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ARTICLE I.

THE REVIVAL OF SYMPHYSIOTOMY IN ITALY, WITH COMPARATIVE TABLES OF THE EARLY AND LATER CASES, SHOWING THAT THE OPERATION HAS BEEN MORE FREQUENTLY PERFORMED IN THAT COUNTRY IN THE LAST SEVENTEEN YEARS THAN IN ALL EUROPE IN THE PREVIOUS EIGHTY, AND WITH FAR BETTER RESULTS. THE WHOLE SUBJECT EXAMINED HISTORICALLY AND CLINICALLY.

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ONE hundred and fourteen years ago, a French medical student who had but recently entered upon the study of his profession, sent to the Academy of Surgery of Paris, a proposition, in which he advocated a division of the symphysis pubis in labour in cases of deformed pelvis, and claimed that such a section would admit of the enlargement of the pelvic canal, and the delivery of the fœtus. This proposition of Jean René Sigault was ridiculed in the Academy, and treated as the wild scheme of an ignorant youth. Not convinced of his error, Sigault made the plan the subject of a thesis in 1773, and in 1777 made trial of the operation, as shown in table 1, case 1. The fœtus being small, and the pelvis of the rachitic dwarf larger than was admitted, there was no strain upon the sacro-iliac synchondroses, and the child was delivered alive. The woman recovered and was exhibited with her infant, to the annoyance of the Academy of Surgery, and the professional advantage of the operator, who was presented with a medal by the Faculty of Medicine, and with a pension by the government; one of the latter being also given to the woman.

Being very unwisely lauded as a public benefactor on the merits of one case, and it neither a crucial one, nor in all respects a perfect success,

there was at once created a feeling of opposition to the operator and his scheme, in which the Academy of Surgery was by no means idle, and the medical profession became divided into *Cæsareanists* and *Symphysiotomists*, Sigault having claimed that his operation was to set aside the Cæsarean section in cases of pelvic deformity. The basis of the scheme was the claim, that the pelvic symphyses became relaxed during pregnancy, and could be acted upon like a hinge to a considerable extent without rupture. This was denied, and to prove it an error, the operation was performed upon a number of dead subjects in which, the condition of the body favouring the production of the result anticipated, the ligaments tore in the experiments. Years afterward, when the excitement had passed away, and the operation was rarely performed, it was found that women dying in labour and operated upon soon afterward, exhibited a marked mobility in the sacro-iliac synchondroses, which would admit of a wide separation of the pubic bones without laceration. Dr. Ainsiaux, of Liège, under these circumstances, in 1811, obtained three inches of separation, but found that after the woman had been dead 36, 38, 48, or 54 hours, he could only obtain from $1\frac{1}{4}$ to $1\frac{1}{2}$ inches. Dr. Giraud, of Paris, in 1800, reached the same opinion.

Symphysiotomy, so far as the design and execution of it upon the living woman were concerned, was entirely original with Sigault; but it had been performed post-mortem many years before; first in Warsaw, in 1655, by Jean V. C. Delacourvée, of France, then in practice there, upon a woman of 48, who died after a labour of four days; and second in 1766 by Prof. Jos. Jacques Plenck, of Bude, Hungary, who, finding in a post-mortem Cæsarean section, that the fœtal head was locked in the pelvis, opened the symphysis pubis and liberated it. It does not appear to have entered the thoughts of either of these obstetricians that such a section might be applicable to the living parturient woman.

The second Sigaultian operation, as shown by table 1, was performed upon a pubes previously diseased, and therefore unsuitable for the experiment. The fatal termination of the case encouraged the opposition, and brought no credit to the German professor who operated. An examination of the early operations gave very little encouragement to one inclined to hope in the possibility of the scheme supplanting gastro-hysterotomy in deformed pelves with a very short conjugate diameter, or even being adapted to cases as low as $2\frac{1}{2}$ inches; still Sigault felt inclined to test his plan in an extreme case, as shown in No. 12, and the fatal result was such as might have been anticipated. The best that can be said for him is, that he was in error as to his measurements of the pelvis; otherwise we must regard his act as next to murderous. He was evidently very much disappointed in the capabilities of his operation, and declined to divide the symphysis in his closing days, in a case having a $2\frac{1}{2}$ inch conjugate. In fact, his whole experience amounted to only five cases,

covering a period of one year. He lost one woman, and four children out of five. His associate, Leroy, appeared to have persevered for a longer period, although he had no more operations; he is generally credited with having saved four children; but his correct credit is three. In the year following Sigault's first operation (1778), it will be noticed there were eleven cases, losing six women and ten children. This being quite discouraging, the number in 1779 fell off to four, all in France; and in 1780 to two; these six in succession recovered; still the operation fell in general estimation until the close of the century, when the average became less than one a year. For more than sixty years the operation has been confined exclusively to Italy, and very few operations have been performed outside of the city of Naples. Here it will be noticed there were only twenty-two operations in forty years, 1818–1858, and of these there were fourteen performed by one man, of which nine recovered, with a loss of ten children.

Even in Naples, the mortality of the women and children was such that the operation may be said to have died out in 1858; there were four cases in eighteen years, and then not another until at the end of eight more years the operation was put upon a new trial, by new obstetrical surgeons in the Ospedale dei Incurabili.

With a great deal of care and research, I have been enabled to prepare for the reader and the benefit of future investigators the accompanying historical table of the early symphysiotomies. This in few words will show the character of cases operated upon, and the fatality to women and children. There is no tabular record extant earlier than that of Prof. Alfonso Corradi, of Bologna, in his History "*Dell'Ostetricia in Italia*," which commences with the case of Bruno Amantea in 1807 (No. 35, table 1), and records twenty-four operations in all, which are exclusively Neapolitan. The other forty-six cases are placed in table for the first time, and the chronological order adopted for the whole seventy will greatly facilitate their examination, and comparison with those in table 2, which presents so different a picture that we are inclined at first to doubt the reliability of the statement. This is made, however, by one of eminent position in Naples, as an obstetrician among the wealthy, by which he has made himself independent; a professor in the University of Naples; a hospital surgeon; and a member of the Royal Academy of Medicine and Surgery. Corradi, who is a very critical historian, makes no doubt about the first twenty-six cases in table 2; and my experience with Italian correspondents leads me to place every reliance upon their statements. Besides, what motive could there be in Prof. Morisani to give an inaccurate hospital record as a basis of an elaborate and voluminous pamphlet; of a second brochure sent to the International Medical Congress; and, finally, of a table prepared for me, according to my own plan, from the hospital records and by private research? I make this

