ergot, sulphate of iron, and small doses of sulphate of magnesia will prove very serviceable. This is more likely to be effectual when the bleeding is of an atonic and passive character. McClintock speaks strongly in favor of the application of a blister over the sacrum. When the hemorrhage is excessive, more effectual local treatment will be required. Cazeaux advises plugging of the vagina. Although this cannot be considered so dangerous as immediately after delivery, inasmuch as the uterus is not so likely to dilate above the plug, still it is certainly not entirely without risk of favoring concealed internal hemorrhage. If it be used at all, the uterine cavity should be plugged with iodoform gauze as well as the vagina, and a firm abdominal pad should be applied, so as to compress the uterus; and the abdomen should be examined from time to time, to insure against the possibility of uterine dilatation. With these precautions the plug may prove of real value. In any case of really alarming hemorrhage I should be disposed rather to trust to the application of styptics to the uterine cavity. The injection of fluid in bulk, as after delivery, could not be safely practised, on account of the closure of the os and the contraction of the uterus. But there can be no objection to swabbing out the uterine cavity with a small piece of sponge attached to a handle, and saturated with tincture of iodine or with a solution of the perchloride of iron. There are few cases which will resist this treatment.

If we have reason to suspect retained placenta or membranes, or if the hemorrhage continue or recur after treatment, a careful exploration of the interior of the womb will be essential. On vaginal examination, we may possibly feel a portion of the placenta protruding through the os, which can then be removed without difficulty. If the os be closed it must be dilated with Hegar's dilators, and the uterus can then be thoroughly explored. This ought to be done under chloroform, as it cannot be effectually accomplished without introducing the whole hand into the vagina, which necessarily causes much pain. If the placenta or membranes be loose in the uterine cavity, they may be removed at once; or if they be organically attached, they may be carefully picked off. The uterus should at the same time, as long as the os remains patulous, be thoroughly washed out with creolin and water, or with a 1 in 2000 solution of perchloride of mercury, to diminish the risk of sapræmia.

Retroflexion can readily be detected by vaginal examination, and the treatment consists in careful reposition with the hand, and the application of a large-sized Hodge's pessary.

CHAPTER XVI.

RUPTURE OF THE UTERUS, ETC.

Rupture of the uterus is one of the most dangerous accidents of labor, and until of late years it has been considered almost necessarily fatal and beyond the reach of treatment. Fortunately it is not of very frequent occurrence, although the published statistics vary so much that it is by no means easy to arrive at any conclusion on this point. The explanation is, no doubt, that many of the tables confound partial and comparatively unimportant lacerations of the cervix and vagina with rupture of the body and fundus. It is only in large lying-in institutions, where the results of cases are accurately recorded, that anything like reliable statistics can be gathered, for in private practice the occurrence of so lamentable an accident is likely to remain unpublished. To show the difference between the figures given by authorities, it may be stated that, while Burns calculates the proportion to be 1 in 940 labors, Ingleby fixes it as 1 in 1300 or 1400, Churchill as 1 in 1331, and Lehmann as 1 in 2433. Dr. Jolly, of Paris, has published an excellent thesis containing much valuable information.[1] He finds that out of 782,741 labors, 230 ruptures, excluding those of the vagina or cervix, occurred—that is, 1 in 3403.

Lacerations may occur in any part of the uterus—the fundus, the body, or the cervix. Those of the cervix are comparatively of small consequence, and occur, to a slight extent, in almost all first labors. Only those which involve the supra-vaginal portion are of really serious import. Ruptures of the upper part of the uterus are much less frequent than of the portion near the cervix; partly, no doubt, because the fundus is beyond the reach of the mechanical causes to which the accident can not unfrequently be traced, and partly because the lower third of the organ is apt to be compressed between the presenting part and the bony pelvis. The site of placental insertion is said by Madame La Chapelle to be rarely involved in the rupture, but it does not always escape, as numerous recorded cases prove. The most frequent seat of rupture is near the junction of the body and neck, either anteriorly or posteriorly, opposite the sacrum, or behind the symphysis pubis; but it may occur at the sides of the lower segment of the uterus. In some cases the entire cervix has been torn away, and separated in the form of a ring.

The laceration may be partial or complete, the latter being the more common. The muscular tissue alone may be torn, the peritoneal coat remaining intact; or the converse may occur, and then the peritoneum is often fissured in various directions, the muscular coat being unim-

[1] Rupture Utérine pendant le Travail, Paris, 1878.

plicated. The extent of the injury is very variable, in some cases being only a slight tear, in others forming a large aperture, sufficiently extensive to allow the fœtus to pass into the abdominal cavity. The direction of the laceration is as variable as the size, but it is more frequently vertical than transverse or oblique. The edges of the tear are irregular and jagged; probably on account of the contraction of the muscular fibres, which are frequently softened, infiltrated with blood, and even gangrenous. Large quantities of extravasated blood will be found in the peritoneal cavity; such hemorrhage, indeed, being one of the most important sources of danger.

