

WILLIAMS (H.)

A COMPARISON

BETWEEN THE

CESAREAN SECTION

AND THE

HIGH FORCEPS OPERATION.

—
A GRADUATION THESIS.
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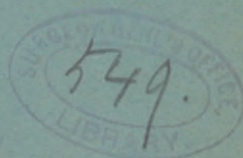
BY

HAROLD WILLIAMS, M.D.,

BOSTON.

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With six tables.
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WOMEN AND CHILDREN, Vol. XII., No. I., January, 1879.*
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Dr. J. Le. Williams
with the compliments of
the Author

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A COMPARISON BETWEEN THE CESAREAN SECTION AND THE
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BY
HAROLD WILLIAMS, M.D.,
Boston.*

(With six tables.)

THE maternal mortality in cases of Cesarean section varies, according to different authors, between 85 per cent as tabulated by Radford, and 24 per cent as shown by Harris.

Statistics of the high forceps operation vary in much the same manner. Dr. Harper, for example, in the *Obstetrical Transactions*, Vol. I., says that he used the long forceps in 162 cases, and that only 1 per cent of the mothers died. Now as the long forceps may be used when the head is distending the perineum, usually quite as well as the short forceps, and often to much greater advantage, it is not fair to judge of the high operation from such data as these, since it is not the instrument, but the relation of the fetal head to the maternal pelvis which renders its use dangerous.

It is the object of the writer to collect all the cases in which the high forceps operation was employed, and all the cases of Cesarean section reported during the last twenty years.

In collecting cases of Cesarean section, care was taken to exclude cases of abdominal section after rupture of the uterus, as suggested by Dr. Harris, in the *American Journal of the Medical Sciences*, Vol. CL., who points out that such cases are more favorable in their results; because, in the first place, the patients are more robust, as a rule, and in better health than those who submit themselves to Cesarean section; and, secondly, since the operation is less likely to be delayed.

The names of the operators and the dates of the operations were also recorded, and thus no cases are considered twice.

The cases subjoined are those reported since 1858, and by this means those cases raked up from the past are excluded;

* The subject of this paper was proposed by Dr. William L. Richardson, of Boston, to whom the writer is also indebted for several of the cases, and many suggestions.

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and this seems just, since it is the intention to compare the operations as they are, and not as they have been.

The whole number of cases collected is 244, of which 125 are of Cesarean section; and 119 of the application of forceps to the head above the brim of the pelvis.

The comparative results of the two operations, in the whole number of cases, is seen in the following table.

TABLE I.
CASES REPORTED SINCE 1858.

	Whole No. of cases.	Mother died.	Mother lived.	Per cent of maternal death.	Child lived.	Child died.	Per cent of children died.	Child not reported or dead before operation.	Mother not reported.
Cesar. Sec..	125	61	64	48.8	81*	17	17.7	29	0
High Forec..	119	61	69	39.47	42	68	61.8	9	5

Thus out of the 125 cases of Cesarean section 51.2 per cent of the mothers lived, and in the high forceps cases 60.52 per cent of the mothers lived; while as regards the child, it is 82.3 per cent of recoveries in the Cesarean section against 38.18 per cent in the high forceps cases.

Out of the 125 cases of Cesarean section, 84 cases are fully reported, and in the 119 high forceps cases, the details are given in 68.

In Table II. it is proposed to compare, as nearly as is possible, those cases in which the operations were done under equally favorable circumstances, and the duration of labor is taken as the fairest standard. As the exact duration of the labor is not recorded in some of the cases in which the details are otherwise fully reported, there are included in the following table those cases in which the labor was less than 40 hours, or the liquor amnii not voided less than 30 hours.

TABLE II.
OPERATION WITHIN FORTY HOURS AFTER THE BEGINNING OF LABOR, OR THIRTY HOURS AFTER THE RUPTURE OF THE MEMBRANES.

