THE OPERATION OF EPISIOTOMY AS A PREVENTION OF PERINEAL RUPTURES DURING LABOR.[1]

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As early as 1810, Michaelis[2] recommended incisions in the median line of the perineum to prevent its rupture, but the recommendation did not meet with favor. Among its opponents[3] were Jörg, Schmitt, and Kilian.

In 1836, Von Ritgen published an article, "Ueber Skarification der Scheide."[4] He was led to try scarification of the vagina, not only from the frequent good results that he had obtained from scarification of the os uteri, but also from the want of efficiency, at all times, of the practices then in vogue, for the protection of the perineum. His method differed only from that of Michaelis in the site of the incisions. The operation, as taught by him, consisted in making seven small nicks on each side of the vaginal orifice, at the moment of its greatest distention, *i. e.*, when the head is from one-fourth to one-third expelled. Not any incision was to exceed a line in depth. By means of these fourteen incisions, he claimed that the orifice gained two inches in its diameter, and the head being allowed to escape gradually, the perineum needed no support. The frenulum remained perfect, no rent occurred at any point, not even from the incisions, and the passage of the shoulders produced no laceration. He employed an instrument fashioned after the English hernia knife, introducing it in the absence of a pain, by sliding the blade, flat-wise, between the rim of the orifice and the head, and then incising by directing the cutting edge toward the vagina. He did not insist upon the fourteen incisions, for he found that ten, or even six, were

[1] Read by Albert H. Smith, M.D., before the Obstetrical Society of Philadelphia, February 7th, 1878.

[2] Lehrbuch der Geburtshülfe von Schroeder. Vierte Auflage.

[3] Lehrbuch der Geburtshülfe von Scanzoni. Vierte Auflage.

[4] Neue Zeitschrift für Geburtskunde, iii. Band.

sometimes sufficient, but they must never be nearer to the posterior labial commissure than an inch, and must terminate at the same distance from the clitoris. If the rigidity was not at the external orifice, then he incised the stricture wherever found. He asserted that scarification did not dispense with the necessity, either for securing a slow expulsion of the head, or for observing that the shoulders clear the outlet of the pelvis with the bis-acromial diameter in relation with the antero-posterior diameter of the inferior strait. He resorted to this procedure in private as well as hospital practice. He found the resulting inflammation to be slight, in fact very rarely sufficient to require any special treatment. The cicatrization was so rapid that a few weeks afterwards, there were no traces of the scarification, and the vaginal orifice was smaller than when no incisions were made.

Cazeaux,[1] in an early edition of his work, after indorsing the teaching of Eichelberg, who cut the vulvar orifice laterally and not posteriorly, limited the practice to those cases when the head is at the vulva, and the rupture is imminent. He recommended the use of Pott's bistoury, which was directed to be passed between the head and the margin of the vulva, incising only as far as necessary to allow the escape of the head. He further agreed with Eichelberg that the place of incision should be at the "thickest part of the vulvar orifice." In a later edition[2] the operation is spoken of as a good one, but to be resorted to only in great necessity. A preference is given to strong blunt-pointed scissors, one blade to be inserted between the child's head and the vulva, and an incision made three-eighths of an inch in length.

Dr. Blundell[3] is said to have advocated and practised lateral incisions of the vaginal orifice, as a prevention of a tear in the median line of the perineum.

The operation found, however, its most enthusiastic advocate in Chailly-Honoré,[4] who, having, as he stated, availed himself of its service for twenty-five years, knew well how to recommend it. He referred to it "as the excellent practice of

[1] Cazeaux's Midwifery. 4th American Edition.

[2] Cazeaux's Midwifery. 5th American Edition. Revised and Annotated by S. Tarnier.

[3] Surgical Diseases of Women. Baker Brown. 3d Edition.

[4] Traité Pratique de l'art des Accouchements. Cinquième Edition, 1867.

Professor Dubois," who taught that the incisions should be made with scissors instead of bistoury, that they should extend in an oblique direction, and should not exceed two centimetres in length. He based his indorsement of the procedure on the greater advantage of an incised wound over a lacerated wound, in respect to the rapidity and perfection of union. He admitted, however, that perineal ruptures cannot always be avoided, yet he believed that incisions would often prevent the accident, or, at least, would mark the place where the rupture should occur, and direct the tear away from the rectum. He advised a resort to labial incisions in forceps cases, when the constriction of the vaginal orifice was marked, and the resistance of the perineum was great.