defence in advance because there are those who are already inclined to explain away the marvellous improvements in the results of Sigault's operation by doubting their reliability. Prof. Morisani is associated with four of the best known obstetricians and gynecologists in Italy, as a co-editor in an Italian edition of Cazeaux and Tarnier's Midwifery; in the last section of which, just completed, he has committed himself to, and staked his reputation upon, a similar report to that of the operations here presented in my second table. We may not be able fully to comprehend the reason for the great change in the results of the operation of Sigault now, over those which followed the same section, and in the same hospital, under Galbiati; but this is no excuse for doubting the record. The same operators are candid in admitting failures in ovariotomy, the Cæsarean section, and Porro's operation; then why would they not be equally so in symphysiotomy? The shoe pinches just here. If Prof. Morisani tells the whole truth, then much that has been said about the dangers and impracticabilities of symphysiotomy in obstetrical text-books will have to be recalled.

General Summary of the 70 *Cases in Table* 1.—Operations performed in Italy, 31; France, 25; Holland, 4; Belgium, 4; Germany, 3; Spain, 1; England, 1; locality not given, 1 = 70. Women lost, 26; children born dead, or moribund, 47; children saved, 20; fate not ascertained, 3. *Causes of death in the women*, viz., pelvic injuries, 4; the same resulting in gangrene, 6; pelvic cellulitis, 1; putrid fever, 1; anasarca, 1; exhaustion and previous disease, 1; shock, 1; syncope, 1; and not mentioned, 10 = 26. Women delivered of children before the symphysiotomy, or at a later period, 19. Cases operated upon twice each, 4, viz., 4–17, 23–29, 36–38, 37–40. Cases of misdirected incision, cutting the bone instead of the cartilage, 3. Prolapsus uteri is mentioned as having followed the operation in 3 cases; and incontinence of urine from fistula in 1 of these and 3 others. Maternal mortality up to 1858, 37 per cent.; fœtal mortality, 67 per cent. Contrast this percentage with that shown in table 2. One-half of the 70 operations were performed by six operators, viz., Prof. Galbiati, 15; Dr. Sigault, 5; Dr. Leroy, 5; Dr. De Cambon, 4; Dr. Gianni, 3; and Dr. Jacolucci, 3 = 35. Of this number, 22 women were saved, and 13 lost; and 24 children perished.

The fœtal mortality in the early days of symphysiotomy had much to do with diminishing the frequency of its performance. As the operation was largely advocated in the interest of the fœtus, the failure to save it reacted upon the measure as a plan for saving the mother. The question really at issue was between the destruction of the fœtus and its delivery, *per vias naturales*, alive. Many of the women had already been delivered of dead children without craniotomy, and some with it, and the object to be gained by separating the symphysis pubis was the saving of the child alive. When this failed in its accomplishment, the crotchet was resorted to, and the fœtus destroyed in the interest of the mother.

1. *Table of* 70 *Symphysiotomies, from the first case under Sigault, down to* 1858.

No.	Date.	Authority.	Locality.	Conjugate diameter.	Result to woman.	Result to child.	Remarks.
1	Oct. 1, 1777	Dr. Jean René Sigault	Paris	3 in. 6 lines	Recovered	Alive	3 ft 8 in. high; wife of a soldier; 5th pregnancy; other children dead; foot presentation. Biparietal diam. 3 in. 4 l. Incontinence of urine produced by use of the knife; was permanent.
2	Feb. 4, 1778	Prof. Siebold	Würzburg	3 in. 9 l.	Died	Lost	Wife of a soldier; had had 7 children, all dead, 6 delivered entire, and one by embryotomy: pubes ossified, and was sawn asunder. Fœtus turned for delivery. Woman died of pelvic injuries resulting in gangrene.
3	Feb. 21, 1778	Dr. Despres de Menmeur	St. Paul de Leon, France	....	Recovered	Lost	Was delivered twice afterward without section: on July 10th, 1779, and again in 1780.
4	Mar. 28, 1778	Dr. De Cambon	Mons, Belgium	....	Recovered	Lost	Was delivered twice before by the forceps. Dr. De Cambon was present at her first delivery. The fœtus was lost in the symphysiotomy by prolapse of the cord.
5	Apr. 5, 1778	Dr. A. Roussel de Vauzesme	Paris	....	Died	Alive	Woman died of gangrene of the genitalia, the result of pelvic injuries.
6	Apr. 5, 1778	Dr. François J. Nagel	Spire, Bavaria	3 in.	Died	Lost	Patient had had several living children. Fœtus thought alive for a few minutes Woman died on the 8th day of external and internal gangrene. Child delivered by turning.
7	Apr. 24, 1778	Drs. L'Escardé and Retz	Arras, France	2 in. 9 l.	Died	Lost	Woman died in 3 days. Fœtus thought to be alive a few minutes.
8	May 10, 1778	Prof. Guerard	Düsseldorf	2 in. 6 l.	Died	Lost	Footling; one leg pulled off; cranium opened; delivery partly by crotchet and finally by the natural forces. Operation and delivery took 9 hours. Woman lived 11 days.
9	1778	Dr. J. R. Sigault	Paris	3 in.	Recovered	Lost	Was delivered naturally of a living child on Oct. 7, 1779. Dr. Sigault was present, and proposed to operate a second time. She declined, and he left her in the care of a widwife.
10	1778	Dr. J. R. Sigault	Paris	....	Recovered	Lost	Was delivered a year later, by turning; child alive, but soon died.
11	1778	Dr. J. R. Sigault	Paris	....	Recovered	Lost	Began to walk on the fifteenth day after the operation.
12	Nov. 15, 1778	Dr. J. R. Sigault	Paris	22 or 23 l.	Died	Lost	Woman 30 inches high; fœtus 20 inches long. Woman died of pelvic injuries in 5 days.
13	Feb. 12, 1779	Dr. Duret	Brest, France	....	Recovered	Lost	Long labour. Woman affected with gangrene, but escaped death; symphysis closed in two months; uterus and vagina prolapsed; urine constantly escaping
14	June 30, 1779	Dr. Van Damme	Racquenghen, Fr.	....	Recovered	Alive; soon died	Patient the mother of 3 living children; fœtus lost by use of forceps.
15	July 18, 1779	Dr. Alphonse Le Roy	Paris	2 in. 8 l.	Recovered	Alive	Woman 4 ft. 3 in. high; vertex presentation; fœtus delivered by turning; biparietal diameter 3 in. 8 lines. Partial procidentia uteri produced by the operation.
16	July 24, 1779	Dr. Alphonse Le Roy	Paris	2 in. 9 l.	Recovered	Alive	Woman was delivered of 6 dead but entire children before the operation, and 3 subsequent to it; was able to walk on tenth day. Fœtus small; lived 14 months; footling; biparietal diam. 3 in. 8 lines. Prolapsus uteri produced.

