operation. The sutures may be of linen, silk or tendon but never of catgut, as such knots are apt to loosen as the muscle fibers shrink, or are too rapidly absorbed before healing is complete. The first row of sutures should enter a little back of the edge of the wound under the peritoneal covering, and pass through the whole thickness of the uterine muscle to but not through the mucosa, reversing the process on the opposite side, and be immediately tied. They should be about 1 cm. apart. The second row of sutures should also be interrupted and sufficient in number to accurately bring the peritoneal edges together over the deeper layer, which are thus lost to sight.

In clean cases one may draw the omentum down over the uterus to prevent adhesions to the abdominal wall, or in septic cases better to put it behind to protect the intestines, as sepsis is most likely to show itself by breaking through the line of incision.

The abdominal wound should be closed with layer sutures, and dressed like any other abdominal wound. Firm support to the wound and much comfort to the patient may be given by applying a broad strip of adhesive plaster on either side. These are laced together by means of shoe hooks fastened into the edge of same and can be unlaced to remove the sutures or adjust the dressings. The patient wears this until she is ready to be discharged, when she is fitted with some form of abdominal support.

The after care is the same as for any puerperal case.

THE IMMEDIATE RESULTS OF CÆSAREAN SECTION.*

BY JOHN T. WILLIAMS, M.D., BOSTON.

FOR permission to use the statistics from the Boston Lying-In Hospital I am indebted to Dr. Charles M. Green, visiting physician, and I furthermore wish to acknowledge my obligation to Drs. Newell, Swain, Friedman, Torbert, Mason and De Normandie, of the hospital staff, for the use of their cases.

Although Cæsarean section has been performed sporadically for three centuries, it is only within the last fifteen to twenty years that the results have been such as to justify its use in any except the most extreme cases of pelvic contraction.

Budin¹ is authority for the statement that every Cæsarean section performed in Paris between the years 1787 and 1876 resulted fatally. Contrasted with this is Reynold's² series of thirty personal cases without a single death, reported in 1907. The reasons for this improvement in results are:

- 1. The introduction of asepsis.
- 2. The introduction of uterine suture.
- 3. The proper selection of cases.

The importance of the first two of these factors is obvious and needs no further mention. It is chiefly with the consideration of the third that I shall deal in this paper.

* Read by invitation before the New England Hospital Medical Society, Nov. 17, 1910.

Three years ago Reynolds² collected all the reported cases of Cæsarean section performed during the preceding ten years by obstetricians who had done at least five operations. He classified them all under three headings: Primary, secondary and late sections. He called those operations performed before the onset of labor, primary; those done early in the first stage, secondary; and those done after six hours of strong pains, twenty-four hours of trifling pains, or in which the os was dilated more than the size of a half dollar, late Cæsarean sections. I have taken the cases collected by Reynolds, and added to them all which I could find similarly reported since, and including 100 published³ and 44 hitherto unpublished operations at the Boston Lying-In Hospital. The results with regard to maternal mortality appear in the following table:

Author.	PRIMARY.		SECONDARY.		LATE	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Reynolds, ²	82	1	158	6	49	6
B. L. H.,	75	3	37	3	32	6
McPherson, ⁴	2	0	40	5	107	17
Polak, ⁵	4	0	4	1	6	0
Spalding, ⁶	2	0	2	0	3	0
Frederick, ⁷	2	0	1	0	1	0
Kynoch, ⁸	5	1	0	0	0	0
Reddy, ⁹	0	0	2	0	3	0
Canton, ¹⁰	0	0	2	0	6	0
Wallace, ¹¹	9	0	4	0	3	1
Reid, ¹²	1	0	2	0	1	0
Mouchotte, ¹³	0	0	8	0	6	0
Boyd, ¹⁴	3	0	1	0	2	0
	185	5	261	15	219	30

These figures show definitely that the mortality of Cæsarean section increases in direct proportion to the length of time in labor, being 2.7% in the primary, 5.7% in the secondary and 13.7 % in the late operation. The causes of death were as follows:

	Pri- mary.	Sec- ondary.	Late.	Total.
General peritonitis,	3	6	16	25
Uterine sepsis,	0	0	4	4
Septicemia and pyemia	0	3	0	3
Thrombosis and embolism,	0	1	1	2
Pneumonia,	1	2	4	7
Hemorrhage,	1	0	0	1
Shock,	0	0	2	2
Rupture of uterus,	0	0	1	1
Intestinal obstruction,	0	0	1	1
Acute dilation of stomach,	0	1	0	1
Chronic nephritis,	0	1	1	2
Paraplegia from Pott's disease,	0	1	0	1
	5	15	30	50

In those patients who recovered, the morbidity of the convalescence also increased in proportion to the duration of labor, being 5% in the primary, 6.5 % in the secondary and 10.5 % in the late sections, as shown in the following table.

