

ART. IX.—*Case of Premature Labour Artificially Induced.* By G. MOEHRING, M. D. and J. K. T. VAN PELT, M. D., of Philadelphia.

EQUAL in value to the discovery of a new therapeutical remedy is the safe and successful performance of an advised or theoretical manipulation in surgery or in surgical obstetrics. Hitherto, the absence of a reliable and harmless oxytotic for inducing premature labour, unattended by danger to both mother and infant, was a want that has been greatly felt by obstetricians who have been consulted for that purpose; and it is, therefore, with a considerable degree of triumph and satisfaction, that Dr. Moehring and myself are enabled to add the following case to the recorded list of those labours which have been successfully accomplished by the process of that skilful accoucheur, Mr. Cohen, of Hamburg. Cohen's method was an improved plan which followed the vaginal warm water douche of Kiwisch, being the same which Schweighauser, in 1825, proposed, viz., to inject water into the cavity of the uterus, the fluid being made to pass between the internal surface of that organ and the foetal membranes. It is this operation which, from the ease with which it can be performed and controlled, we desire to advocate and recommend to the profession. That caution will necessarily always be required we need not enjoin. Fatal consequences may result from a too sudden dilatation of the cervix and os from the enormous fluid pressure contusing or rupturing the lower portion of the uterus, or else stretching the imperfectly developed uterine fibres beyond the power of reaction, causing paralysis or the separation of the placenta, or allowing the water itself or air sucked up with the fluid to be injected through the uterine veins and sinuses, and thus introduced into the circulation. There

markable peculiarity of having a complete calcareous coating or layer, which I am not aware has been described to be ever possessed by the latter disease, yet I can readily imagine that this might be the condition of any artery undergoing degeneration of its tissues. The present disease, undoubtedly, began at an early period and always escaped notice, as happened in the case of the celebrated French tragedian Talma, who, it is stated, died of a partial aneurism of the parietes of the heart, which was revealed by dissection, though during life no signs had announced its presence. In this man there were no abnormal signs except an extension of cardiac dulness to the left side, which could hardly have indicated anything beyond hypertrophy or dilatation.

The two other diseases, bronchitis and arachnitis, with cerebral softening and suppuration, were undoubtedly dependent upon the heart-disease, and were the immediate causes of death.

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EQUAL in value to the discovery of a new therapeutical remedy is the safe and successful performance of an advised or theoretical manipulation in surgery or in surgical obstetrics. Hitherto, the absence of a reliable and harmless oxytocic for inducing premature labour, unattended by danger to both mother and infant, was a want that has been greatly felt by obstetricians who have been consulted for that purpose; and it is, therefore, with a considerable degree of triumph and satisfaction, that Dr. Moehring and myself are enabled to add the following case to the recorded list of those labours which have been successfully accomplished by the process of that skilful accoucheur, Mr. Cohen, of Hamburg. Cohen's method was an improved plan which followed the vaginal warm water douche of Kiwisch, being the same which Schweighauser, in 1825, proposed, viz., to inject water into the cavity of the uterus, the fluid being made to pass between the internal surface of that organ and the foetal membranes. It is this operation which, from the ease with which it can be performed and controlled, we desire to advocate and recommend to the profession. That caution will necessarily always be required we need not enjoin. Fatal consequences may result from a too sudden dilatation of the cervix and os from the enormous fluid pressure contusing or rupturing the lower portion of the uterus, or else stretching the imperfectly developed uterine fibres beyond the power of reaction, causing paralysis or the separation of the placenta, or allowing the water itself or air sucked up with the fluid to be injected through the uterine veins and sinuses, and thus introduced into the circulation. There

is also the liability of forcing the water through the Fallopian tubes into the peritoneum. All these perils, noticed by Scanzoni, Guillier, Professor Simpson, and other eminent accoucheurs, are to be apprehended, and most carefully guarded against. Again, the amount of water to be injected is a very important consideration; when excessive, it has altered the presentation of the fœtus, as in the two cases noticed by Dr. Priestley, in one of these, causing the pelvic pole to take the place of the cephalic; the cause of this accident was the abnormal distension of the lower segment of the uterus, by so large a bulk of water, altering the ovoid form of that viscus and occasioning thereby such results.

Mrs. Z., the patient who was the subject of the operation, had resided for several years in New York. The physicians who conducted her delivery there in her first accouchement subsequently induced artificial labour in her fourth, fifth, and seventh pregnancies.