Symphysiotomy Table 1, continued.

No.	Date.	Authority.	Locality.	Conjugate diameter.	Result to woman.	Result to child.	Remarks.
17	Jan. 1780	Dr. De Cambon	Mons, Belgium	....	Recovered	Alive	A second operation performed upon the subject of case 4.
18	Aug. 9, 1780	Licen'te Amonio Delando, directed by Prof. F. Canivel of Univ. of Cadiz	Utrera, Andalusia, Spain	....	Recovered	Alive	Woman 42, a primipara, and in labour 3 days. Operation by a licentiate under the direction of Prof. Francisco Canivel, who performed through him the first subcutaneous operation,[1] cutting from below upward and from within outward. Woman recovered in 38 days.
19	Dec. 5, 1781	Dr. Du Chauffoy	Lyons	1 in. 7 l.	Died	Lost	Incision mi-directed; knife cut off the end of right pubic bone. Forceps used, then turning Woman died in 52 hours, from pelvic injuries.
20	Dec 24, 1781	Dr. Antonio Lavagnigno	Genoa	2 in. 5 l.	Died	Alive; soon died	Fœtus, being thought dead, was extracted with crotchet, and lived several hours. Woman died in 17 days; external and internal parts gangrenous.
21	Sept. 4, 1782	Mr. John Welchman	Kingston, England	2¼ in.	Died	Lost	Case of malacosteon: woman reduced from 5 ft. 6 in to 4 ft.; 4th labour: pulse 110: fœtus putrid; long labour. First and only symphysiotomy in Great Britain.
22	Mar. 1783	Dr. Giovanetti	Borgo d'Orta, Italy	....	Recovered	Lost	Patient 34; delivered twice before by crotchet; in labour 3 days; pubes but slightly separated in the delivery.
23	Oct. 20, 1783	Dr. Johannes C. Damen	The Hague	....	Recovered	Lost	Was once before delivered of a putrid child Pubes opened by a razor and a common knife; head escaped as the patient was expiring.
24	Nov. 1783	Dr. V. (name withheld)	Paris	....	Died	Lost	Third labour; delivered by turning; patient recovered by 17th day.
25	Aug. 7, 1784	Dr. Alphonse Le Roy	Paris	3 in.	Recovered	Alive; soon died	Woman had borne 3 children before; the first died at 15 months; second was a footling, and lost; third delivered by the crotchet. Pubic bone was cut through in the pubiotomy, as in case 21; fœtus delivered by the feet. Biparietal diameter 3¼ inches. Woman died from injuries to her pelvis.
26	Mar. 12, 1785	Dr Alphonse Le Roy	Paris	Over 3 in.	Recovered	Alive: soon died	Cord prolapsed; incision carried through the os pubis, as in cases 19 and 27. Biparietal diameter 3 in. 5 lines. Woman died on 8th day; intra-pelvic parts found gangrenous.
27	Apr. 17, 1785	Dr. Dematthiis	Paris	2 in. 6 l.	Died	Lost	A second operation performed upon the subject of case 23.
28	Apr. 24, 1785	Dr. Alphonse Le Roy	Paris	2 in. 6 l.	Died	Alive	Fifth labour; inferior strait contracted; delivered by forceps after opening the pubes.
29	Aug. 11, 1785	Dr. J. C. Damen	The Hague	....	Recovered	Alive	Patient 3 ft. high: died on 6th day from pelvic injuries.
30	.....	Dr. De Cambon	Mons, Belgium	....	Recovered	Alive	Woman 29; in labour 80 hours; child lived less than half an hour. Woman walked in 40 days; had a urinary fistula in lower part of cicatrix
31	.....	Dr. De Cambon	Mons, Belgium	2 in. 7 l.	Died	Lost	Symphysis failed to unite. Woman still living, and able to walk, twenty years later; was employed as a messenger.
32	Jan. 23, 1786	Dr. Verdier Duclos	La Ferté Bernard, France	....	Recovered	Alive; soon died	Case of exostoses of the ischiæ. Woman died of anasarca in 40 days; symphysis united in 30 days.
33	1787	Prof. Domenico Ferrara	Naples	....	Recovered	Lost	
34	Rep. in 1804	Dr. Johannes Van Munster	Nymwegen, Hol'nd	....	Died	?	
35	1807	Bruno Amantea	Naples	....	Died	Lost	

[1] Cazeau credits Imbert of Lyons, 1833, with originating this method of operating, done 53 years before.

Symphysiotomy Table 1, concluded.

