing down pains.

Cragin says:

On the other hand it is only fair to the patient that she should be visited and carefully examined by her obstetrician as soon as her labor is well started and that he should remain with her during her second or expulsive stage and for at least an hour after the birth of the child. After a careful examination during the first stage, experience will usually indicate to the physician how long he can safely be absent and engaged in other work without being needed by the patient, and if there is a well trained nurse in attendance, and especially if he can communicate with her by telephone, he is often enabled, during the first stage, to devote several hours to other work. He should always hold himself in readiness, however, to come at once to the patient's house on the call of the nurse. During the first stage it is a good rule not to encourage the patient to use her abdominal muscles during uterine contractions as it usually does little good, and by forcing the undilated cervix downward it tends to loosen the fascial support of the anterior wall and favors the development of a cystocele. During the first stage, unless it occurs at night, the patient should be encouraged to be up and walking about, as engagement of the presenting part and dilatation of the cervix are favored by the upright position. She should not be allowed, however, to become fatigued by excessive walking. If the first stage begins at night the patient, after the examination of the obstetrician,

TABLE 3.—HOURS DURING WHICH PATIENTS WERE KEPT IN CHAIR

Number Hours in Chair	1 or Less	2	3	4	5	6	7	8	Not Recorded	Total
Spontaneous	45*	64	49	16	5	7	..	4	3	193
Low forceps	5	3	4	..	1	1	..	..	1	15
Medium forceps	1	2	3	1	..	1	1	..	..	9
High forceps	..	..	..	1	..	..	..	..	..	1
Version	1	3	1	1	..	..	1	..	1	8

* Of these forty-five, in 1 case 15 minutes, 7 cases 30 minutes, 1 case 35 minutes, 4 cases 40 minutes, 5 cases 45 minutes, 1 case 55 minutes.

should be advised to get some sleep if possible, so as to have her strength for the demands of the morrow.

DeLee says:

The treatment of the first stage is one of watchful expectance. The duty of the accoucheur is to observe the efforts of nature, not to aid, until she has proven herself unequal to the task. Only when nature fails is art to enter. Nothing is so reprehensive as meddlesome midwifery. It has cost thousands of valuable lives. Attempts to hasten the dilatation of the cervix, either manually, by bags, or by having the woman bear down may not be made. Premature bearing down efforts of the mother aid very little in the first stage; further, it is distinctly harmful, since the child is forced down before the dilatation of the os, overstretching the broad ligaments and laying the foundation of a future prolapsus uteri. Let the parturient woman walk around the room, the admission of dust into the vagina being guarded against by a large sterile pad and a T-binder. She may rest at intervals on a couch, lying on her back or on the side to which the occiput is directed.

Peterson says:

During the first stage of labor, there is little to be done beyond the moral support of the patient. All necessary preparations have been made for the final moments of the delivery. All that is necessary at this time is for the physician to ascertain the nature and position of the presentation, and to assure himself of the normal conditions of affairs. During this stage the bowels and bladder must be emptied by the methods already described. The patient must be impressed with the necessity of conserving her strength at this time. To this end, she should remain in her chair

or bed, according as to whether it is day or night, occasionally walking around the room in order to bring the action of gravity into play, thereby stimulating the uterus to more efficient contractions. In most women and especially those with relaxed abdominal walls, much valuable assistance will be afforded at this time by the wearing of an abdominal binder. This should be closely fitted to the abdominal protuberance. It affords a certain amount of support to the woman, and stimulates the womb to more energetic contraction. After the labor has progressed sufficiently to result

TABLE 4.—ABNORMAL PELVES

	Primiparas	Multiparas	Total
Contracted outlet	14	1	15
Very projecting spines	1	..	1
Flat pelvis	9	1	10
Justo minor flat	..	1	1
Justo minor	21	..	21
Funnel (male) type	2	..	2
Flat with projecting spines	1	..	1
Generally contracted	8	5	13
Right Nägele	..	1	1
Total	56	9	65

in a cervical dilatation of from 4 to 5 centimeters the patient should be confined to her bed in order to avoid the possibility of a precipitate escape of the child.

