ON DEATH AND DISABILITY RESULTING FROM CHILDBIRTH

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RECORDS of failures, though less frequently reported than those of successes, are perhaps more instructive. I have decided to bring before you certain facts relative to death under labour and to the more or less permanent disability resulting from labour, based on the records of cases that have been under treatment in the Montreal Maternity and in the gynæcological outdoor department of the Montreal General Hospital. For permisson to use this material I am indebted to the respective heads of these Departments, Professors Cameron and Lockhart. They, however, are in no way necessarily responsible for any of the conclusions I have drawn. By an analysis of these results I shall endeavour to determine, first, whether any of the deaths might have been prevented by different treatment of the patient; and second, in how far the early and later care of puerperal patients could be held responsible for the disabilities of which they subsequently complained.

From the opening of the new Maternity, October 17th, 1905, to October 1st, 1909, there were treated at that institution some 2,634 patients. Of these thirty-five died. It is admitted that this 1·33 per cent. unexpurgated mortality is unusually high, as indeed is shown by comparison with the records of other clinics, where the mortality varies from 2·8 per cent. (Olshausen, Berlin) to 0·56 per cent. (Von Herff, Basel). But no patient seriously ill was refused admission even post-partum, and during the entire four years no patient whose death seemed imminent was allowed to be removed from the hospital.

Without minute details the causes of death may be summarized as follows:

Eclampsia	8	
Nephritis with general anasarca	3	
Vomiting	3	
Toxæmia		14
Infection		13
Hæmorrhage		1
Placenta prævia		2

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Cardiac disease	2
Rupture of uterus	1
Pyelitis	1
Bronchitis	1
Total	35

In other words:—

Deaths from one or other form of toxæmia	40 per cent.
" from infection	37 per cent.
" from all other causes, including placenta prævia	23 per cent.

This relative frequency of the causes of death was a surprise, but on again examining the statistics of other countries and clinics I find much the same relation in Great Britain and Ireland (von Winckel, iii, 2, 380). It is interesting to note from Boxall's statistics that ·65 per cent. is the mortality rate in childbed in Ireland, and that, roughly, forty per cent. of these deaths are due to puerperal fever. In England and Wales the mortality from fever in the puerperium rose from ·18 per cent. in 1847-56 to ·228 per cent. in 1875-84, and to ·245 per cent. in 1886-95. The importance of my theme then seems justified, particularly when deaths from fever take second place to deaths from a more combatable condition, the toxæmias of pregnacy.

Let us consider first the more or less unusual causes of death, and return later to the question of toxæmia and infection.

The loss of a patient with bronchitis, who developed pneumonia on the thirteenth day postpartum and died as the result, cannot, I think, be accredited to lack of obstetric care. Moreover, pyelitis is not essentially obstetrical, and when, in that case, we had done all that seemed indicated, notably the induction of labour and the removal of the fœtus as an aggravating cause, the condition became surgical, and death may be ascribed to a surgical, rather than to an obstetrical, complication.

Rupture of the uterus, either spontaneous or traumatic, is usually evidence of absolute mismanagement. In the case here recorded, a transverse presentation, *recognized*, had been left alone in the belief that spontaneous evolution might occur; the patient was brought to the clinic with a tear extending through the uterus from the cervix to the fundus and the placenta was free in the abdominal cavity. To await spontaneous evolution signifies obstetric incompetence.

An autopsy was not obtained on either of the two patients dying of cardiac disease, and in both a clinical diagnosis of myocarditis was made, though one of the two had, as well, extensive enlargement of the

thyroid and marked tachycardia. Both died as a result of labour, and neither was under treatment immediately prior to the onset of labour. Apart from these two, the hospital records show some forty cases carried through pregnancy and labour in spite of advanced cardiac disease, and we have lost no such cases where the patient came under observation with, or before, the first evidence of loss of compensation. This conservative handling of the patients with heart disease and the excellent results of treatment have already been the subject of an extensive review by Professor Cameron.