No.	Date.	Authority.	Locality.	Conjugate diameter.	Result to woman.	Result to child.	Remarks.
36	.....	Prof. Dubois	Paris	....	Recovered	Lost	Patient had been once before delivered.
37	1808	Dr. Vermandois	Bourg, France	....	Recovered	Lost	Woman 30; second labour. Craniotomy and turning tried before opening the pubes; then turning and forceps.
38	Oct. 24, 1809	Profs. Dubois and Gardien	Paris	....	Recovered	Alive	Woman 27; in her third labour.
39	1811	Dr. Paolo Assaliui	Milan	....	Recovered	?	Dr. P. A. is credited with two cases, both saved.
40	1811	Dr. Vermandois	Bourg, France	....	Recovered	Lost	Woman 33; same subject as in case 37. Turning and then forceps used after opening the pubes.
41	1815	Prof. Gennaro Galbiati	Naples	2 in. 4 l.	Died	Lost	Woman died of putrid fever in 18 days; child lived 48 hours; foot presentation.
42	1815?	Dr. Giacomo Gianni	Milan	....	Recovered	Alive	Patient 18, 3 ft. 5 in high; deformed by rickets; fœtus delivered by the feet.
43	Jan. 18, 1816	Dr. G. Gianni	Milan	2 in. 3 l.	Recovered	Lost	Fœtus delivered with forceps. Woman gave birth to a child when alone, in the following year.
44	1815?	Dr. G. Gianni	Milan	....	Died	Lost	Child turned for delivery. Patient died of syncope in an hour and a half.
45	?	Dr. G——	Batigny, France	....	Recovered	?	Woman had previously borne 2 children. Before incising the symphysis, the arm had been amputated and fœtus destroyed.
46	?	Dr. Riollay	Pimpol, France	3 in.	Died	Lost	Woman recovered in 22 days.
47	?	Dr. Brodthlag, Jr.	?	....	Recovered	Lost	Woman was well in a month; her health was good afterward.
48	?	Dr. Prillevitz	Holland	....	Recovered	Lost	Woman recovered in a month; her pelvis was deformed by *malacosteon*.
49	1818	Prof. G. Galbiati	Naples	2¼ in.	Recovered	Alive	Patient was well in 40 days.
50	1820	Prof. G. Galbiati	Naples	....	Recovered	Lost	Breech presentation; fœtus moribund when delivered; pubes consolidated in 36 days.
51	1821	Prof. Mancini	Naples	2⅛ in.	Recovered	Alive	Spontaneous delivery.
52	1826	Profs. Galbiati and Mancini	Naples	2⅛ in.	Recovered	Lost	Woman died in 5 days of gangrene of the vagina, etc.
53	1828	Prof. G. Galbiati	Naples	2⅛ in.	Recovered	Alive	Patient recovered in 35 days. A small piece of bone exfoliated from the pubes.
54	1829	Dr. L. Pasquale Cattolica	Naples	2⅛ in.	Died	Lost	Fœtus died the first day, from injury by forceps. Woman affected with incontinence of urine.
55	1834	Dr. Francesco Petrunti	Naples	2¼ in.	Recovered	Alive	
56	1835	Prof. G. Galbiati	Naples	2⅛ in.	Recovered	Lost	
57	1835	Prof. G. Galbiati	Naples	....	Recovered	Lost	
58	1835	Prof. G. Galbiati	Naples	....	Died	Lost	Fœtus delivered by the forceps.
59	1836	Prof. G. Galbiati	Naples	2⅛ in.	Died	Alive	
60	1836	Prof. G. Galbiati	Naples	2¼ in.	Recovered	Lost	(Twins.)
61	1836	Dr. Rispoli	Naples	....	Recovered	Alive	
62	1837	Prof. G. Galbiati	Naples	....	Died	Lost	
63	1838	Prof. G. Galbiati	Naples	....	Recovered	Alive	
64	1839	Prof. G. Galbiati	Naples	....	Died	Lost	
65	1840	Prof. G. Galbiati	Naples	....	Died	Lost	
66	1840	Prof. G. Galbiati	Naples	....	Died	Lost	
67	1850	Dr. Caccioppoli	Naples	3 in.	Recovered	Alive	Inferior strait contracted; fœtus extracted with forceps; woman recovered in 40 days.
68	1853	Prof. Enrico Jacolucci	Naples	2¼ in.	Recovered	Lost	No accident; well in a month.
69	1856	Prof. E. Jacolucci	Naples	2⅛ in.	Recovered	Alive	" " " " [nant.
70	1858	Prof. E. Jacolucci	Naples	2¼ in.	Died	Lost	Woman died in 15 days of pelvic cellulitis; was 8 months preg-

My thanks are due in connection with the preparation of this historical table to Prof. Alfonso Corradi, of Bologna, who kindly sent me his voluminous quarto history of obstetrics in Italy, completed in 1875; and to Dr. J. Stockton Hough, formerly of this city, for the privilege of examining his collection of rare symphysiotomy pamphlets. Those who make researches in old obstetrical matters often bless the memory of the late Prof. Charles D. Meigs, who, when in Europe some thirty years ago, made a collection of old works pertaining to his special branch, which are now accessible to the student, in the libraries of the Pennsylvania Hospital and College of Physicians, of Philadelphia.

Summary of the 50 Recent Neapolitan Cases.—Women saved, 40; died, 10. Children born alive, 41; dead, 9. Vertex presentations, 45; shoulder, 2; breech, 3. Conjugate diameters, $2\frac{3}{8}$ inches in 2 cases; $2\frac{5}{8}$ inches in 15; $2\frac{3}{4}$ inches in 5; $2\frac{7}{8}$ inches in 16; and $3\frac{1}{8}$ inches in 12 = 50. The same in the fatal cases, $2\frac{5}{8}$ inches in 5 (lost out of 15); $2\frac{7}{8}$ inches in 4 (lost out of 16); and $3\frac{1}{8}$ inches in 1 (lost out of 12) = 10. The fœtuses perished in all of the shoulder (2) and breech presentations (3), and in 4 of the 45 vertex presentations. Nine of the 10 women lost were delivered of living children; and 8 of the 9, who bore dead children, recovered. In only one instance did both mother and child perish, and this was a case of breech presentation in one of the largest ($3\frac{1}{8}$ conj.) pelves. The woman was operated upon on the fourth day of labour. Cases 8–19 and 24–28 were each operated upon twice successfully, making in all six double operations, or six subjects twice operated upon, on record.

The two tabular records contain, as stated, 120 cases. To these may be added a second successful operation by Assalini, and one each for Ballentani and Marescotti, all of Lombardi; the last two prior to 1812; one successful, for Ettore Piccinnini, of Asti, 1871; two for Prof. Novi, of Naples, to be hereafter referred to more particularly; and one to Prof. Morisani, of Naples, 1880. These seven additional cases increase the list to 127, with 92 recoveries. Besides these, are operations, one each, said to have been performed in Constantinople, Bannières-en-Artois, France, and Frankfort-on-the-Main, in the last century, or very early in this, results not given; and no doubt others entirely lost to history.

