TREATMENT OF PLACENTA PREVIA BASED ON A STUDY OF 303 CONSECUTIVE CASES AT THE BOSTON LYING-IN HOSPITAL

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In 1921 I reported a reduction in maternal mortality in placenta previa at the Boston Lying-In Hospital for the years 1915-1920 over previous years. This improvement was from 19 per cent, in 1895-1915, to 6 per cent, in 1915-1920, and was attributed to marked increase in treatment by conservative methods, the use of the Voorhees' bag and bipolar version, as against manual dilatation and immediate extraction. Other factors were contributory but this was the main one. Reference to the first five columns of Table I shows this graphically.

It will be observed that when conservative methods reached 57 per cent the mortality had dropped to 6 per cent. In concluding this report I predicted confidently that in the next five years when we should have treated 70 to 75 per cent of the cases (which seemed as high as possible in hospital practice) by conservative delivery from below, our results would be still better, and perhaps equal the German statistics of 3 per cent. I stressed our series of 12 complete and 43 incomplete previas delivered with bags or bipolar version without maternal mortality as a basis for this belief.

The next five year period ended and was studied. I hoped to demonstrate conclusively that conservative delivery from below is the best

Table I

	PLACENTA PREVIA 303 CASES, MATERNAL MORTALITY 15%					
	ACCOUCHEMENT FORCÉ 152 CASES, MATERNAL MORTALITY 19%				BAG AND BIPOLAR VERSION, 151 CASES, MATERNAL MORTALITY 8.25%	
	'95-'00	'00-'05	'05-'10	'10-'15	'15-'20	'20-'25 + six months
Number of Cases	18	26	42	66	66	85
Maternal Mortality	17%	15%	24%	20%	6%	10.5%
% Cases Bag or Bipolar Version	0	0	2%	13%	57%	76 %
Number Maternal Deaths	3	4	14	13	4	9
Maternal Mortality Complete Previa				36%	18%	25 %
Maternal Mortality Incomplete Previa				9%	0%	6 %
Fetal Mortality				44%	48%	54 %

method of treating placenta previa. I expected to do a bit toward checking the growing tendency to resort to abdominal section in these cases. It had always seemed the mark of a nonobstetrical surgeon to resort to section except in the very rare primiparous central previas. Reference to the sixth column of Table I shows that expectations were not realized. True, 76 per cent of our previas had been delivered conservatively from below, but our maternal mortality had risen from 6 per cent to 10.5 per cent. In complete previas it had risen from 18 per cent to 25 per cent. The fetal mortality had risen somewhat. The combined mortality in 151 cases by conservative treatment was 8.25 per cent as against 19 per cent in 152 cases delivered by radical manual dilatation and immediate extraction. The only honest conclusion I could draw was that conservative delivery from below is more than twice as safe for the mother as accouchement forcé in placenta previa.

That conservative methods from below are obtaining best results in this condition is not so certain.

A study of the literature makes it possible to state that we do not know what the mortality is in placenta previa treated by abdominal section. This in regard to all previas to say nothing of the mortality in the different groups dependent on the degree of previa. It has been stated as 2 per cent, again as 3.6 per cent, again as 5 per cent by German authorities; as 4 per cent by an American, and by others as much higher. Because of the relatively few cases we must feel that these are but estimates.

Hitschmann, who gives the cesarean mortality as 3.6 per cent, states that in general, delivery by bipolar version or bags has a death rate of 7.6 per cent.

I would call to your attention eight considerations bearing on treatment which have arisen as a result of this study. These are:

(1) The "Typical Placenta Previa Death." Briefly described it is as follows: Delivery is accomplished, the placenta out, ergot and pituitrin given, fundus held, cervix pulled down with hooks, inspected, found intact or laceration repaired to top, fundus, cervix and vagina packed or not as you choose, transfusion or not as indicated, patient in fair or good shape, prognosis good barring sepsis. One-half to three hours later bleeding, rising pulse or lower pressure, softening fundus; reexamine, intact cervical ring, pack or repack, ergot and pituitrin, transfuse or retransfuse—consider hysterectomy, condition too poor, sudden persistent softening of whole uterus, death. Not all previas die in this manner, but this happens often enough to keep up the mortality and discourage one with delivery from below. For many years I have sought a satisfactory explanation of this phenomenon without success, because it seemed to me that if we could eliminate cases dying in this manner our mortality would be only the inevitable one due to neglect and occasional surgical accident. The usual explanation given is atony