The two cases of placenta prævia died, one from thrombosis on the tenth day of an otherwise uneventful puerperium, and the other immediately after delivery, when, in addition to the placental condition, a concealed hæmorrhage—a clot weighing over 1,000 grms.—was made evident. The latter patient entered *in extremis*, but it is likely that as satisfactory, if not a more satisfactory, result would have been obtained by infusing the patient and attending to her general condition before attempting delivery. The first of these two shows the importance of care in handling this class of case, as the bacteria normally in the vagina, though unimportant in the consideration of general uterine infections, may be responsible for the extensive propagation of thrombi at the placental site, which must in any case be a source of danger on account of the thinness of the lower uterine segment. The danger from hæmorrhage, while grave, is subject to control by tight packing. Of the management of placenta prævia I am not, in the light of some ten or eleven cases, competent to give advice. I have, however, learned that the grave danger is infection, that the life of the child is negligible, and that the chief danger lies in the extensive tears resulting from delivery on account of the condition of the lower segment of the uterus. All of which suggests the value of simple rupture of the membranes in cases other than that fortunately extremely rare condition, *central* placenta prævia.

Hæmorrhage

Postpartum hæmorrhage should not appear as a cause of death under labour, and depends very largely on the care and conduct of the third stage; for if the placenta comes away entire, and there is no extrinsic obstruction to the contraction of the uterus, there will be no hæmorrhage. Atony of the uterus should have gone with milk fever. True, there are certain cases where the uterus, too rapidly emptied, has not acquired the habit of contraction; yet, in the majority of cases, the failure to contract will be found to be either in a full bladder or rectum, or in retention within the uterus of some portion of the placenta, or of clots. The placenta under ordinary circumstances is ready for expres-

sion within half an hour after the completion of the labour, and I have never seen good come from waiting longer than this before attempting its expression, a manipulation with which every obstetrician should be familiar. It is well to remember that a curettage prior to the pregnancy may seriously modify the manner of attachment of the placenta, and that, where such an operation has been undertaken, it is more than likely that the placenta may have to be removed manually. However, if the placenta comes away intact and there is bleeding, obviously not due to some laceration of the perineum or cervix, the first thing to do is to make sure that the bladder is empty. A full bladder holds the uterus up and back, and prevents an automatic shutting off of its cavity. If the uterus remains soft, squeeze out the clots, and the mechanical irritation may be sufficient to keep the uterus contracted. Ergot administered by the mouth is slow to act, and when given hypodermically the drug seems to have such a strong effect upon the muscle that within a few minutes the relaxation may be even greater than before its administration. When given hypodermically, deep into the muscle, (it should never be given subcutaneously), administration by mouth at the same time is advisable.

Much has been written about the value of the hot douche. I have never seen a hot douche do any good in the control of hæmorrhage, and carelessly prepared and carelessly given it is far more apt to do harm. A sterilized bandage, which takes but little room in an obstetric bag, makes an excellent pack, either for the uterus or for the vagina, and is one of the safest and surest methods of controlling hæmorrhage otherwise intractable. The new device, suggested by a German surgeon, Momberg, is also of the utmost value in emergency cases. A rubber tube is tied about the body about the level of the umbilicus, compressing the abdominal aorta. This measure, while under ordinary circumstances safe, has occasionally given rise to serious results and should be reserved for rare cases of sudden, severe, uncontrollable hæmorrhage and then used without the slightest hesitancy. The tube should be drawn very tight and should compress the abdominal aorta till the pulse in the femoral artery is occluded. When this has been done, the uterus will be found to be more or less in tetanic contraction, and this contraction will persist so long as the ligature is left in place.

It is worthy of note that postpartum hæmorrhage is entirely relative, that is, one patient may suffer more from the loss of 300 c.c. of blood than would another patient from the loss of four times that quantity. The average blood loss in an ordinary labour is about 350 c.c., or 12 ounces. This loss does no harm, and is, I believe, of value in douching out the vagina after the completion of labour.

Infection

Of thirteen cases dying as the result of infection, seven came to the hospital after treatment outside; four had been delivered; two partially delivered; and one, a placenta prævia, had been repeatedly examined. Another case with a streptococcus, sore throat died of peritonitis within a few hours of delivery, and the child likewise died of streptococcus septicæmia. One case of Cæsarean section died after operation, as did also one case upon which pubiotomy was done. In both of these last there was evidently some fault in technique, such as is apt to occur with a major operation. For the three remaining cases there is no possible excuse. Two of the patients were delivered spontaneously and one by a low forceps operation, all within two weeks of one another. Now, while these three are but a small percentage of the cases with fever, a still smaller percentage of the total of cases delivered, they are important, occurring as they did together, and as being the only three deaths from fever among our own cases in the hospital.