Italy alone has a credit of 87 symphysiotomies, with 65 women saved, against perhaps as many as 50 for the rest of Europe, more than half of which were in France. The first operation performed in Italy has generally been credited to Dr. Antonio Lavaguigno, of Genoa (No. 20 of table 1), in 1781; and the first in the *Ospedale dei Incurabili*, to Prof. Domenico Ferrara (No. 33 of table 1), in 1787; but Prof. Ottavio Morisani, of the same hospital, has just made[1] claim, in a foot-note to a translation of Cazeaux and Tarnier's Midwifery, that Ferrara performed the

[1] October, 1882.

2. *A Table of 50 recent Neapolitan Symphysiotomies, showing a greatly diminished mortality.*

No.	Date of operation.	Hospital.	Name of patient.	Age	Conj. diam. ins.	Conj. diam. mills.	Presentation.	Result to woman.	Result to child.	Cause of death of woman.	Remarks.
1	Jan. 5, 1866	For incurables	Anna Esposito	29	3 1/8	81	Vertex	Recovered	Alive		
2	Nov 17, "	"	Anna Napoletano	..	3 1/8	81	"	"	"		
3	Jan. 23, 1867	"	Bridgida Pugliese	40	3 1/8	81	Breech	Died	Dead	Metroperitonitis	Admitted on the fourth day of labour.
4	June 29, "	"	Gaetana Attanasio	36	3 1/8	81	"	Recovered	"		
5	Dec. 15, "	"	Maria Angiano	20	2 7/8	74	Vertex	Died	Alive	Iliac phlegmon	Admitted when in labour.
6	Oct. 30, "	"	Grazia d'Angelo	..	2 5/8	67	"	"	"	Metroperitonitis	
7	Jan. 28, 1868	"	Francesca Esposito	30	3 1/8	81	Breech	Recovered	Dead	.....	Membranes ruptured 14 hours.
8	Aug. 4, "	"	Rachele Bruno	23	2 7/8	69	Vertex	"	Alive	.....	Had been 48 hours in labour when admitted.
9	Aug. 31, "	"	Vinzenza Romano	..	2 5/8	67	"	"	"		
10	Oct. 4, "	"	Anna Buongiovanni	21	2 7/8	74	"	Died	"	Metroperitonitis	
11	Oct. 14, "	"	Nunzia Nocera	34	2 7/8	74	"	Recovered	"		
12	Dec. 4, "	"	Teresa Cuosto	21	3 1/8	81	Shoulder	"	Dead		
13	Feb. 5, 1869	"	Caterina Antudio	31	2 7/8	74	Vertex	"	Alive		
14	June 1, "	"	Concetta Esposito	..	3 1/8	81	"	"	"		
15	June 5, "	"	Angela Viola	17	2 5/8	67	"	Died	"	Metroperitonitis	
16	July 5, "	"	Filomena Tarallo	..	2 7/8	74	"	"	"	Peritonitis	
17	July 8, "	"	Carolina Borbonisco	21	3 1/8	81	"	Recovered	"		
18	Dec. 27, "	"	Maria Castellano	21	2 7/8	61	"	"	"		
19	Apr. 6, 1870	"	Rachele Bruno	25	2 7/8	69	"	"	"		Second operation ; see Case 8.
20	Oct. 27, 1871	"	Vincenza Ceuci	33	3 1/8	81	"	"	"		
21	?	"	Rosa Borghese	..	2 7/8	74	"	"	"		
22	?	"	Maria Falco	..	2 7/8	74	"	"	"		
23	?	"	Rosa Monte	..	2 5/8	67	"	"	"		
24	?	"	Teresa Arossa	..	2 5/8	67	Shoulder	"	Dead		A vesico-vaginal fistula produced ; cured by an operation.
25	?	"	Pasqualina Basilica	..	2 3/8	61	Vertex	"	Alive		
26	?	"	Maria Grazia Tizzano	..	2 5/8	67	"	"	"		
27	Feb. 7, 1873	"	Maria Battaglieri	22	2 5/8	67	"	"	"		There were 26 operations and 6 deaths, up to Sept. 26, 1872 (Corradi).
28	Aug. 30, "	"	Teresa Arossa	..	2 5/8	67	"	"	Dead		Second operation ; see case 24.
29	Mar. 11, 1874	"	Rosa Adaba	..	2 5/8	67	"	"	Alive		
30	Feb. 11, 1875	"	Maria Lecca	..	2 7/8	74	"	"	Dead		
31	Apr. 29, "	"	Adelaide Paparone	..	2 7/8	74	"	"	"		
32	May 13, "	"	Rosa Guido	..	2 7/8	69	"	"	Alive		
33	Feb. 20, 1877	"	Maria Anaclerio	20	2 5/8	67	"	"	"		
34	Feb. 28, "	"	Clementina Crispo	20	2 5/8	67	"	"	"		
35	Aug. 7, "	"	Carmela De Luca	27	2 7/8	74	"	"	"		
36	Oct. 13, "	"	Vincenza N——	..	2 7/8	74	"	"	"		In labour 30 hours when admitted.
37	Nov. 1, "	"	Maria Finizio	21	2 5/8	67	"	Died	"	Peritonitis	
38	Apr. 27, 1878	"	Elisabetta Materasso	27	2 7/8	74	"	"	"	Endocarditis.	Lived 32 days after the operation.
39	June 27, "	"	Raffaela Esposito	20	2 7/8	74	"	Recovered	"		
40	Dec. 10, "	"	Filomena Carritano	40	2 5/8	67	"	"	"		
41	Feb. 5, 1879	"	Vincenza Nunziano	22	2 7/8	74	"	"	"		
42	Mar. 9, "	"	Maria Ippolito	23	2 7/8	74	"	"	"		
43	Aug. 28, "	"	Nunzia Basile	22	3 1/8	81	"	"	"		
44	Oct. 6, "	"	Raffaela Areteri	24	3 1/8	81	"	"	"		
45	Dec. 9, "	Obstetric Clinic	Rosa Bosco	40	2 7/8	69	"	"	"		
46	Jan. 6, 1880	For incurables	Giuseppa Pettinicchi	22	2 5/8	67	"	Died	"		
47	Jan. 16, "	"	Angiola Esposito	30	2 7/8	69	"	Recovered	Dead	Diphtheritic endometritis and vaginitis	
48	Oct. 20, "	"	Cristina Pastore	22	3 1/8	81	"	"	Alive		
49	Dec. 5, "	"	Rosa Rossi	20	2 7/8	74	"	"	"		
50	Dec. 21, "	Obstetric Clinic	Carolina Passalacqua	32	2 5/8	67	"	Died	"	Septic metroperitonitis.	The disease prevailed at the time in the hospital. She had been in labour 20 hours when admitted.
70	Cases in table from 1777–1858										
120	Total of two tables, 1777–1880										