Naegele[1] alluded to the practice as a prevention of laceration.

Schultze[2] recommends four to five little incisions on each side of the posterior part of the vulvar circumference. The line of incision to be directed toward the sciatic tuberosities, and as far as possible from the raphé of the perineum.

Tyler Smith[3] indorsed a resort to incisions after failure to secure dilatation by means of fomentations, tartar emetic, venesection, and chloroform. He expressed his belief that incisions prevent extensive laceration, and that the wounds from such an operation heal readily.

Gustav Braun[4] advises incisions under the following indications: 1st, in constriction and great resistance of the vaginal orifice, as is frequently observed among primiparæ who are advanced in years; 2d, in cases of long perineum with bulging of the posterior third; and 3d, where the rupture is central, with escape of a fetal hand or foot. He directs the incisions to be made as the woman lies upon the left side. The operator is to stand at the right side of the bed, and with the left hand introduced between the thighs of the patient, is to make direct pressure on the fetal head, regulating thus its expulsion; while a probe-pointed bistoury, held in the right hand, is slipped between the head and the vulvar orifice.

[1] Traité Pratique de l'art des Accouchements. Naegele-Grenser.
[2] Traité Pratique de l'art des Accouchements. Naegele-Grenser, page 191.
[3] Lectures on Obstetrics. W. Tyler Smith-Gardner.
[4] Compendium der operativen Gynäkologie und Geburtshülfe. 1860.

Then, as the pain comes on, the cutting edge of the knife is directed towards the tuber ischii, and the handle being simply raised, the downward pressure of the head makes an incision of from four to five lines. If the dilatation thus obtained is not sufficient, and the constriction of the vaginal orifice still threatens a perineal rupture, then a similar incision is to be made on the left labium major. He further states that the cicatrization is rapid, and does not produce constriction of the vaginal orifice. In his clinic in the General Hospital of Vienna, I had frequent opportunities, during the winter of 1873–4, of witnessing this method of operation.

Carl Braun,[1] in whose writings I find the first use of the term episiotomy (*επισειον*, *vulva*, *labium pudendi*), believes that, by careful support of the perineum, incisions in the vaginal orifice are seldom necessary, and that the operation is resorted to mainly by those who lay no weight on the importance of supporting the perineum.

Scanzoni[2] favored incisions on the ground that the operation was almost painless, and that when the cut was sufficiently large, there was no disposition for the tissues to tear; that the hemorrhage was slight, and the healing so rapid that, in the course of a few days, small triangular cicatrices remained alone to mark the site of operation. He did not believe that scarification of the vaginal orifice would always save the perineum, stating that while he admitted that there were cases in which the most careful management failed to secure this, he was convinced that the practice would prevent many a threatened rupture. He hoped that what he had written on the subject would remove the prejudices against the operation, and would lead to its general introduction in obstetric practice. In another work,[3] he repeated the recommendation, as he had frequently put it to the test.

Simpson[4] mentioned lateral incisions among the means of preventing central perineal lacerations. The practice, as sanctioned by him, consisted in making one or two slight cuts on either side of the fourchette, so that, if a laceration must occur, there should be a choice of site and direction.

Barnes[5] recommends episiotomy when the vulva is rigid and

[1] Lehrbuch der Geburtshülfe, 1857. [2] Lehrbuch der Geburtshülfe, 1866.
[3] Diseases of Females, Gardner, 1856.
[4] Obstetrical Works of Sir J. Y. Simpson, Bart. J. Watt Black, 1871.
[5] Barnes, Obstetric Operations. Dawson, 2d American Edition.

the protruding perineum threatens a central rupture; and also in mento-sacral positions, in order to facilitate the escape of the chin over the anterior border of the perineum. The edge of the vulva is to be raised by the forefinger passed between it and the head, and to be incised at two or three points and near the posterior commissure.

Baker Brown[1] concurs with Dr. Blundell in regard to the place of incising the vaginal orifice, and he would resort to the procedure if chloroform failed to effect the dilatation, or if there should be any contra-indications to the use of anesthetics.

Dr. Goodell, in an article on the Management of the Perineum during Labor,[2] questions the propriety of incising a rigid perineum, except on account of a cicatricial condition. He agrees with some others in giving an incision little preference to a laceration of the perineum, in regard to rapidity of union.