	Primary.	Secondary.	Late.
Wound sepsis,	4	7	8
Uterine sepsis,	5	5	8
Uterine and wound sepsis,	0	0	1
Phlebitis,	0	4	2
Pneumonia,	1	0	0

A few words about fetal mortality in Cæsarean section. We have been accustomed to consider

this operation as promising infallibly the birth of a living child, making allowance for an occasional case in which resuscitation fails, and this is certainly true in the primary and secondary sections. In the late section, however, where the fetus as well as the mother has borne the strain of a long and difficult labor, and especially where unsuccessful attempts at delivery have been made, often by practitioners little skilled in obstetric operating, there is a distinct percentage of stillbirths, 5.48 % in the series which I have collected. Adding to these deaths occurring during the first five days of life, the infantile mortality of the late operation rises to 13.28 %, making it a procedure not only dangerous to the mother, but often futile in saving the life of the child. The fetal mortality is shown in the following table.

Author.	PRIMARY.			SECONDARY.			LATE.		
	Cases.	Stillbirths.	Deaths.	Cases.	Stillbirths.	Deaths.	Cases.	Stillbirths.	Deaths.
Reynolds, ²	82	1	2	158	1	2	49	1	3
B. L. H.,	75	1	2	37	0	2	32	1	2
McPherson, ⁴	2	0	1	40	0	2	107	13	5
Polak, ⁵	4	0	0	4	0	0	6	0	0
Spalding, ⁶	2	0	0	2	0	0	3	0	1
Frederick, ⁷	2	0	0	1	0	0	1	0	0
Kynoch, ⁸	5	0	0	0	0	0	0	0	0
Reddy, ⁹	0	0	0	2	0	0	3	0	1
Canton, ¹⁰	0	0	0	2	0	0	6	1	0
Wallace, ¹¹	9	0	1	4	0	0	3	0	0
Reid, ¹²	1	0	1	2	0	0	1	0	0
Mouchotte, ¹³	0	0	0	8	0	0	6	0	0
Boyd, ¹⁴	3	0	0	1	0	0	2	0	0
	185	2	7	261	1	6	219	16	12

The causes of fetal death in the above series were as follows:

	Primary.	Secondary.	Late.
Atelectasis,	2	0	0
Prematurity,	0	5	0
Long labor,	0	0	8
Attempts at operative delivery,	0	0	4
Congenital heart disease,	1	0	0
Spina bifida, meningitis,	1	0	0
Unknown,	3	1	0
	7	6	12

Next in importance to prolonged labor and unsuccessful attempts at delivery as a cause of fetal mortality is prematurity. Whenever a Cæsarean baby does not appear especially vigorous, it should be treated as a premature child for the first few weeks. Aside from these conditions, the mortality of children delivered by Cæsarean section is entirely an accidental one.

CONCLUSIONS.

- 1. Primary Cæsarean section is a simple and safe operation with a low maternal mortality.
- 2. The mortality from Cæsarean section increases in direct proportion to the duration of labor, being only 2.7 % in the primary, 5.7 % in the secondary, and 13.7 % in the late operation.
- 3. Maternal morbidity as well as mortality is increased in the secondary and late Cæsarean sections.

- 4. While there is no fetal mortality as a result of the operation where the fetus has been previously subjected to the strain of a long and difficult labor, the operation is frequently unsuccessful in saving the life of the child.
- 5. The maternal mortality of 13.7%, and the percentage of 13.28 of unsuccessful results for the child make the late Cæsarean section an unjustifiable operation.

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THE END RESULTS OF CÆSAREAN SECTION.*

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WE may divide the end results of Cæsarean section into two classes.

First, those conditions which may occur as a result of the operation.

Second, those complications incident to other methods of delivery which are avoided by it.

Of the latter class we will mention first the absence of perineal and vaginal tears, prolapse and procidentia which frequently follow deliveries per vaginam, especially by means of those operative procedures between which and Cæsarean section the obstetrician is repeatedly called upon to choose. This advantage of Cæsarean section is too obvious to demand further explanation.

Less well recognized but of even greater importance is the absence of nervous collapse, which is far from uncommon as a sequel to labor in the over-civilized woman of to-day. Constitutional ill-equipment for labor was first recognized as an indication for Cæsarean section by Reynolds.¹ His views have been supported by Davis,² Newell³ and others. Reynolds says that when a poorly equipped woman has lost in strength and health during pregnancy, the pains are nearly always poor and irregular, and the uterus acts poorly. Labor is not likely to be spontaneous, and is often followed by a neurasthenic state lasting for a long period.

Those patients of this class upon whom he has performed Cæsarean section have made perfectly satisfactory convalescences and have enjoyed good health during the subsequent year, in marked contrast to the much greater number of those whose labors have been treated by other measures.

The original indication for the performance of Cæsarean section was to secure a living child. To secure a child not only living, but free from

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