operation in that institution in 1774, which would have been three years earlier than that of Sigault. This statement is based on that of Prof. Cattolica, which was set aside by Prof. Corradi, in his History of Obstetrics in Italy. Galeotti published an obstetrical treatise in Naples, in 1787, in which he refers to the operation of Ferrara of that year, as the second in Italy, and that of Lavaguigno as the first. This is, in one sense, also an error, as the case of Giovanetti, 1783 (No. 22, table 1), is between the two. Ferrara is said by Novi, of the same hospital, not to have been made a professor until 1777, three years after he is claimed to have operated. Had Galeotti been in error, he would doubtless have been corrected by Ferrara as to the time of his first operation.

According to Penchienati and Brugnone, 1806, there were 34 symphysiotomies in Europe from 1777 to 1785, with 23 mothers and 11 children saved. Baudelocque gave 25 as the number of operations in the first five years. Churchill, in 1841, gave the record of cases as 49, and deaths as 16. It will now be seen by my record that at that time there had been at least 69, with 25 deaths. After the operation was inaugurated in the Hospital for Incurables in Naples, ninety-five years ago, it was occasionally resorted to at longer or shorter intervals, alternating with the Cæsarean section as the cases appeared to require it, until finally there were but 9 symphysiotomies in a period of thirty years (1836–66), saving only 4 women and 3 children. During the eight years prior to 1866, in which the operation was revived, there was not a case. After the resuscitation, there was such a change of success, that the operation advanced in the estimation of the hospital staff, and has, since January, 1866, been performed more than fifty times.

My second table begins with the resuscitation in Naples, and up to the present time, as far as I have been able to ascertain, there have been 53 operations in that city, saving 43 women and 42 children. In the Hospital for Incurables, where nearly all of these women were operated upon, they have had a bitter experience with the Cæsarean section, losing 25 out of 27 women between 1791 and 1875, although all of the children were removed alive. With an abundant rachitic population requiring relief in parturition, is it to be wondered at that the obstetric surgeons of Naples should endeavour to revive and improve the method of Sigault, notwithstanding its general condemnation, and their own very imperfect success? When we read the record of success, in table No. 2, we are inclined to ask, can this be the "unscientific" and "unjustifiable" operation of Sigault, and if so, what has made the great change in the mortality of the women and children, particularly of the latter? And these are not the only improvements claimed, as will be shown by an examination of the causes of death in the two tables, and attention to the following answers to an interrogatory letter, returned by Professor O. Morisani, of the University of Naples.

1. All of the fifty operations (in table 2) were performed upon rachitic subjects, whose pelves were generally flattened antero-posteriorly. In four or five instances the pelves were simply dwarfed in dimensions. There was no case of rostrate pelvis, as *malacosteon* is very rarely met with in Naples.

2. Version was not resorted to except in the transverse positions. The forceps were applied in about one-fourth of the cases.

3. The separation at the pubes amounted to about 2 inches (50 mm.), which was obtained without any effort, and without producing any lesion of the sacro-iliac synchondroses.

4. The immovable dressing secured the firm union of the symphysis pubis in all the cases that recovered.

5. The women had good health after the operation.

6. There were no malformed infants. Nearly all of the children were sent to the Foundling Hospital to be taken care of.

7. *Phlegmasia alba dolens* did not occur in any of the women.

8. There were no pelvic lesions left, as a sequel of the operation.

9. Vesico-vaginal fistula occurred in but one case, and this was easily cured by an operation.

The answer to No. 8, I presume, is an oversight, as table 2 records a death from "*iliac phlegmon*," case 5.

Table No. 2 was prepared for me in Naples after a form sent; but by an error in transcribing, the heading of the column arranged for the operators (*operatori*) was changed to *operata*, and the names of the patients made to take those of the operators whom I designed to credit. These, however, were mainly Professors Morisani and Novi, already mentioned.

The operation in Naples has been performed with great carefulness. The section is made subcutaneously with the probe-pointed and sickle-shaped (*falcetta*) bistoury of Galbiati. An incision is made above the pubes, somewhat after the method of Ferdinando Carbonai (1841), of Florence, and the knife of Galbiati slowly passed behind the symphysis until it reaches the pubic arch, when its cutting edge is brought to bear upon the ligaments, and the parts are divided from below upward. The pelvis is not forced open, neither is the fœtus turned or dragged upon, but where the head presents, the case is left mainly to nature. In about one case out of four the forceps are applied as an assistant. The incised part is treated antiseptically, and by irrigation if in warm weather; and as soon as convenient the ossa pubes are kept in apposition by an immovable apparatus, to secure an early union of the severed parts.

To avoid the much-dreaded Cæsarean operation, Professor Enrico Jacolucci, of Naples, in 1867, proposed to combine the induction of premature labour with symphysiotomy in one class of extremely deformed cases, and with craniotomy and cephalotripsy in another and still more deformed class. Acting upon his suggestions, Professor Novi has performed

one operation of each class, and Professor Morisani one of the former, as follows:—

1. The first operation was performed by Prof. Novi, in the Hospital for Incurables, upon Louisa Attiola, having a conjugate of $2\frac{1}{8}$ inches (54 mm.). Labour was induced in the seventh month, the fœtus presented in the second position of the right shoulder, was turned and delivered, but lived only an hour. The woman recovered in 50 days.