The history of each labour was very accurately stated by herself and husband, which was as follows: She was married at nineteen, and miscarried at the third month of her first gestation; again becoming pregnant, she fell into labour the ensuing fall, being then twenty years of age; this parturition was characterized by sufferings of a most intense and agonizing severity. It continued three days with some intervals of cessation. The presentation was cephalic, and the child was extracted by the long forceps. It was a male, and stillborn; the bi-parietal and bi-malar diameters of the cranium were pronounced by the medical attendants as unusually great. A miscarriage at the seventh week, preceded the second child, which was prematurely delivered at the thirty-fifth week by the use of the sponge tent and the colpeurynter; it presented by the feet; the labour lasting from 2 P. M. until 8 P. M., no forceps assistance was required; the child was a female, and stillborn. The same method of premature labour was employed the following year to deliver a second female child at the thirty-second week, and again presenting by the feet; severe pains, lasting one hour only, accomplished the birth of a *living* infant, but some defect of its rectum or anus was assigned as the cause of its death, which occurred three days after. At the close of another year, the gestation of the fourth child being allowed to run out to term, labour began spontaneously, but becoming protracted, and her pains acutely distressing, while the head, from its impaction, was unable to advance, her medical attendant performed version by the feet. After the exit of the child's body the foetal cranium became wedged in the pelvis, and to assist its descent, the blunt hook was inserted into the child's mouth, but the great tractive force employed breaking the jaw, it was then placed in the orbit, thus effecting the birth of the infant, a male, and stillborn; this labour lasted from 6 A. M. until 9 P. M. The fifth child, a female, and also stillborn, was prematurely delivered at the thirty-first week by the same method as the preceding; it presented by the breech, her labour lasting twelve hours;

the death of the infant was due from neglect to extract the head from the pelvis by timely instrumental interference, as stated by the parties.

From the foregoing narrative, it is seen that the three female children were pelvic presentations, and the males cephalic, and also that the conceptions followed so rapidly and immediately that her deliveries took place annually. The methods employed were also attended by great detriment to the health, as they occasioned severe attacks of dysuria, profuse menorrhagia, leucorrhœa, ulceration, and abrasion of the internal and external os; it was in this exhausted and weakened state of the constitution, attributable mainly to the modes thus used, that she again became enceinte, removing to Philadelphia for attendance here.

The first investigation of the dimension and shape of the pelvis was made by Dr. Moehring and myself, December 14th, being a careful, external, and vaginal measurement; and that the diagnosis should prove clear and positive, a repetition of the examination was made on three subsequent occasions. Our conclusions were, that the pelvis was eminently rachitic, that condition which Busch, of Berlin, a most able German writer on obstetrics, describes as resulting in early youth from an arrest of development in the lower limbs, as also in the transverse and ascending rami of the pubis, while the ossa ilia, upper body, the bust, and upper limbs, attain a natural growth; he states that this arrest ceases, however, but at a period too late to overtake or attain to an equality with the more favoured portion of the frame. This condition was well exemplified in our patient by the contraction of her superior strait; the length of whose conjugate or sacro-pubic diameter was judged to be but three inches, involving an elevation and advance of the promontorium, besides an abnormal approach towards the os pubis, and this view was further strengthened by the unnatural concavity of the sacrum visible externally while the diminutive lower limbs and well expanded chest clearly stamped the case as belonging to the order described by the authority mentioned. The inclination of her pelvis was unusually great. At our last interview, the partly expanded cervix could be easily touched, its tissues and the os were felt to be soft and capable of entrance. The peculiar dangers attending the *modus operandi* proposed, were now fully stated to the lady and her family, but the vivid recollections of her sufferings from the former manipulations induced them gladly to accept a proceeding that offered any chance of less distress, especially as it increased the probabilities of the delivery of a live infant. It was determined to induce labour at the thirty-second week, but upon further consideration this was deferred until the *thirty-third* week, from our extreme anxiety to favour the child's existence, not regarding the delay of a few days as in any way impairing the usefulness to the mother of the method advised.

The instruments employed for the operation were two No. 7 very smooth, flexible, gum-elastic male catheters, the vesical end of each termi-

nating for half an inch in a silver tube, with a perforation at the extremity, in addition to the lateral openings; to prevent the stilet protruding from any of the orifices, the wire was passed through a piece of cork one-fourth of an inch thick, as far as its ring, before inserting it into the catheter, thus avoiding any risk of its projecting point lacerating the membranes or uterus. The injecting apparatus used was the common hydrocele injecting bag, capable of holding five ounces, its nozzle made to fit accurately the catheter, and provided with a reliable stopcock.