	Number of cases.	Mother lived.	Mother died.	Per cent of maternal death.	Child lived.	Child died.	Per cent of children died.	Child not reported or dead before oper.	Mother not reported.
Cesar. Sec..	44	29	15	34.08	35	4	10.25	5	0
High Forec..	54	37	17	31.48	20	29	59.18	5	0

*Twins in two cases.

It will be noticed that of the 84 cases of Cesarean section which are fully reported; in only 44 the labor was of less than 40 hours' duration, and attention is called to the fact that the whole number of cases in Table II. is less than the number of mothers who lived, according to Table I., interesting as showing not only the hesitation with which the operation is decided upon, but also under what unfavorable circumstances it may be successful.

In the third table the two operations are compared, after the elimination of serious complications. Under the head of Cesarean section the following cases are eliminated :

" Abdominal walls thin and necrosed ".....	1
Ante-partum hemorrhage.....	1
Bright's disease (lived).....	1
Improper food.....	1
Cancer of vagina.....	1
Bowel inclosed in uterine wound.....	1

From the high forceps cases in Table II. the following are excluded :

Albuminuria with eclampsia.....	1
Accidental hemorrhage (lived).....	1

TABLE III.

LABOR LESS THAN FORTY HOURS, THERE BEING NO SERIOUS COMPLICATIONS.

	Number of cases.	Mother lived.	Mother died.	Per cent of maternal death.	Child lived.	Child died.	Per cent of children died.	Child not reported or dead before oper.
Cesarean Section..	38	28	10	26.31	31	3	8.82	4
High Forceps.....	52	36	16	30.76	20	28	58.33	4

Thus in labors of 40 hours or less, there being no complications which would lead us to fear bad results, in spite of the operation rather than because of it, we find that Cesarean section gives 73.69 per cent of recoveries of mothers, while the child lived in 91 per cent; whereas in the high forceps operation 69 per cent of the mothers and 41.67 per cent of the children lived.

In the fourth table the two operations are compared, there having been no additional operative interference.

From the 38 cases of Cesarean section one case of craniotomy is eliminated. From the 52 cases of high forceps, the following are eliminated: Craniotomy, perforation, and cephalotripsy, 16; version, 2.

TABLE IV.

LABOR LESS THAN FORTY HOURS, THERE BEING NO SERIOUS COMPLICATION, NOR ANY ADDITIONAL OPERATIVE INTERFERENCE.

	Number of cases.	Mother lived.	Mother died.	Percent of maternal death.	Child lived.	Child died.	Per cent of children died.	Child dead before op. or not rep.
Cesarean Section. . .	37	28	9	24.32	31	3	8.82	3
High Forceps.	34	28	6	17.6	20	10	33.3	4

Comparison of Tables III. and IV. shows that, when there is no previous operative interference, 75.68 per cent of the mothers recover after Cesarean section in labors of less than 40 hours, there being no serious complication to the labor. It also shows that in the high forceps operation, after the elimination of additional operative interference, 82.4 per cent of the mothers recovered, and 66.6 per cent of the children; but as far as the children are concerned, this is no guide to the mortality of the operation, because in several of the operations the child was dead before craniotomy was performed, and it is fair to assume that many would have died, even if craniotomy had not been performed, since we see that such is the usual result in cases where there is no additional interference.

Craniotomy is said by the highest authority to be comparatively harmless, as regards the mother, when done under favorable circumstances. Now if we compare Tables III. and IV. we find that in high forceps cases *followed by craniotomy*, the percentage of maternal deaths is 55.5, and the conclusion to be drawn is, that this high rate of mortality is due to the high forceps operation, and not to that of craniotomy which followed.

For it must be admitted that there is less danger in dragging a head, which has been reduced in size by craniotomy, through a narrow pelvis, than in dragging a head only somewhat compressed through the same space, since the danger in either operation is due to the injury done to the maternal soft parts;

and the results arrived at in the *eliminated* cases seem to strengthen the conclusions derived from Table III., since craniotomy should improve the prognosis as regards the mother, and the deaths in these cases must, in a great measure, have been due to the high forceps operation which preceded that of craniotomy.