Causes.—The causes are divided into *predisposing* and *exciting;* and the progress of modern research tends more and more to the conclusion that the cause which leads to the laceration could only have operated because the tissue of the uterus was in a state predisposed to rupture, and that it would have had no such effect on a perfectly healthy organ. What these predisposing changes are, and how they operate, is yet far from being known, and the subject offers a fruitful field for pathological investigation.

It is generally believed that lacerations are more common in multiparæ than in primiparæ. Tyler Smith contended that ruptures are relatively as common in first as in subsequent labors, while Bandl[1] found that only 64 cases out of 546 ruptures were in primiparæ. Statistics are not sufficiently accurate or extensive to justify a positive conclusion, but it is reasonable to suppose that the pathological changes presently to be mentioned as predisposing to laceration are more likely to be met with in women whose uteri have frequently undergone the alteration attendant on repeated pregnancies. Age seems to have considerable influence, as a large proportion of cases have occurred in women between thirty and forty years of age.

Alterations in the tissues of the uterus are probably of very great importance in predisposing to the accident, although our information on this point is far from accurate. Among these are morbid states of the muscular fibres, the result of blows and contusions during pregnancy; premature fatty degeneration of the muscular tissues, n anticipation, as it were, of the normal involution after delivery; fibroid tumors or malignant infiltration of the uterine walls, which either produce a morbid state of the tissues, or act as an impediment to the expulsion of the fœtus. The importance of such changes has been specially dwelt on by Murphy in England and by Lehmann in Germany, and it is impossible not to concede their probable influence in favoring laceration. However, as yet these views are founded more on reasonable hypothesis than on accurately observed pathological facts.

Another and very important class of predisposing causes are those which lead to a want of proper proportion between the pelvis and the fœtus.

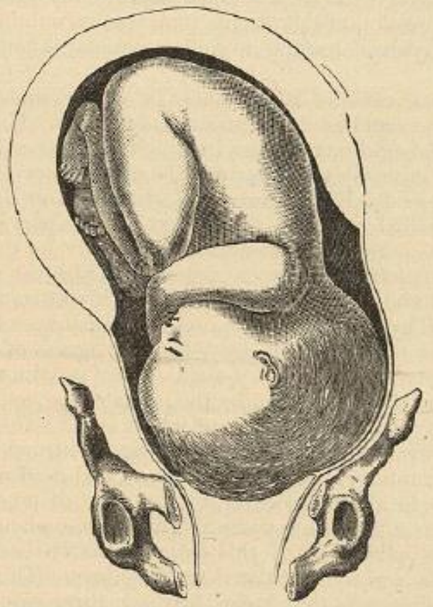
Deformity of the pelvis has been very frequently met with in cases in which the uterus has ruptured. Thus out of 19 cases carefully recorded by Radford,[2] the pelvis was contracted in 11, or more than

[1] Ueber Ruptur der Gebärmutter. Wien, 1815.

[2] Obst. Trans., 1867, vol. viii. p. 150.

one-half. Radford makes the curious observation that ruptures seem more likely to occur when the deformity is only slight, and he explains this by supposing that in slight deformities the lower segment of the uterus engages in the brim, and is, therefore, much subjected to compression; while in extreme deformity the os and cervix uteri remain above the brim, the body and fundus of the uteri hanging down between the thighs of the mother. This explanation is reasonable; but the rarity with which ruptured uterus is associated with extreme pelvic deformity may rather depend on the infrequency of advanced degrees of contraction.

Fig. 154.



Illustrating the dangerous thinning of the lower segment of the uterus owing to non-descent of the head in a case of intra-uterine hydrocephalus (After Bandl.)

Bandl, who has made the most important of modern contributions to our knowledge of the subject, points out that rupture nearly always begins in the lower segment of the uterus, which becomes abnormally stretched and distended when from any cause the expulsion of the fœtus is delayed. The upper portion of the uterus becomes, at the same time, retracted and much thickened (see Fig. 154). As the pains continue, the stretching of the lower segment, called by Spiegelberg the "obstetrical cervix," becomes more and more marked, until at last its fibres separate and a laceration is established. The line of demarcation between the thickened body and the distended lower segment, known as the ring of Bandl, can, in such cases, be occasionally made out by palpation above the pubes.