of the isthmus. For instance, R. T. von Jaschke says, "Half the deaths in placenta previa are due to the bleeding produced by the dilatation of the lower uterine segment during the third stage and immediately after." Hofmeier on the other hand denies this explanation and states that "there is little danger of hemorrhage resulting from the lack of contraction of the lower uterine segment." This divergence of opinion by authorities, together with the observation that the bleeding usually manifests itself after some interval, justifies my scepticism of this "atony of the isthmus" explanation of the "typical placenta previa death." Only this year have I had a satisfactory explanation. Dr. F. S. Newell, of Boston (with whose permission I quote this conversation), said that in talking with Dr. Wm. E. Caldwell, of New York, Dr. Caldwell told him that at autopsy he had observed the following pathology in certain patients dead with placenta previa: an intact or well-repaired external cervical ring, but above in the lower uterine segment a split at the placental site into the uterine musculature, permitting hemorrhage from large deep vessels and sinuses. I think this observation of paramount importance in a consideration of the treatment of placenta previa. It explains the interval before the appearance of bleeding noted above in the description of the "typical placenta previa death." As the uterus in its normal postdelivery contraction and relaxation, more pronounced in multiparous women as are most previas, contracts, the bleeding is checked; when it relaxes, bleeding occurs freely. It explains the observation that whereas transfusion before, during, and after delivery in some cases is as helpful as most writers state, in this group it seems to hasten the end; as blood is pumped into the arm and, keeping up pressure, runs out of the uterus. It explains why the pack does not control bleeding. As the pack is introduced, the uterus contracts and the bleeding stops; when the uterus relaxes, the pack is not against the deep, partially buried bleeding vessel.

(2) A second matter for your consideration is suggested by the following statement from Hofmeier. It is his opinion that in placenta previa the lower uterine segment is not the primary seat of implantation of the ovum, but that the presence of a portion of the placenta near the cervix is due to the widespread growth of the placenta or to a placenta reflexa. Because of this and because of the anatomic arrangement of the blood vessels there is no serious blood loss after delivery, even when there is no active contraction of the lower uterine segment. He continues, and this is the sentence I wish particularly to emphasize—"Only where the placenta has grown into the uterine wall is there danger of hemorrhage. In the latter case a Porro operation is indicated." To interpret this in another form he believes that it is only when placenta previa and placenta accreta (or increta) coexist that danger from the lower segment arises. But he fails to state and I fail to see how

this can be predetermined. Coupled with this statement is my own opinion based on observation in the case room. I feel that there are a certain number of previas in which no method of delivery from below, either natural or artificial, will fail to rupture the lower segment in one way or another, open or concealed. In this group I believe a part of the lower segment is so invaded by placental tissue or so thinned out that it cannot fail to rupture if the fetal head comes through it. I believe, but do not know, both on theoretical grounds and by a very few observations that this is as likely to be true in partial as in complete previa. I believe that in marginal previa the statement above by Hofmeier regarding higher primary implantation is always true.

(3) The third consideration involves a critical discussion of the theory of bipolar version and the use of the Voorhees' bag in the treatment of placenta previa. We, as advocates of these methods of treatment, have insisted in our teaching that the *sine qua non* in the treatment of placenta previa is to obtain full dilatation without violence, or manual dilatation,—synonomous terms. We have insisted that bad results come because the attendant would not wait for the bag to dilate completely, or would insist on pulling the baby, gently of course, through the partially dilated cervix rather than wait for nature to push it through as the true Braxton Hicks' procedure calls for. One of my associates in the hospital who has an enviable series of successful deliveries by these methods still insists that this is true. Two years ago I agreed; now I doubt whether it is always true, though I still believe it too often is. These things make me question: (a) that in my previous paper I seemed to demonstrate that the danger of rupture lies in the last inch of dilatation rather than in the earlier part. In other words that rupture is caused by the after-coming head and not by the dilating instrument whether it be bag, breech, or fist. (b) That in bipolar version the dilatation obtained by the breech by nature, especially in premature babies who have a relatively smaller breech, is often not enough for the head, and when the head sticks and is picked out "ever so gently" rupture may take place. (c) That bag failure; i.e., failure of the bag to obtain full dilatation, does take place to the extent that nearly 50 per cent of the last five years' cases in this series are recorded as having a rim of cervix visible when the bag came out and labor stopped or bleeding occurred forcing immediate delivery by manual dilatation of the rim and "gentle version and extraction." The average fist never dilates the cervix completely, therefore, precisely the same condition as in (b) resulted with its inevitable toll of rupture from the dangerous last inch. That this bag failure occurs frequently is further emphasized by W. B. Thompson, reporting 66 cases of placenta previa in the first 10,000 deliveries at the Johns Hopkins Hospital, who states without apology: "The use of the bag is routine at the Johns Hopkins Hospital. Because of the poor quality of

birth. We lost 27 per cent of the babies of the 85 mothers either for nothing or to save more mothers,—according to the point of view. Of 85 babies, 23 died who might have lived if they had not been subjected to delivery from below. Again I only question whether our maternal mortality justifies this.