Leischman[3] admits that there are occasional cases of rigidity of the perineum, where it is justifiable to make slight incisions with a lancet or the finger-nail. His views agree with those of Dr. Agnew[4] in fearing the abuse of the practice among inexperienced obstetricians.

Playfair[5] refers to the recommendation by other teachers of incisions on each side of the raphé perinei to prevent laceration; but while he has no fear of the safety of the operation, he questions its utility, and would limit the practice to cases of cicatricial contraction. He asserts that the tear is always in the median line, and excludes the consideration of rapid union by maintaining that the edges of the tear are as clean as if cut.

Clay[6] advises the support of the perineum after incising, for fear an incision might give origin to a laceration.

Roberts[7] recommends, in obstinate rigidity of the vulva, several small incisions at its posterior part.

Schroeder[8] advocates episiotomy when the head is large and the vulvar orifice is small. Instead of waiting for a dilatation which the parts do not promise, he advises incising the tense border of the vaginal orifice sufficiently to permit the escape of the head. The incisions are to be made with either knife

[1] Surgical Diseases of Women. 39th Edition.
[2] American Journal of Med. Sciences, 1871.
[3] System of Midwifery, 1873.
[4] Lacerations of the Female Perineum.
[5] System of Midwifery, 1876.
[6] Hand-book of Obstetric Surgery.
[7] Guide to the Practice of Midwifery.
[8] Lehrbuch der Geburtshülfe. Vierte Auflage.

or bistoury, to be two in number, and to take the direction of the tuber ischii.

Dr. Madden[1] refers to perineal incisions as one of the means of preventing laceration. He has resorted to the practice in several instances with advantage, and yet he does not recommend the measure, except on rare occasions, when manual support of the perineum fails.

Butignot, in the *Gazette des Hôpitaux*, 1859,[2] advised bilateral incisions near the posterior commissure of the labia, when there was a threatened rupture of the perineum, and the vaginal outlet was narrow.

Cohen[3] recommended "tenotomy" in the neighborhood of the clitoris, using for the purpose a "lithotomy knife." He believed that the tear did not begin in the integument, but had its origin in the fascia beneath, and on this account he made a subcutaneous operation.

In the *Dictionnaire de Médecine et de Chirurgie Pratique*, Armand Desprès mentions incisions of the labia majora as a means of preventing perineal rupture, and curved scissors are advised for the purpose.

Dr. Graily Hewitt[4] asserts that support of the perineum as a preventive of laceration is worthless, but he refers to the recommendation of others, to make incisions on each side of the fourchette when there is a threatened rupture.

Dr. Johnston, in the clinical reports of the Rotunda Lying in Hospital, published in the Dublin *Quarterly Journal of Medical Science*,[5] February, 1870, found the necessity to resort to vulvar incisions but once in 1,159 deliveries, and then on account of gidity. In the following year,[6] among 1,087 patients, the perineum was incised but twice, its great "elongation and toughness" preventing the expulsion of the child. As thus employed, it was a means of overcoming an obstruction to labor, rather than of preserving the integrity of the perineum.

Olshausen[7] believes that the resistance at the vaginal orifice is caused by the constrictor vaginæ, which is felt as a tense band directly beneath the mucous membrane, and 1.5 centime-

[1] Lacerations of the Perineum, Sphincter Ani, etc. AMER. JOURNAL OF OBSTETRICS, May, 1872. [2] Year Book for Medicine and Surgery, 1860.

[3] Mon. für Geb., Supp. 1861, quoted in Year Book for Medicine and Surgery, 1873. [4] Year Book for Medicine and Surgery, 1862.

[5] AMERICAN JOURNAL OF OBSTETRICS, 1870. [6] Ibid, 1871.

[7] Ueber Dammverletzung und Dammschutz. Sammlung Klinischer Vorräge von Volkmann.

tres posterior to the frenulum. He states that in some cases the laceration has its origin in the fibres of the muscle, and that this is followed by tearing of the subcutaneous connective tissue and the integument; or, in other cases, that the lesion is limited to the vagina, and involves only the mucous membrane. For this reason he recommends the incision to be made from the vagina, and he thinks it can be accomplished more readily by means of a curved, probe-pointed bistoury with a short cutting edge, than by means of scissors. He prefers the subcutaneous section of the sphincter vaginæ, according to the suggestions of Simpson and of Cohen, to the ordinary method of episiotomy, namely, that of incising in the direction of the tuber ischii on one or both sides of the raphé. He believes that resort is had to incisions oftener than is justifiable. He further urges that the operator should be convinced that the rupture is inevitable, before resorting to the procedure, and should rarely make incisions greater in extent than two centimetres.