It was agreed to induce labour on Monday, the 9th day of March, at 10 A. M., but a slight attack of indisposition occurring on the Sunday before, it was deemed prudent to postpone all interference until Tuesday, March 10th, on which day the operation was begun at 11 A. M. The bladder and bowels having first been fully evacuated, the injecting bag was carefully filled with water at a temperature of 70° Fh., until its surface came to a level with the edge of the extremity of the nozzle, hence insuring all absence of atmospheric air from this instrument. The patient was placed on her back, bringing down the hips to the edge of the bed, as in the usual obstetrical position for instrumental accouchement. The finger was now introduced within the os uteri to direct the catheter; and that instrument containing its stilet, so bent near its vesicular end as to assume a curve considerably less than that of the male sound, was well lubricated, and slowly and with great gentleness passed up into the cavity of the uterus, between its inner surface and the foetal membranes. It passed in on the right side and advanced towards the front uterine wall, without our experiencing the slightest resistance; on withdrawing the stilet cautiously a few drops of blood escaped, proving that the catheter in its passage had separated the membranes from their adhesions with the womb. To measure how far the tube had penetrated within the organ, the second catheter was inserted within the vagina, until its extremity rested against the os, and then placing both in juxtaposition, the amount of separation of the two manual ends of each catheter indicated exactly the distance the first had entered, in this case shown to be five inches. Attaching the nozzle of the injection bag, five ounces of water was gradually injected; of this quantity a teaspoonful, only, escaped. The catheter was allowed to remain a few minutes and was then withdrawn; the only effect observable was the production of a drawing feeling about the abdomen, and a dragging sensation in the back. This speedily disappeared, and as soon as the patient became calm she was permitted to walk about her apartment, and we agreed to desist from further interference until nearly twelve hours had elapsed.

The interval of "twelve hours," Dr. Tyler Smith, who has followed this proceeding for several years, states as preceding the coming on of labour, and in his practice "labour was often not deferred as much as twelve hours from the time of using the injection, and generally it had commenced im-

mediately." Also the statistics of fifty cases that have been operated on in Germany by this means show, that in all, labour came on within twelve hours.

At 8 P. M. we found our patient moving about her room, having been entirely free from any pain or annoyance since the morning, the injected water had gradually drained off, and she pleasantly exclaimed, "Oh, this is too easy, you must cause me greater suffering; my nature cannot be so easily impressed, it is too strong to yield up a child so readily."

At our first injection we found it very difficult to reach the os, or retain the finger in it as a guide, as the extreme flexion of the thighs in the dorsal decubitus exerted so great a pressure against the overhanging abdomen as to lift the uterus out of the superior strait, thereby carrying the os almost beyond reach, and likewise causing painful cramps in her limbs. Abandoning this posture, she was now placed on her left side; the os was found unchanged, and the second injection was made in the same manner as the first, without the escape of the slightest quantity of water; the stilet was withdrawn, and in imitation of the practice followed in Germany, we allowed the catheter to remain, intending it to be retained until labour supervened, but in a few moments she complained greatly of a severe feeling of distension around the front of the abdomen and descending towards the back, assuming so violent a degree as to demand the speedy withdrawal of the instrument, when a total subsidence of the unpleasant symptoms followed, greatly relieving our anxiety. Shortly, however, she was seized with chilliness and shivering, cold feet, oppression at the chest, her eyes becoming somewhat sunk, pulse feeble and quick, all her symptoms simulating those of internal bleeding, but the application of artificial heat to the feet and body soon removed this collapsed condition. After remaining with her some hours we left for the night, having ordered Hoffmann's anodyne to be given in repeated doses, as also lime-water, for flatulence which was present. Meeting the following morning at 11 A. M., we found our patient had enjoyed perfect repose during the night, and had passed, just before our visit, some of the water with a clot of blood in it. On examination, we found the os further down, dilated about two inches, and its temperature, as well as that of the vagina, cooled, by the draining of the injected water, to a most remarkable degree below the natural heat of those organs; the finger could also be passed into the uterus around the membranes, and the child's head was plainly felt resting on the symphysis pubis. It was thought best to let her rest to-day undisturbed; an ounce of castor oil was ordered, and she was permitted to recruit her strength by using beef essence freely. This day was spent quietly, with perfect freedom from labour-pain, and at night she had a long and refreshing slumber.