(7) A seventh consideration is a minor one,—yet I have seen it contribute to fatal outcome. The multiparous women in whom placenta previa is most frequent are prone to vulval and vaginal varicosities. It is disconcerting to observe the difficulty of controlling bleeding from these if extensively ruptured by the head,—while a torn cervix bleeds simultaneously.

(8) Barring Germany, where very low maternal mortality is reported from bipolar version, and where, oddly enough in the face of this, there is the most enthusiasm for section in the treatment of previa, these statistics compare favorably with others or are much the same in similar institutions. To illustrate with but one example in a reasonably long series of cases; New York Lying-In Hospital, 591 cases, maternal mortality 12.1 per cent, stillbirth incidence 42 per cent. Treatment chiefly gauze packing followed by internal podalic version (R. McPherson). Kosmak reports from the same institution another series with 14 per cent maternal mortality, stillbirth rate 62 per cent.

To recapitulate these eight points before drawing conclusions:

(1) The "typical placenta previa death" with its apparent explanation by Dr. Caldwell's autopsy observations on "concealed rupture," can only be prevented surely by delivery from above.

(2) Hofmeier's recognition that placenta previa and placenta increta occur together and the danger in this, together with my own clinical opinion that some placenta previa cervices are bound to rupture if a baby passes through. Neither of these conditions can be predicted in advance and can only be determined and appropriately treated from above.

(3) Bipolar version and Voorhees' bag induction often do not obtain full dilatation which is the desired object in conservative delivery from below; in the last inch of dilatation lies the danger of rupture.

(4) The maternal death rate is due in half the cases to rupture of the uterus, the others are nearly all due to hemorrhage and shock (so-called but practically just hemorrhage) and sepsis. It would seem that hemorrhage could be controlled as surely by delivery from above with hysterectomy if necessary, as any other way. If bleeding occurs later the uterus could be packed. We should remember in this connection that according to one theory there is no danger of bleeding from the lower segment, ordinarily (Hofmeier), and according to another, this tendency to bleed is "produced by the dilatation of the lower uterine segment during the third stage and immediately after" (von Jaschke).

In either case, therefore, we should seldom have hemorrhage in delivery from above. It would seem that sepsis is best prevented by delivery from above and hysterectomy when the history of the case makes infection probable, especially when we remember the cardinal pathology of practically all lethal sepsis—a focus of infection in the torn cervix. It would seem that ruptured uterus, open or concealed, accounts for half the deaths, and I suspect rather more can be surely prevented by delivery from above.

(5) Maternal mortality in complete previa by any method from below is so high that some other method deserves extended trial.

(6) A very high proportion of living (not too premature) babies are lost by delivery from below. Many of these would be saved by abdominal section.

(7) Ruptured varicosities sometimes contribute to a fatal result. These would not be ruptured by section.

(8) These reported results are as good as average and better than many.

CONCLUSION

In spite of previously held opinions, and in the face of the opinions now held by those for whose obstetrical judgment I have the most regard I am forced by this study to these beliefs:

That all central and partial previas are best treated by low abdominal cesarean section, whether the baby be viable or nonviable, living or dead.

That marginal placenta previa is best treated by Voorhees' bag induction.

That moribund or very sick patients with placenta previa should be rested, bleeding controlled by necessary methods, including tight cervical and vaginal pack and pressure over and above the fundus; transfused, operated as above on pulse and pulse pressure reaction, and retransfused. It should always be the effort to ascertain as nearly as possible how much blood has been lost and to replace that amount as nearly as possible. I think direct transfusion probably better than citrated blood if time, apparatus, and knowledge of technic permit. If there is any question of these things, the simple citrate transfusion should be used immediately, since unquestionably a quick, well-done citrate transfusion is superior to a botched direct transfusion.

Further, I believe that hysterectomy following section should be frequently practiced, each case to be considered by itself on the following grounds: risk of sepsis from previous history, persistent bleeding following the section, and number of dependent children at home. If a woman has several as is usually the case, and hysterectomy seems to improve her chances, it should unhesitatingly be done.

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