From the cases that have been admitted partially delivered or delivered, and have died of fever, we have been able to draw some conclusions as to the reason of our own relative freedom from severe infections. It is to be found in the preliminary care of the patient and the care with which internal examinations are made. None of the patients admitted, who died later, had had sufficient preparation of the vulva prior to vaginal examination or operation, while in one or two cases, at least, reliance had been placed upon a preliminary vaginal douche. In the Maternity we have tried to be scrupulously careful about the cleansing of the vulva after shaving with a safety razor, and under no circumstances has a vaginal douche been used ante partum, even where profuse vaginal secretion was present due to the gonococcus. In these gonorrhæal cases the only special care was to *avoid* vaginal examination with the possibility of carrying the infection into the cervix. The result has been that a large number of cases with acute gonorrhœa in pregnancy have been delivered without any ill effect, solely on account of the conservative manner in which they had been handled. Krönig of Freiberg, possibly the leading gynæcologist and obstetrician of Germany to-day, has gone so far as to suggest that no cleansing of the vulva should be undertaken in the management of the labour, because, as he says, nothing short of shaving the vulva and disinfecting as for a major operation, can be satisfactory. He substitutes for vaginal examination a rectal examination. Either of his suggestions are worthy of consideration. For my own part, it is with extreme rarity that I make a vaginal examination, relying for the diagnosis on external

palpation and rectal examination to determine the amount of dilatation of the cervix.

Where an operation is necessary, the shaving and disinfection of the vulva allows the introduction of the hand into the vagina with absolute security. In the Maternity where all the patients are shaved alike for vaginal examination and for operation, the operative cases show a lower percentage of morbidity than do ordinary normal cases; that is to say, the morbidity varies with the technique of the vaginal examination, which differs in the two classes of cases only in the application of permanganate of potash and oxalic acid to the vulva of those under an anæsthetic.

Toxæmia

It is difficult to fix a definite classification of the toxæmias, particularly of the eclamptics; for a patient with nephritis, who develops convulsions, or becomes comatose, may be indexed either as eclamptic or uræmic. Eight deaths from eclampsia would suggest a high mortality, yet in forty cases of undoubted eclampsia that passed through my hands, there were but four deaths, ten per cent., and two of the deaths were from causes apart from the eclampsia. The cases of nephritis and pernicious vomiting, which are more readily classified, show a mortality of ten and twenty-three per cent. respectively, inasmuch as there were thirty more or less severe cases of nephritis with three deaths and thirteen cases of vomiting with three deaths. In other words, pernicious vomiting and severe nephritis were as fatal to the pregnant woman as was eclampsia, which we have always considered as one of her gravest dangers.

There are valuable lessons to be gained from these fatal cases of toxæmia. Of the deaths classed as due to eclampsia, one was that of a postpartum eclamptic who entered in coma and died practically before any treatment could be instituted; a second was that of a patient who died of cerebral thrombosis long after the symptoms of eclampsia had disappeared. The remaining six were alike in the respect that all were treated more or less symptomatically before they were delivered. *No patient that was delivered immediately after the first convulsion died of eclampsia.*

Of the cases of nephritis one with œdema of the lungs died immediately after delivery, though labour had been induced upon her admission to the hospital. The two others rallied for a time after delivery, then changed for the worse about the eighth day, at a time when the serious danger seemed past.

Of three deaths due to toxæmia with vomiting, one occurred after

abortion at three and a half months, but the other two were of patients who had been carried through pregnancy in spite of the vomiting and who died after the strain of labour.

I think it may be admitted that mortality can be lessened—

1. By the immediate delivery of eclamptics.

2. By the timely interference in all cases of albuminuria with evidence of renal insufficiency.

3. By the realization that vomiting, when persistent, is a grave sign and that a child carried to term in a patient with severe toxæmia lives at the expense of the mother's life.