Dr. Pallen[1] believes that, under certain conditions, incisions in the labia offer the only hope of saving the perineum. His method differs from that of others in the time selected for the operation; namely, during the absence of the pain. He recommends the incisions to be made with scissors, upon both sides, and midway between the fossa navicularis and the fourchette. In his article, I find the first published suggestion in regard to closure of the incised wounds. He advises the use of silver sutures and finds that the surfaces heal readily.

Dr. Barker[2] considers a small perineal incision a preventive of rupture, when the vaginal orifice is small and the perineum unyielding.

In the Woman's Hospital of Philadelphia, in a period of two years, ending Nov., 1877, 212 women were delivered, all of whom were under my direct charge. Of this number, 101 were primiparous. I subjected the genitalia of each lying-in patient to a careful, ocular examination, and I noted conscientiously each lesion. Of the 212 women, 26 suffered perineal ruptures, of whom 21 were rimiparæ and 5 multiparæ. The lesions varied in extent from a tear of the fourchette to a laceration as far as the sphincter ani. The rupture in no case involved the sphincter, and only in two instances extended as far as its margin. The patients were delivered in the side

[1] New York Medical Journal, May, 1876. [2] The Puerperal Diseases.

position, and the gradual and even distention of the perineum was favored by careful and systematic support of the fetal head in every case.

In 56 cases, when the perineum was unyielding, from simple rigidity or from a cicatricial condition, I incised the vaginal orifice, and in nearly all of these cases I demonstrated to others and satisfied myself that episiotomy saved the perineum. Rigidity of the perineum occurred most frequently in old primiparæ. In two instances, the perineum was unyielding from cicatrices, the result of previous laceration. In one case, the resistance was caused by the presence of condylomata on the perineum. The time of operation was when the head was distending the vulvar orifice. The site selected for the incision was a point about one-third the distance from the posterior commissure to the clitoris. The instrument employed was the ordinary probe-pointed, curved bistoury. The knife was slipped between the head and the lateral margin of the vaginal orifice, and its cutting-edge directed, during a pain, towards the tuber ischii. The pressure of the head was often a sufficient force to carry the knife into the tissues already made tense by the dilatation. Care was thus taken to avoid the fourchette by incising the sides of the vulva, and cutting in a direction at right angles to the raphé perinei. If, after an incision upon one side, a rupture still seemed imminent, then resort was had to a similar operation upon the opposite side. The length of the incision never exceeded 1.5 cm. The cuts seemed only to involve the mucous membrane, but I had not opportunity to verify this by post-mortem examination. The patients complained of no suffering, in fact were often unconscious of the operation, the incisions being made during a pain. The operation was attended by no hemorrhage. With the exception of a few cases of diphtheritic deposit upon the incised surfaces, the incisions did not complicate the lying-in. The wounds showed no erysipelatous appearance. They healed readily, and when opportunity was had to examine the patients, some months after delivery, the small cicatrices were scarcely recognizable.

During the first year of my service, inasmuch as I had seen in Vienna no special after-attention given to the incisions, I did not adopt any uniform treatment of the wound, except that of applying carbolized oil, and noting the periods of granulation

and cicatrization. Occasionally, when it was convenient, I applied serres fines and sometimes introduced stitches. Early, however, in the present year, a puerperal patient, in whom the vaginal orifice had been incised, died eighteen days after delivery from peritonitis. The vulvar incisions were healed at the time of death, and I felt convinced, by watching the case and by the autopsy, that the lining membrane of the uterus was the source of infection; yet I determined thereafter in every case to prevent, if possible, any denuded surfaces, whether caused by laceration or incision, from becoming an avenue for infection. The immediate treatment of the incisions was the main consideration, as, according to Billroth, a granulating surface is not an absorbing one. I first attempted to keep the edges of the wounds together by means of serres fines. These failed to remain adjusted, and since then resort has been had invariably to stitches. After trying catgut sutures, silver wire, and silk, I gave preference to the last. I satisfied myself that by means of silk sutures I obtained more perfect coaptation of the edges of the wounds than by any other means. The stitches did not always secure complete union by the first intention, but they kept the wounds more or less closed until the period of granulation. In working up the literature of the subject, I found an article by Dr. Pallen of New York (before referred to), which had until then escaped my attention, suggesting the closure of the incisions by stitches. This article appeared about the time that they were first used in the Woman's Hospital.