Again, since craniotomy is harmless to the mother, when done under favorable circumstances, the mothers who lived in the eighteen cases may have been saved by craniotomy, and in the next table the two operations are compared, the mothers who lived after craniotomy not being included.

TABLE V.

CASES TAKEN FROM TABLE III. THOSE CASES IN WHICH THE MOTHER MAY HAVE BEEN SAVED BY CRANIOTOMY BEING EXCLUDED.

	No. Cases.	Mother lived.	Mother died.	Per cent of mat. death.	Child lived.	Child died.	Per cent of child. died.	Dead before op. or not rep.
Cesarean Section...	38	28	10	26.31	31	3	8.82	4
High Forceps.....	44	28	16	36.36	20	20	50	4

In the 18 cases eliminated because of craniotomy, we find 55 per cent of maternal deaths.

Table IV. shows 17.6 per cent, and thus we see that the result of Table V. is an exact mean between these two extremes, between which the truth probably lies. In the 55 per cent, however, it must be admitted that there is a possible source of fallacy, inasmuch as no diameters were recorded, and it may be that the pelves were so contracted that high forceps should not have been performed; but the names of the reporters, among whom may be mentioned Hicks, Ramsbotham, Elliot, and others, seem sufficient guarantee against the improper use of instruments.

TABLE VI.

LABOR OF TWENTY-FOUR HOURS OR LESS, THE CASES BEING TAKEN FROM TABLE III.

	No. Cases.	Mother lived.	Mother died.	Per cent of mat. death.	Child lived.	Child died.	Per cent of child. died.	Dead before op. or not reported.
Cesarean Section..	29	23	6	20.6	25	2	7.4	2
High Forceps.....	33	23	10	30.3	12	17	58.6	4

Thus in labors of 24 hours or less, and under favorable circumstances, Cesarean section gives 79.4 per cent of maternal, and 92.6 per cent of children's recoveries, whereas the high forceps operation, under similar circumstances, gives 41.4 per cent of children's and 69.7 per cent of maternal recoveries. Or, in other words, the Cesarean operation is 10 per cent more favorable to the mother, and 51 per cent more favorable to the child, than the high forceps operation. To recapitulate, we find that in 125 cases of Cesarean section, reported since 1858, the maternal mortality was 49 per cent, thus very closely agreeing with the result obtained by Michaelis.

It is said by some writers that even these figures are too favorable, since only favorable cases are reported. But in the cases in Table I., the fact that 64 lived, and 61 died, shows the inconsistency of this reasoning, as the fatal cases so nearly equal in number the successful ones.

Of the 125 cases there are particulars in only 84, and it is from these 84 cases that conclusions must be drawn, since in the remaining cases the operation may have been post mortem, for all we can tell to the contrary.

Table II. shows that out of 84 cases there were only 44 in which the operation was performed within 40 hours from the beginning of labor, showing the fallacy of deriving conclusions from cases taken at large, and without some data to enable us to judge of the condition of the woman at the time of the operation.

Table III. shows that, if we eliminate from the 44 cases in Table II. serious complications, as cancer of the vagina, etc., the maternal mortality is reduced to 26 per cent, from the 34 per cent derived from Table II.

Finally, Table VI. shows that, when the labor was of 24 hours' duration or less, and the above-mentioned unfavorable cases were not included, the maternal mortality is again reduced, and to 20.6 per cent.

These statistics seem to me to present the Cesarean operation in by no means too favorable a light, since in many cases the operations, though done after short labors, and upon women who had no severe disease, were still far from being done under the *most favorable circumstances*. Several of the patients were subject to rickets and osteomalacia, and in many

instances the operation was not performed after the most approved method, nor at the most favorable time, which Ludwig Winkle, the most experienced operator, says is during the labor, and before the membranes are ruptured.