On Thursday morning at 11 A. M., the condition of the patient being every way favourable, and no symptom of labour beyond the slight dilatation of the os being manifest, she was again placed on her left side and the

catheter carried within as before; five ounces of water were injected, which at first refused to flow from the bag, as if an impediment to its advance existed by the adhesions between the membranes and uterus, when suddenly, the obstacle being overcome, the water rapidly left the elastic bag, flowing between the membranes and womb, the greater portion returning into the vagina. Four ounces more were immediately injected, some of which soon escaped through the os. The motions of the child had been felt very strongly since the injection used the day before, and were now very active; the waters also were more tense, rendering a greater caution necessary in introducing the catheter, for fear of rupturing them prematurely. In two hours labour had become very strong, and as the membranes relaxed, the head was diagnosed to be in the first position of the vertex, but still resting on the transverse ramus of the pubis. By 2 P. M. the os was nearly dilated, the pains occurring every five minutes, and the head had descended into the brim, giving every indication of delivery in a short time. At 3 P. M. the os was entirely dilated, and she referred her pains chiefly to the lower part of the abdomen. As the advance of the head now seemed delayed, it was determined to evacuate the waters at 5 P. M. if no progress was perceptible; this was done. At 6 P. M. there was no further descent of the child, and placing her on the back, it was found to cause both the head and os to recede; a shortness of the cord was suspected as the cause of our delay. As the dorsal position seemed to lessen the strength of the pains, which also became fewer and further apart, it was found, on a trial, that a right or left lateral decubitus favoured both their strength and rapidity. She was therefore allowed to assume these alternately. By 8 P. M. the head evidently had moved from its stationary position towards the excavation encircled by the swollen os, though so loosely that the periphery of the opened cervix was not made tense or distended by the pains. At half-past 9 P. M., the head, sinking within the excavation, stretched the dilated os to its fullest capacity, when it was pressed up past the foetal cranium by the finger. At 10 P. M. the birth of the infant was fully accomplished; it was a male, and opened its eyes, gasping and moaning immediately upon its exit from the maternal organs. The cord was unusually short, and was wound around its neck and left arm; from prudential motives we did not sever the connection between the placenta and foetus until all pulsation ceased in the umbilical vessels. The placenta came away without difficulty or any hemorrhage. The measurement of the diameters of the head was made, giving for the occipito-mental, 5 inches; occipito-frontal, $4\frac{1}{8}$ inches; bi-parietal, $3\frac{1}{8}$ inches; cervico-bregmatic, $3\frac{1}{8}$ inches; its circumference was 13 inches.

The next day the nurse reported the condition of the child as every way satisfactory; it swallowed easily and eagerly its nourishment, and had several evacuations of meconium and urine; it was ordered to be kept permanently on its right side, and from its birth to the present date has been unusually exempt from the customary infantile indispositions.

The recovery of our patient was rapid; the lacteal functions were well established, and not one unpleasant symptom has appeared since her delivery; in three weeks she received her friends in her parlour, and is enjoying perfect immunity from all the female maladies which, for past years, have in combination been the harassing sequences of her puerperal state.

The New York physicians, in their statements to Mrs. Z., pronounced the conjugate diameter of the superior strait to be *less* than three inches. The careful measurements made anteriorly and subsequently to this labour, have confirmed our diagnosis of its length being *fully* three inches.

In support of the propriety of our treatment of this case, I shall quote here the instructions which Scanzoni has given in regard to the subject, as found at page 730 of his *Lehrbuch Der Geburtshilfe*. He there declares that, "on the authority of Marinus, Ritgen, Stoltz and Kiwisch, artificial labour must be employed when the dimension of the conjugate diameter of the superior strait is abnormally small," and minutely points out the time by the following schedule, viz. :—

When the sacro-pubic diameter is 2 inches and 6 or 7 lines, induce labour at the 30th week.

"	"	2	"	8 or 9	"	"	31st	"
"	"	2	"	10 or 11	"	"	32d	"
"	"	3	"			"	33d	"
"	"	3	"	1 line,		"	33d	"
"	"	3	"	2 or 3	"	"	34th	"
"	"	3	"	4 or 5	"	"	35th	"
"	"	3	"	2 or 6	"	"	36th	"

Scanzoni observes that the necessity of producing premature delivery may be argued from the fatality resulting to the children previously born, whether caused by the compression of their heads when excessive in volume, or by a contraction of the pelvis; this is conditional, however, as a subsequent child might be smaller, and with ease and safety pass through a diameter of three, or three and three-quarters of an inch. Further delay in the case of Mrs. Z. would have been imprudent, as a sudden and very rapid increase in bulk of the uterine contents very ostensibly took place at the thirty-third week. As it was, the tardy character of her labour towards its close gave us sufficient reason to believe that instrumental interference would be advisable if delivery was protracted beyond 12 P. M.; the development acquired by the child, from too long a postponement of the artificial induction of labour, would, without doubt, have required a forceps delivery.

A more expanded and detailed account of this case has been given than was first intended, and our limits prevent any comparison between Cohen's process and the various methods employed. The life of a child, the security and health of its parent, the credit of preserving and continuing male issue to the family, under a knowledge of the discouraging antecedents, are achievements which must strongly recommend the means employed by us with such signal success.