I recognize the objections to episiotomy in private practice, and I appreciate fully the risks to which any genital lesion subjects the patient. Notwithstanding, I consider the operation a safe and justifiable procedure, when the perineum is threatened; and where the danger of deep laceration is imminent, I look upon it as the proper and indispensable means to be used with the hope of meeting that danger, and diverting the risks of labor from what may possibly be a horrid permanent mutilation to a harmless temporary lesion.

I have added reports of the 56 patients, in whom, during labor, resort was had to incisions of the vaginal orifice, and in conclusion I desire to express my gratitude to Dr. A. H. Smith, through whose kindness I have been able to consult authorities which would otherwise have been inaccessible.

No. of Case.	Age.	Nativity.	No. of Pregnancy.	Condition of Perineum during Labor.	Presentation and Position.	Duration of 2d Stage of Labor.	No. of Vulva incisions.	Condition of Perineum after Labor.	Weight of Child.	Occipito-frontal Diameter.	Bi-parietal Diameter.	Width of Shoulders.	Maximum Temp. and	Maximum Pulse of Puerperium.	Date of Discharge.	Condition on Discharge.
									lbs.	cm.	cm.	cm.	degrees		day	
1	23		1st	Rigid	O. L. A.		2	Rupture, not involving the sphincter ani.	7½	12	10	14½	103	108	20th	Well
2	25		1st	"	" " "	1 h 25 m	1	Rupture, 1 cm. in length.	9	13	9	16	100.8	96	20th	"
3	30	Irish	1st	"	" " "	3 h 5 m	2	No rupture.	8	13½	9	15	105.8	120	26th	"
4	36	"	1st	"	O. R. A.	1 h 30 m	1	"	8	12	10	14	102.9	116	22d	"
5	19	Amer.	1st	"	" " "	1 h 35 m	2	" "	7½	12½	10	15	101.1	112	28th	"
6	25	Irish	1st	"	O. L. A.	8 h 20 m	2	" "	9	13	9	15	102	100	20th	"
7	21	Amer.	1st	"	O. R. A.	1 h 20 m	2	" "	6	11½	9	14	102.5	112	20th	"
8	21	"	1st	"	" " "	1 h 15 m	2	Laceration of the integument.	6	10½	8½	12	102.1	100	21st	"
9	23	"	1st	"	O. R. P.		2	No rupture.	8	10½	8½	13	100.2	80	17th	"
10	20	"	1st	"	non-rotat'n O. R.		2	"	6½	9	7	10	101.2	98	16th	"
11	26	English	1st	"	O. L. A.		2	"	7½	12½	9	12	99.8	84	21st	"
12	20	Amer.	1st	"	" " "		2	"	6½	11	8½	10	101.4	108	21st	"
13	28	German	1st	"	" " "		2	"	7½	11	8½	10	105	104	18th	"
14	21	Irish	1st	"	" " "	2 h	2	"	8½	12	10	12	105.2	130	19th	Convalescent
15	23		1st	"	" " "	26 m	2	"	6½	12	10½	14	101.4	90	19th	Well
16	24	Irish	1st	"	O. R. A.	17 m	2	"	8½	13	11	19	100.7	97	22d	"
17	28	"	1st	"	O. L. A.	2 h	2	"	8	13	10½	13	101.3	98	20th	"
18	26	"	1st	"	" " "		2	"	7	12¾	9	12½	101.5	128	18th	"
19	18	Amer.	1st	"	" " "	1 h 50 m	2	"	5	11	9	9	102.1	118	22d	"
20	26	German	2d	"	" " "	17 m	2	"	8	12	9	9½	101.1	103	20th	"
21	22	Amer.	1st	"	" " "	49 m	2	"	5	11	8½		104.7	128	46th	"
22	23	Irish	2d	Unyielding on account of cicatrix.	O. L. P. Occiput rotated post'rly	Forceps delivery.	2	Rupture, 3 ctm. in length.	9½	13	10	18	100.5	87	18th	"
23	22	"	1st	Rigid	O. L. A.	1 h 31 m	2	No rupture.	6½	12	9	11	104.3	125	18th	"
24	20	Amer.	1st	"	" " "	5 m	2	"	8	11	10	12	104.4	104	17th	"
25	22	"	2d	"	" " "	1 h 25 m	2	"	8½	11½	10	13½	102.9	135	22d	"
26	21	"	1st	"	O. R. P.	12 m	2	Rupture, one-half the length of the perineum.	8½	12	9½	11	103	101	20th	"
27	21	"	1st	"	O. L. A.	28 m	2	No rupture.	8		9	13	103.4	108	19th	"