2. The second operation by him was performed at term, upon Rosa Meglio, on September 8th, 1872. This woman had a conjugate of less than 2 inches (49 mm.), and the fœtus was dead. After opening the symphysis, the head was perforated and then crushed, after which it was delivered with the body of the fœtus; the woman recovered in 42 days. In estimating the propriety of this mode of operating, it must be borne in mind that one of the two successful gastro-hysterotomies in Naples out of 27 was performed by Prof. Novi, in 1865, and that in 1871, his only former case had died of peritonitis in three days. He doubted the propriety of risking the Cæsarean section for the delivery of a dead child.

3. The third operation is one of much interest, and was performed by Prof. O. Morisani, upon Lucia Esposito, a rachitic dwarf, 20 years old, and 3 ft. $7\frac{3}{4}$ inches high, having a conjugate of $2\frac{3}{16}$ inches ($5\frac{1}{2}$ cm.). Of this woman I have in my possession two full-length photographs, and have received from Dr. Rafaele, in pamphlet, the following description: "Head large; lower jaw elongated; teeth lost or decayed; right shoulder-blade and ribs beneath more salient than the corresponding parts on the left side; left lateral inclination of the thorax, with a convexity in the right dorsal portion; compensative scoliosis of the lumbar portion; back very hollow; and right natis much more prominent than the left." This woman entered the *Clinica Ostetricia* on May 15th, 1880, in the seventh month of her pregnancy, and when the extent of her pelvic deformity was ascertained, it was determined to bring on labour in the first week of the eighth month. This was accordingly done on June 9th, and by the 11th labour had sufficiently advanced to permit of the performance of symphysiotomy, which was executed, after the manner already described, by Prof. Morisani assisted by Prof. Novi and others. When the symphysis was divided, the fœtal head which presented by the vertex in the first position began to descend, passed into the cavity of the pelvis, and after some delay at the perineum was extruded from the vulva. The fœtus soon began to breathe regularly; it was $15\frac{3}{4}$ inches long, and weighed $4\frac{1}{4}$ pounds; occipito-frontal diameter $3\frac{1}{2}$ inches; occipito-mental $4\frac{3}{4}$; bi-parietal 3 inches (7.5 cm.); and bi-temporal $2\frac{3}{8}$ inches. The child when three days old was sent to the *Casa della Annunziata*, a foundling hospital.

The wound was dressed with a compress, kept moist by a drainage tape leading from a vessel of hæmostatic water, and by the end of a week the pelvis was secured by an immovable apparatus, an opening being left

over the wound. In 34 days union was complete, and in forty days the patient left her bed, being ready soon afterward to be presented at the clinic, having no pain or inconvenience in walking.

Symphysiotomy would appear to present, according to its history, two eras having in each very opposite characters, as shown by their relative mortality in women and children, and the effects on the health of the surviving subjects. Thanks to the opposition of Baudelocque and many obstetrical writers of the close of the last and beginning of the present century, I have been enabled to procure and present the results of the early operations from 1777 to 1815, by which it will be seen that not only was the mode of delivery very fatal to the women, and still more so to the children, but the opening of the pubes was made to produce such injuries to the sacro-iliac connections as to set up an inflammation ending in gangrene and death. It is clearly demonstrated by Baudelocque that the early operators were often incapable of measuring the interior of the pelvis with any accuracy, and that, in many instances, women capable of bearing unmutilated and in some cases living children were subjected to the operation. By comparing the causes of death in tables 1 and 2, it will also be noticed that they are altogether different. In the first we have generally death from pelvic injuries, and in the second from peritonitis, metro-peritonitis, and other forms of inflammation, such as follow cases of labour, not always instrumental or traumatic. Italian hospital obstetricians, in the regions where pelvic deformities are most numerous, have become of necessity skilled in the use of pelvimeters of various forms, and, from constant practice, are enabled to make very reliable measurements in parturient subjects. They have also been forced to adopt every expedient of modern surgery in after-treatment to diminish the mortality in their old maternities, which were formerly little better than pest-houses in the proportion of deaths. The effect of antiseptic measures and greater cleanliness has been shown by the results of the Porro and other capital operations in large lying-in institutions, and in nothing more than the entire change of results in the two maternities of Naples in which the old and new pubic sections have been performed. Perhaps no tabular record of Italian surgery is so much to the point in exhibiting the possible reversion of results from unfavourable to favourable as that prepared upon the first, second, and third hundred ovariotomies, by Dr. Peruzzi, of Lugo, and reviewed in abstract by me in this Journal. From having lost nine of the first operations in succession before one success, they have gradually improved in results until now the mortality is reduced to a moderate percentage, and the end of reduction has evidently not yet been reached. It is not strange, then, that they have been able to improve materially in their results in symphysiotomy in the old Ospedale dei Incurabili of Naples, where fifty years ago, and more recently, Galbiati, whose knife they now use, was so unsuccessful in

his results, as shown towards the close of table 1. Had this operation been all that William Hunter, Baudelocque, Churchill, and many others believed it to be, scientifically considered, it would have been beyond the possibilities for Morisani and Novi to have demonstrated its feasibility upon the living subject as they have done. There is certainly more in the theory of pelvic mobility in pregnant women than was demonstrated by Hunter upon the dead subject, the much more extensive test upon the living having shown the fallacy of his. It can easily be shown how little is gained in the sacro-pubic diameter for each inch of pubic separation; but this does not appear to present so great an obstacle in practice as might be supposed. The pelvis gains in its transverse and oblique diameters, and the head, when not hurriedly forced, moulds itself to the space obtained and slowly passes through. At all events, the fact remains that 42 out of 46 fœtuses presenting by the vertex were in some manner delivered alive, in Naples, since January, 1866, under pubic section, with a saving of 80 per cent. of the mothers. Other hospitals, and obstetricians in other countries in private practice, may not be able to accomplish as much, but the fact of the possibility remains. The Porro operation in two hospitals in Vienna and Milan has been managed with such care and skill that 14 out of 19 women have been saved (73 per cent.), and all of the children; but the rest of the world out of 77 cases has only saved 30, or $38\frac{7}{77}$ per cent., with 55 children. Two of these seventy-seven operations were performed in Naples in 1881 and 1882, and both women, with one child, were lost. The Porro operation thus far has saved 44 out of 96 women, and 74 children, or $45\frac{5}{8}$ per cent. of the mothers, and $77\frac{1}{12}$ per cent. of the children. Prof. Morisani, before the International Medical Congress of 1881, was inclined to compare the symphysiotomies of the Neapolitan hospitals with the *general* work under the Porro operation, which we think unfair to the latter. Let him measure their 50 cases with those of Santa Caterina of Milan and the Krankenhaus of Vienna, and he will show a saving of 80 per cent. of women and 82 per cent. of children, against 73 per cent. of women and 100 per cent. of children.