Amongst the causes of disproportion depending on the fœtus are either malpresentation, in which the pains cannot effect expulsion, or undue size of the presenting part. In the latter way may be explained the observation that rupture is more frequently met with in the delivery of male than of female children, on account, no doubt, of the larger size of the head in the former. The influence of intra-uterine hydrocephalus was first prominently pointed out by Sir James Simpson,[1] who states that out of seventy-four cases of intra-uterine hydrocephalus the uterus ruptured in sixteen. In all such cases of disproportion, whether referable to the pelvis or fœtus, rupture is produced in a twofold manner—either by the excessive and fruitless uterine contractions, which are induced by the efforts of the organ to overcome the obstacle; or by the compression of the uterine tissue between the presenting part and the bony pelvis, leading to inflammation, softening, and even gangrene.

The proximate cause of rupture may be classed under two heads—mechanical injury and excessive uterine contraction. Under the former are placed those uncommon cases in which the uterus lacerates as the result of some injury in the latter months of pregnancy, such as blows, falls, and the like. Not so rare, unfortunately, are lacerations produced by unskilled attempts at delivery on the part of the medical attendant, such as by the hand during turning, or by the blades of the forceps. Many such cases are on record, in which the accoucheur has used force and violence, rather than skill, in his attempts to overcome an obstacle. That such unhappy results of ignorance are not so uncommon as they ought to be is proved by the figures of Jolly, who has collected seventy-one cases of rupture during podalic version, thirty-seven caused by the forceps, ten by the cephalotribe, and thirty during other operations the precise nature of which is not stated.[2] The *modus operandi* of protracted and ineffectual uterine contractions, as a proximate cause of rupture, is sufficiently evident, and need not be dwelt on. It is necessary to allude, however, to the effect of ergot, incautiously administered, as a producing cause. There is abundant evidence that the injudicious exhibition of this drug has often been followed by laceration of the unduly stimulated uterine fibres. Thus, Trask, talking of the subject, says that Meigs had seen three cases, and Bedford four, distinctly traceable to this cause. Jolly found that ergot had been administered largely in thirty-three cases in which rupture occurred.

Premonitory Symptoms.—Some have believed that the impending occurrence of rupture could frequently be ascertained by peculiar premonitory symptoms, such as excessive and acute crampy pains about the lower part of the abdomen, due to the compression of part of the uterine walls. These are far too indefinite to be relied on, and it is certain that the rupture generally takes place without any symptoms that would have afforded reasonable grounds for suspicion.

General Symptoms.—The symptoms are often so distinct and alarming as to leave no doubt as to the nature of the case. Not infre-

[1] Selected Obst. Works, p. 385.

[2] Op. cit., p. 38.

quently, however, especially if the laceration be partial, they are by no means so well marked, and the practitioner may be uncertain as to what has taken place. In the former class of cases a sudden excruciating pain is experienced in the abdomen, generally during the uterine contractions, accompanied by a feeling, on the part of the patient, of something having given way. In some cases this has been accompanied by an audible sound, which has been noticed by the bystanders. At the same time there is generally a considerable escape of blood from the vagina, and a prominent symptom is the sudden cessation of the previously strong pains. Alarming general symptoms soon develop, partly due to shock, partly to loss of blood, both external and internal. The face exhibits the greatest suffering, the skin becomes deadly cold and covered with a clammy sweat, and fainting, collapse, rapid feeble pulse, hurried breathing, vomiting, and all the usual signs of extreme exhaustion quickly follow.

Abdominal palpation and vaginal examination both afford characteristic indications in well-marked cases. If the child, as often happens, has escaped entirely, or in great part, into the abdominal cavity, it may be readily felt through the abdominal walls; while in the former case, the partially contracted uterus may be found separate from it in the form of a globular tumor, resembling the uterus after delivery. *Per vaginam* it may generally be ascertained that the presenting part has suddenly receded, and can no longer be made out, or some other part of the fœtus may be found in its place. If the rupture be extensive, it may be appreciable on vaginal examination, and, sometimes, a loop of intestine may be found protruding through the tear. Other occasional signs have been recorded, such as an emphysematous state of the lower part of the abdomen, resulting from the entrance of air into the cellular tissue; or the formation of a sanguineous tumor in the hypogastrium or vagina. These are too uncommon and too vague to be of much diagnostic value.

Unfortunately, the symptoms are by no means always so distinct, and cases occur in which most of the reliable indications, such as the sudden cessation of the pains, the external hemorrhage, and the retrocession of the presenting part, may be absent. In some cases, indeed, the symptoms have been so obscure that the real nature of the case has only been detected after death. It is rarely, however, that the occurrence of shock and prostration is not sufficiently distinct to arouse suspicion, even in the absence of the usual marked signs. In not a few cases distinct and regular contractions have gone on after laceration, and the child has even been born in the usual way. Of course, in such a case mistake is very possible. So curious a circumstance is difficult of explanation. The most probable way of accounting for it is, that the laceration has not implicated the fundus of the uterus, which contracted sufficiently energetically to expel the fœtus. Hence it will be seen that the symptoms are occasionally obscure, and the practitioner must be careful not to overlook the occurrence of so serious an accident because of the absence of the usual and characteristic symptoms.