They all agree that the woman should walk about and even sit in a chair, but its actual value in shortening the time of labor is not touched on. The one objection, the use of the abdominal muscles during the uterine contractions by the woman bearing down, I heartily agree with when the pains are strong, but this applies to her while she is walking around the room as well as when she is sitting in a comfortable chair, where she is much less likely to attempt such efforts and at the same time the pressure of the bag of waters is exerting its best efforts.

I believe that every obstetric patient should have the "test of labor," however abnormal the existing condition may be. If I may be pardoned the enthusiasm which only a practical experience can give, I should go further and say, with special reference to the abdominal cases encountered in obstetric work, that no opportunity should be lost, no deviation from the normal too great, to try the obstetric chair if for no other rea-

TABLE 5.—DELIVERY

	Spontaneous	Low Forceps	Medium Forceps	High Forceps	Version	Breech Extraction	Cesarean Section	Total
Contracted outlet	4	3	6	..	..	1	..	14
Very projecting spines	..	..	1	..	..	..	..	1
Flat pelvis	4	..	3	..	1	..	1	9
Justo minor	8	..	7	..	2	3	1	21
Funnel (male) type	..	1	1	..	..	..	..	2
Flat with projecting spines	..	..	..	1	..	..	..	1
Generally contracted	5	3	..	..	..	..	..	8
Total	21	7	18	1	3	4	2	56

son than the dilatation of the cervix. We must not expect the impossible, such as a spontaneous delivery of a large baby in a markedly contracted pelvis or in cases of grave deformity with presentations impossible of delivery where all sorts of bad handling already handicap any procedure. But the obstetric chair has certainly justified itself in our experience by shortening the time of labor with benefit to mother and child, to say nothing of the time saved to the accoucheur.

In an earlier article I suggested that a folding chair might be improvised which could be constructed of such material that its sterilization might be easily accomplished and of such small size that it might be folded up and carried from case to case. As yet this has not been easy to do, and I have therefore turned to the rocking chair found in every home that can be made into an excellent obstetric chair. Our method of using the chair is as follows: When regular contractions have been established, the patient is instructed to conserve her strength by not remaining too long in one position, but to sit from time to time in the chair with the knees elevated so that they support the enlarged abdomen and to have the chair so padded with pillows, blankets, etc., that the maximum of comfort is afforded. In such a chair, if her pains are weak, she may comfortably sleep for half an hour or more, and the accoucheur will be satisfied by the fact that the weight of the uterine contents is being exerted on the cervix, not in a harmful way but with a steady hydrostatic pressure that at this stage does more to shorten the labor than anything else. If she becomes restless in the chair or the contractions are severe, she may with benefit walk about the room or even recline.

TABLE 6.—PRIMIPARAS WITH NORMAL PELVES

Delivery	No.	Average Time in Chair	Stage When Put in Chair		Average Duration of Labor, Hrs.	Progress in Chair		
						Good	Fair	Poor
Spontaneous	193	2	157	36	12	178*	12	2
Low forceps	15	1¾	14	1	22	9†	3	3
Medium forceps	9	2½	8	1	28	2‡	4	3
High forceps	1	4	1	..	25	..	..	1
Version	8	3	7	1	22	5§	..	3

* One not recorded; 1 inertia.
† Of these fifteen: 1 right occipitoposterior presentation; 1 eclampsia; 1 lobar pneumonia; 9 weak pains—inertia; 3 not recorded.
‡ Of these nine: 1 left occipitoposterior presentation not rotated; 2 prominent spines; 3 rigid cervix; 2 inertia, weak pains; 1 not recorded.
§ Of these eight: 2 right occipitoposterior presentation; 1 cord prolapsed; 1 twin; 1 eclampsia; 1 inertia; 1 no advance; 1 not recorded.

Again, the inclination of the chair is of the greatest importance, as in old multiparas with an abdominal wall so relaxed that the uterus is completely antiflexed in the upright position. A binder should be applied and the chair so tipped back that the axis of the uterus will point directly downward into the pelvis.

That the chair should be used with discretion, I most certainly believe; but that rule applies to all medical procedures.

Since I began to use the chair, I have performed fewer operations, such as cesarean section, versions, forceps, etc., and a study of my statistics shows an improvement, there being a decrease in deaths of mother, fewer stillbirths and fewer deaths of children following labor. As far as perineal lacerations go, it has not apparently affected them as far as can be seen in the few cases collected, and I believe that where lacerations or other complications of a similar nature do occur, the fault lies with the accoucheur in not controlling the progress of the child through the parturient canal in time to prevent such accidents.