The frequently toxæmic character of early vomiting should always indicate care in its observation; later the quantity of urine is as important as its physical characteristics. Two counsels for pregnant women are, "drink plenty of water," and "keep the bowels regular." In case of doubt, with even slight symptoms, valuable information of the renal condition may be gained by putting the patient to bed on a fluid diet, which should be carefully measured, then, carefully tabulating the output of urine and fluid stools, a comparison of the two totals will give an index to the gravity of the condition.

In all cases of toxæmia the coagulability of the blood is an important factor, and milk, on account of its high calcium contents, should, I believe, be avoided.

Short of actual delivery, blood letting is the best of all therapeutic measures, but in cases of doubt labour should be promptly induced by some modification of Krause's method.

There is no branch of medicine that is so insufficiently taught or so badly practised as obstetrics; and it is safe to say that in spite of the mortality records I have quoted, eighty per cent. of all women approach their first labour without a preliminary examination, and that the casual and occasional examination of a small quantity of urine is of little value. Are there not too many of us in the class of the practitioner who, on being asked what fee he obtained for a confinement, replied: "An ordinary case five dollars, a little sepsis ten dollars, a little more sepsis fifteen dollars"?

With reference to the disabilities incident to labour, I have noted during the four months, January-May, 1910, the condition of the new patients that have applied for treatment in the gynæcological outdoor department of the Montreal General Hospital. During that time there have been some 130 new cases, of whom ninety-six had borne children. Of these, five were without definite physical signs, and eleven came for a diagnosis of early pregnancy, or for some trouble connected with early pregnancy. Of the remaining eighty, sixty showed evidenec that a

previous labour had more or less to do with their present condition. That is, there were as underlying causes:

Laceration of the cervix with leucorrhœa	15
Prolapse of uterus, long standing	9
Retroversion with pressure symptoms	8
Retroversion with prolapse (moderate)	6
Parametritis	6
Subinvolution	5
Obstinate constipation following labour	5
Irregular hæmorrhages	3
Cystitis	3

Obviously the cause of these disabilities must be sought, (a) in the persistent relaxation of the vaginal outlet, (b) in the non-healing of cervical lacerations, and, (c) in some factor tending to backward displacement of the uterus after labour.

For the laceration of the cervix the explanation is probably easiest. Under ordinary circumstances, if the labour progresses naturally there will not be extensive laceration of the cervix. But it is not the habit of the majority of practitioners to allow labour to progress naturally. The dictum, that "the forceps is only to be applied when the cervix is fully dilated," is unknown to the majority of practitioners who have little or no compunction about dragging a head through a cervix but half dilated. Not only is this the case, but an old idea that the laceration of the cervix should be left unrepaired on account of the danger of infection, still holds its place in the minds of a great number of practitioners, and, possibly, with the technique usually employed, rightly so. Yet, if we are to hope for fewer postpartum complications, we must bear in mind two rules; first, that "the forceps must not be applied till the cervix is fully dilated," and secondly, that an "extensive laceration of the cervix should be repaired even as a laceration of the perinæum."

Laceration of the perinæum is probably more important than laceration of the cervix, since, where treatment is not radical but conservative, the patient may be allowed to go for a long time without the assistance of a forceps in the hope that the labour may progress naturally, for the majority of practising physicians still believe that a laceration of the perinæum is unnatural. Indeed, it is not so long since that we had with us the practitioner who *never* had a laceration of the perinæum in a confinement case; and he may be here still. Such a man either is incapable of appreciating what a laceration of the perinæum means, or it has been his good fortune not to have been called to a patient with

that narrowing of the pelvic outlet which occurs in about one in ten of all patients that come for confinement. It is time to realize that the laceration of the perinæum depends more or less on mechanical factors and not upon the care given to the patient. Indeed, under certain circumstances, it may be advisable to anticipate the possibility of a tear and incise the perinæum before allowing the birth of the head. An incision in a perinæum that obviously must tear with the birth of the head gives a wound easy to repair, which rarely extends far up into the vagina. The principles of the perinæal repair are, to "take a wide bite" on each side of the wound, to "go as deeply as possible into the surrounding tissues," and to "tie the sutures very loosely." The idea is to splint the tissues rather than tie them together. If these three principles are borne in mind the most inexperienced will be surprised at the satisfactory results achieved.