28	19	Amer.	1st	Rigid.	O. R. P.	1 h 2 m	2	No rupture.	8	12	9½	12	105.7	100	23d	Well
29	36	"	1st	"	Occiput rotated postr'ly	4 h 25 m	2	Rupture, not involving the sphincter ani.	7	11½	8½	12	103	120	28th	"
						Forceps delivery.										
30	28	Irish	1st	"	O. L. A.	1 h 25 m	2	No rupture.	8		9½		104.4	112	27th	"
31	21	Amer.	1st	"	" " "	38 m	2	Laceration of the integument, one inch in length	8	11½	10	12	104.7	101	14th	"
32	28	"	1st	"	" " "	5 h 28 m	2	No rupture.	7½	11½	9	12	101	103	12th	"
33	21	"	1st	"	" " "	46 m	2	"	7¾	11	9	10½	105	116	17th	"
34	25	"	1st	"	O. R. A.	2 h 47 m	2	"	8	11½	9¼	11	100.8	107	18th	"
35	23	"	1st	"	" " "	11 m	2	"	8½	12	9¾	12	101.7	102	18th	"
36	26	Irish	1st	"	O. L. A.	5 h 50 m	2	"	9	11	9	11½	103	106	28th	"
						Forceps delivery.										
37	22	Amer.	1st	"	" " "	27 m	2	"	9	11½	9		101	108	18th	"
38	36	Irish	1st	"	O. R. A.	10 h 14 m	2.	"	10	12	10	10½	106	140	Died of Peritonitis on 18th day.	
39	23	"	1st	"	O. L. A.	1 h 22 m	2	"	8	10	9	12	102.2	95	20th	Well
40	18	Amer.	1st	"	" " "	1 h 12 m	2	"	6¾				102	98	18th	"
41	30	Swede	1st	"	O. R. A.	53 m	2	"	7½	12½	8¾	11	104	100	19th	"
42	20	Amer.	1st	"	O. L. A.	23 m	2	"	6½	11	8	8	102.4	98	17th	"
43	27	"	1st	"	" " "	1 h 8 m	2	"	10		10	12¾	105.5	114	19th	"
44	23	"	1st	"	" " "	33 m	2	"	8¼		8½	11	100.3	107	26th	"
45	20	"	1st	"	" " "	48 m	2	"	8¾	12½	11	13	104.8	93	18th	"
46	22	"	1st	"	" " "	14 m	2	"	8	12	9	11	103.2	100	20th	"
47	26	"	1st	"	O. R. A.	56 m	2	"	8	12¾	9	12¾	103.2	106	16th	"
48	22	Irish	1st	"	" " "	3 h 25 m	2	"	7	11½	8½	17	104.6	114	28th	"
49	23	Scotch	1st	"	O. R. P.	3 h 25 m	2	"	7	12	9½	13	103	101	17th	"
50	24	German	1st	"	O. L. A.	1 h 6 m	2	"	7½	13	12	12	100.8	119	20th	"
51	22	Amer.	1st	"	O. R. A.	2 h 55 m	2	"	8	12	9	12½	102	113	22d	"
52	18	"	1st	Unyielding from condylomata	O. L. A.	1 h 47 m	2	Rupture, one-half the length of perineum.	5¾	10	9	11½	103	108	18th	"
53	29	Welsh	1st	Rigid	" " "	8 h 8 m	2	No rupture.	10	12	9	11½	100.4	84	21st	"
54	36	Irish	7th	Unyielding from cicatrices	O. R. A.			" "	8¼	10¾	8¼	12	99.8	80	16th	"
55	30	"	2d	Rigid from cicatrix	O. R. P.	Forceps delivery.	2	" "	8¼	12	9	12½	102.2	105	21st	"
56	29	German	1st	Rigid	O. L. A.	21 m	2	" "	8	9¼		18	100	89	16th	"