But in one sense the two operations are not to be compared. Symphysiotomy can never, with every advantage of care, skill, and climate, except in a limited degree, be made to take the place of the Cæsarean and Porro-Cæsarean operations, as its advocates are not inclined to recommend it in cases having a conjugate of less measure than 67 millimeters, or $2\frac{5}{8}$ inches. Conscious of this fact, some of the early advocates of symphysiotomy endeavoured to modify the pubic section, so as to make it possible to deliver in cases of extreme deformity, and to this end devised the operation known as *bi-pubiotomy*, which in its fatal results did much to hasten the downfall of the more simple method. The operation originated with Prof. Galbiati of Naples, who performed it on a dwarf $3\frac{1}{2}$ feet high, on March 30th, 1832. As this woman had a conjugate of

only an inch, he devised the plan of opening her pelvis, by a subcutaneous section with an Aitkin chain-saw, cutting the horizontal and descending rami of the ossa pubes on either side, so as to be able to open the collapsed superior strait, by lifting the anterior wall of the pelvis from the posterior, as we open a bellows. He succeeded in delivering the woman of a dead fœtus, but such was the injury produced by stretching the tissues over the severed bones, that she died in agony on April 3d, four days later, her vagina, vulva, and surrounding tissues being all gangrenous. Not contented with this disastrous test, Dr. Nanziante Ippolito tried the same plan in the Hospital for Incurables in the winter of 1842–3 with a similar fatality. Thus ended the attempt to make a pelvic section do the work of a gastro-hysterotomy in cases of excessive pelvic deformity.

Symphysiotomy has found a home in Italy for two reasons, viz., the number of parturient women demanding relief on account of pelvic deformity, and the opposition of the Papal church to the destruction of unborn infants. In a country like Great Britain or the United States, cases with the conjugate limits in table No. 2, would be delivered by craniotomy or cephalotripsy, as the life of the fœtus is considered of no value where that of the mother is in danger. But although the general teaching of our text books is to this effect, there are exceptional cases in which there should be an effort made to save the fœtus. If symphysiotomy can be performed with safety to the mother, why should it not be employed in cases where the pelvis is just a little too small to admit of the fœtus being born alive, and where fœtus after fœtus has been sacrificed to save the mother? Such cases could be relieved and saved by the induction of premature labour, but the opportunity to do this at the proper time is generally wanting, and patients are often unwilling to submit to it. I have seen a woman lose child after child, simply because her pelvis was small, and the fœtal heads large; and yet occasionally deliver herself where the head was small enough to pass. There have been as many as sixteen children sacrificed in the successive labours of one lady in this city, each head having been locked in her pelvis, which was small but not deformed: a seventeenth was saved, by an accident inducing labour, when she was 8 months pregnant. Now is there not a field for symphysiotomy in such cases, if the operation can be performed with the small amount of risk claimed in table 2? Has the fœtus no claim upon us for its life, and must we always destroy it in the interest of the mother? I believe with the late Dr. Thomas Radford of Manchester, Eng., that the fœtus has more title to life than we generally accord it.

Symphysiotomy is by no means the "very simple" operation that writers have claimed it to be. As deformed pelves are frequently asymmetrical, it is difficult to define the exact centre of the symphysis pubis, just as it is to determine in an ovariotomy the position of the *linea alba*. If the end of one os pubis is sliced off as has several times been done, the piece

excised will become carious and keep up a discharging fistula until it is expelled or removed. An error in striking the line of the cartilage will also delay very materially the process of union. The operation is best adapted to cases of rachitic deformity, or to symmetrical dwarfing of the pelvis, and should be avoided where there is any reason to believe that the deforming disease may have produced sacro-iliac ankylosis on one or both sides. It would therefore be improper to operate in a case of Naegelé's oblique pelvis, or Robert's pelvis; or of the obilque pelvis produced by coxalgic ankylosis of one side, in which the os innominatum is undeveloped, flattened, and apt to be united by bone to the sacrum.

The result of the operation will often be determined by the relative size of the fœtal head; and the impossibility of ascertaining its dimensions before delivery, constitutes another of the difficulties in the way of operating. A dwarf may carry in utero a fœtus which is out of all proportion to her own size (see case 12, table 1), and the possibility of this should be suspected, if the father is of large proportions. Rachitic dwarfs are usually illegitimately impregnated, and although they may attempt to conceal this fact, the size of the father of the child can generally be ascertained, at least so far as to his being a small or tall man. A woman of 4 feet 4 inches high, bore in this country a fœtus of 14 pounds weight; and one of 3 feet 2 inches high, a child weighing 9 pounds: both were removed by the Cæsarean section. It is evident that in such cases, the operation of Sigault must be a failure. In the lower animals, the impregnation of a small female by a much larger male is not infrequently fatal to her in labour from the excessive size of the fœtuses. A few years ago a leopardess died in labour in the garden of the Philadelphia Zoological Society from this cause. She had been brought up in captivity and her skeleton was of small size, while the male was a large trapped animal caught after maturity; three cubs were extruded, and four larger ones remained in utero, where they were found *post mortem*.

Where premature delivery at the earliest viable period is impossible, it may be advisable to bring on labour and then open the symphysis as in the Morisani case already related. The fatality of such cases under craniotomy and the Cæsarean section influenced the Neapolitan obstetricians to offer this method as one less dangerous to the mother, as well as saving the fœtus: the gain of a fraction of an inch may decide the question between its life and death.

Version by the feet was the common practice of the early symphysiotomists, and no doubt the cause of serious injury to the mother and the death of the fœtus in many cases. The abandonment of this practice has very materially reduced the fatality of the operation to the fœtus, and the amount of strain put upon the sacro-iliac synchondroses. Traction and version by the feet are confined, in Naples, to non-cephalic presentations, as of the shoulder, body, breech, and feet.

329 S. TWELFTH ST., PHILA., Nov. 1st, 1882.