The statistics in Table 1, based on 320 cases, include 179 reported in September, 1915.

From the standpoint of anatomic conditions encountered, Table 2 is of interest.

Table 3, arranged under the headings of hours during which the patients were kept in the chair, is of interest. A consideration of this table and the explana-

tory note shows that in about 20 per cent. of the cases labor lasted only one hour or less after the patient was put in the chair. In one case fifteen minutes apparently sufficed, though here the cervix was almost fully dilated at the time, while in eighteen cases in which the cervix was only 1 or a few fingers dilated, less than one hour was required.

In the next group of cases, the patients with abnormal pelves, Table 4 gives the important features.

TABLE 7.—DELIVERY

Pelves	Spontaneous	Forceps	Cesarean Section	Total	Average Time in Chair	Average Duration of Labor
Generally contracted	3	1	1	5	1½	16
Contracted outlet	1	..	..	1	2	13¼
Flat	1	..	..	1	1	38
Right Nägele	1	..	..	1	4½	5½
Justo minor flat	..	..	1	1	2½	13
Total	6	1	2	9	....	....

If we consider the primiparas in this group and their behavior with the obstetric chair, we observe the data given in Table 5.

Considering the first portion of this table, namely, the primiparas with normal pelves, an analysis and consideration gives the features presented in Table 6.

Reference to the last part of this table, that referring to the progress in the chair, taken in conjunction with the notes appended, shows that interference was necessary in six cases because of abnormalities of fetal position: 3 right occipitoposterior presentation, 1 left occipitotransverse presentation, 1 prolapsed cord, 1 twin; and in 8 cases because of abnormalities in the mother: 1 lobar pneumonia, 2 eclampsia, 2 prominent spines, 3 rigid cervix.

In the remaining nineteen where operative interference was resorted to, excluding five where notes of the progress were not made, there were fourteen cases where uterine inertia prevented delivery.

It will thus be seen that in twenty-one primiparas where conditions anatomically might have presupposed, or rendered necessary, operative interference, spontaneous delivery occurred. In other words, in about 37 per cent. of fifty-six cases the obstetric chair apparently obviated the necessity of any other artificial aid.

TABLE 8.—ABNORMALITIES IN MULTIPARAS

	Spontaneous	Low Forceps	Medium Forceps	Version	Breech Extract	Total
Right occipitoposterior	11	5	5	2	..	23
Left occipitoposterior	1	..	2	1	..	4
Right occipitoposterior	5	..	2	..	..	7
Left occipitoposterior	5	..	2	3	..	10
Breech	7	..	..	..	3	10
Transverse	2	..	..	..	1	3
Left mentoposterior	1	..	..	..	..	1
Total	32	5	11	6	4	58

Of these twenty-one cases, fifteen were in the first stage of labor and six in the second. In two cases the patients were kept in the chair five and six hours, respectively, while in nine cases one hour sufficed to effect delivery, six cases needed two hours, and seven cases needed three hours for spontaneous delivery. The average duration of the entire labor in these cases was about twenty-one hours, while the average time in the chair was about two and one-half hours.

Of the twenty-nine multiparas with normal pelves, all but one was delivered spontaneously. Of the nine multiparas with abnormal pelves, Table 7 shows the important points.

In only two cases of the multiparas spontaneously delivered was the patient in the chair for more than two hours. A brief table of this series of cases, arranged with reference to the occurrence of abnormal positions and presentations and the resulting deliveries, is of decided interest (Table 8).

From this table it will be seen that in almost 50 per cent. of twenty-three cases of right occipitoposterior positions, in one case of a total of four left occipitoposterior positions, in cases of transverse and in one case of chin posterior spontaneous delivery occurred.

With regard to the case with the face presentation, the effect of the chair was to cause a rotation forward to a left mento-anterior position, and then to effect spontaneous delivery.

A brief survey of these tables, limited as is the number of cases on which they are based, cannot but bring home the distinct advantage the use of the obstetric chair offers, especially too in those cases in which, for some abnormality in the fetus or mother, operative interference seems to be indicated.

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