While the laceration of the cervix and the laceration of the perinæum may account for a certain number of the conditions noted above, one further feature in the general management of cases postpartum seems to be accountable for much later distress. This is the custom of tightly bandaging the patient immediately after delivery, and leaving her in such a condition that she is comfortable only when lying flat upon the back. This procedure has, I believe, three distinct disadvantages. In the first place, it absolutely opposes any involution of the round ligaments, which would tend to draw the uterus forward; it prevents the falling forward of the uterus upon the bladder, with the consequent tendency to spontaneous micturition; and, finally, tends permanently to hold the uterus back, so that the anterior lip of the cervix is drawn forcibly from the more or less fixed posterior lip, and laceration, if present, is prevented from healing by the formation of scar tissue in the angle of the wound. Not only does this permanent opening of the cervix cause discomfort later, but it is usually associated with a permanent, backward displacement of the uterus.

Opposed to these three marked disadvantages of the binder, there is, I am sure, no definite advantage to be claimed for its use. True, it has been urged that the figure of the patient has been preserved by its use,—an idea exploded some hundred and fifty years ago by a not unknown Frenchman named Mauriceau,—and the fallacy is obvious to any one who would consider for a moment the value of splinting muscles, say in the arm or the leg, as opposed to allowing them free use. Moreover, the loss of the figure as a result of pregnancy or labour is not dependent upon the handling of the puerperium. While, on the one hand, it is necessary that the cervix should be dilated before the application of forceps, we should remember that trouble post-

partum is frequently a result of too long a delay in the second stage, which so over-taxes the abdominal muscles that the recti are pulled apart, and the patient can never regain her former condition.

The most universally accepted argument in favour of that much discussed question—early rising in the puerperium—was its marked effect in decreasing the number of cases of retro-version; in a series of cases prepared some years ago, I found that retro-version, postpartum, in the bandaged cases was six times as frequent as where the binder had not been used.

Cystitis, though comparatively infrequent, may occur postpartum, and is then due to frequent, and possibly careless, catheterization. I have noted that the bladder is mechanically hindered from emptying itself by the application of the binder. Where a binder is not used the distension of the bladder is made evident in its effect upon the position of the fundus of the uterus, and the quantity of urine in the bladder gauged roughly by the displacement of the fundus—1 cm. corresponding to 100 c.c. Further, if the patient is catheterized immediately after the completion of labour, the chances of voiding spontaneously are greater than if she is left alone, and for this reason: no matter how carefully the perinæum is guarded small lacerations will occur about the vestibule. These, if left to themselves, heal spontaneously in the course of a few hours; but, if within a short time after the labour the patient voids, and the urine trickles over the abrasions, the consequent irritation is sufficient to cause retention, and should catheterization be necessary the manipulation for this operation prevents the healing of these wounds. If the patient's bladder is emptied immediately after the completion of labour, it is possible to wait twelve, or even fourteen, hours, during which time the patient may sleep comfortably without fear of over-distension; nor do I recall any case where the catheter was required later, when this had been done. Where catheterization is necessary, the value of large doses of urotropin, postpartum, and also the administration of large quantities of water as an inducement to spontaneous micturition, is undoubted.

I would not have you think that I hold the abdominal binder responsible for all the ills resulting from the management of the puerperium, but I do believe that it is a most important factor in its influence on the adverse conditions resulting from the labour, that it serves no good purpose, that where it is not used it is possible to obtain a better idea of the involution of the uterus and of the condition of the bladder, and that its absence allows freedom of movement by the patient with a resultant improvement in the condition of the abdominal muscles. Remember that it is as important to avoid over-stretching of the

abdominal muscles by a too long second stage, as, on the other hand, it is wrong to undertake operation before the cervix is fully dilated; and, finally, while it has ceased to be a disgrace to allow a laceration of the perinæum, now the disgrace is to allow such a laceration to go unrepaired.

Care in the puerperium will avoid many disabilities, and care at the time of the labour will avoid many deaths. Deaths from hæmorrhage and deaths from infection vary with the experience of the practitioner. The frequency of the deaths from toxæmia vary with the attention given to the patient during pregnancy and to the realization of the many obvious danger signs.