Another means by which the mortality in Table VI. would have, in all probability, been still more reduced, is that many successful cases are reported in German publications, which the writer could not obtain; and as in nearly all the cases occurring in Germany, in which the details were recorded, the operation was very soon after the beginning of labor, it is highly probable that many of these cases, which were excluded for want of sufficiently full report, would have also been included in Table VI., could the publications have been obtained.

On the other hand, as regards the high forceps operation, Table I. shows that in 119 cases, 39.47 per cent of the mothers died. This result seems to present the operation in too favorable a light, since it is the exception, rather than the rule, to find it recorded whether the head had or had not passed through the superior strait before the instruments were applied, and this omission in the report, of course, throws out of consideration a large number of cases, many of which were reported as showing the danger to the mother in forceps operations. Again, it is probable that the many fatal cases of the application of forceps, tabulated in the various reports, are due to the high application of the instruments, since the low forceps operation is said by the best authorities to be harmless, an assertion which would be unwarrantable unless the deaths which are recorded after forceps were due to some other cause than the low application of the instrument.

Table VI. shows that the high forceps operation, in labors of 24 hours or less, is fatal to the mother in 30 per cent, a conclusion which is probably too favorable, since the cases were taken from Table III., and it is more than likely, as previously shown, that many of the mothers were saved by craniotomy in the eleven cases included.

As regards the child, we see from Table VI. that Cesarean section is 51 per cent more favorable than high forceps. But as craniotomy was done in eleven of these cases, it is impossible to tell the exact mortality of the children, since several of that number were dead before craniotomy was resorted to.

The percentage of children who died from the high forceps operation, therefore, lies between 58.6 per cent as a maximum, and 33.33 per cent as a minimum, being, in either case, considerably more serious in its results to the child than Cesarean section, which places the mortality at 7.4 per cent.

Before looking at the practical bearing of these statistics, a word should be said regarding the results obtained by Harris, as compared with those obtained by Table VI. Dr. Harris concludes his communication in the *American Journal of the Medical Sciences* by saying "that he believes it fair to estimate the result of timely operations at from 70 to 75 per cent of recoveries of both mothers and children."

Table VI. shows that 79 per cent of women and 92 per cent of children were saved by timely operations, *not by estimation*, but as a direct result, obtained from 29 cases, in which the labors were 24 hours or less, and under circumstances of which each reader may judge for himself. This difference is due, in a great measure, to the fact that the cases collected by Harris all occurred in the United States, where the operation is an unusual one; that several occurred many years ago, when the operation was very imperfectly known; that the operators in most cases had no experience in the operation; and that the whole number of "timely operations" was small (16 cases).

In Table VI., on the contrary, the cases are all of comparatively recent date, and many occurred in Germany, the operators being in several instances skilful surgeons, with great experience in the operation, and operating, too, in a country where Cesarean section is looked upon as a legitimate operation, and is not, as it were, done under protest.

The practical conclusions to be drawn from these tables are :

1st. If Cesarean section is decided upon, there should be no delay in its performance, since when done in labors of 24 hours or less it is 6 per cent more favorable than when delayed to 40 hours; and it seems equally true that when the operation is performed still earlier in the labor, still more favorable results might be hoped for, especially since the most favorable time is during the first stage.

2d. That the high forceps operation should be undertaken with the greatest hesitation, inasmuch as its results to the mother are more fatal than those of Cesarean section, while the prognosis as to the child is far better in the latter.

3d. When the question arises as to what operation will give the best chance to both mother and child, the choice must lie between Cesarean section and turning.

4th. That Cesarean section seems especially called for in cases of labor complicated by ovarian tumors, which can neither be pushed out of the way nor punctured, since Playfair found that about 50 per cent of the women died in such cases, when craniotomy was employed, whereas we find that Cesarean section gives nearly 80 per cent of recoveries of the women, to say nothing of saving 92 per cent of the children.