Prognosis.—The prognosis is necessarily of the gravest possible

character, but modern views as to treatment perhaps justify us in saying that it is not so absolutely hopeless as has been generally taught in our obstetric works. When we reflect on what has occurred—the profound nervous shock; the profuse hemorrhage, both external and, especially, into the peritoneal cavity, where the blood coagulates and forms a foreign body; the passage of the uterine contents into the abdomen, with the inevitable result of inflammation and its consequences, if the patient survive the primary shock—the enormous fatality need cause no surprise. Jolly has found that out of 580 cases 100 recovered—that is, in the proportion of 1 out of 6. This is a far more favorable result than we are generally led to anticipate; and as many of the recoveries happened in apparently the most desperate and unfavorable cases, we should learn the lesson that we need not abandon all hope, and should at least endeavor to rescue the patient from the terrible dangers to which she is exposed.

As regards the child, the prognosis is almost necessarily fatal; and, indeed, the cessation of the fœtal heart-sounds has been pointed out by McClintock as a sign of rupture in doubtful cases. The shock, the profuse hemorrhage, and the time that must necessarily elapse before the delivery of the child, are of themselves quite sufficient to explain the fact that the fœtus is almost always dead.

Treatment.—From what has been said of the impossibility of foretelling the occurrence of rupture, it must follow that no reliable prophylactic treatment can be adopted beyond that which is a matter of general obstetric principle, viz., timely interference when the uterine contractions seem incapable of overcoming an obstacle to delivery, either on the part of the pelvis or fœtus.

After rupture the main indications are to effect the removal of the child and the placenta, to rally the patient from the effects of the shock, and, if she survive so long, to combat the subsequent inflammation and its consequences. By far the most important point to decide is the best means to be adopted for the removal of the child; for it is admitted by all that the hopeless expectancy that was recommended by the older accoucheurs, or, in other words, allowing the patient to die without making any effort to save her, is quite inadmissible. If the fœtus be entirely within the uterine cavity, no doubt the proper course to pursue is to deliver at once *per vias naturales*, either by turning, by forceps, or by cephalotripsy. If any part other than the head present, turning will be best, great care being taken to avoid further increase of the laceration. If the head be in the cavity or at the brim of the pelvis, and within easy reach of the forceps, it may be cautiously applied, the child being steadied by abdominal pressure so as to facilitate its application. If there be, as is often the case, some slight amount of pelvic contraction, it may be preferable to perforate and apply the cephalotribe, so as to avoid any forcible attempts at extraction, which might unduly exhaust the already prostrate patient and turn the scale against her. This will be the more allowable, since the child is, as we have seen, almost always dead, and we might readily ascertain if it be so by auscultation.

After delivery extreme care must be taken in removing the placenta,

and for this it will be necessary to introduce the hand. The placenta will generally be in the uterus, for if the rent be not large enough for the child to pass through, it may be inferred that the placenta will not have done so either. If it has escaped from the uterus, very gentle traction on the cord may bring it within reach of the hand, and so the passage of the hand through the tear to search for it will be avoided; but, in all cases of this kind, there must have been a very considerable escape of blood into the uterine cavity, and abdominal section will probably give the patient a better chance of recovery.

There can be but little doubt that, in the cases indicated, such is the proper treatment, and that which affords the mother the best chance. Unfortunately, the cases in which the child remains entirely *in utero* are comparatively uncommon, and generally it will have escaped into the abdomen, along with much extravasated blood. The usual plan of treatment recommended under such circumstances is to pass the hand through the fissure (some have even recommended that it should be enlarged by incision if necessary), to seize the feet of the fœtus, to drag it back through the torn uterus, and then to reintroduce the hand to search for and remove the placenta. Imagine what occurs during the process. The hand gropes blindly among the abdominal viscera, the forcible dragging back of the fœtus necessarily tears the uterus more and more, and, above all, the extravasated blood remains as a foreign body in the peritoneal cavity, and necessarily gives rise to the most serious consequences. It is surely hardly a matter of surprise that there is scarcely a single case on record of recovery after this procedure.

Of late years a strong feeling has existed that, whenever the child has entirely, or in great part escaped into the abdominal cavity, the operation of cœliotomy affords the mother a far better chance of recovery; and it has now been performed in many cases with the most encouraging results. It is easy to see why the prospects of success are greater. The uterus being already torn, and the peritoneum opened, the only additional danger is the incision of the abdominal parietes, which gives us the opportunity of washing out the peritoneal cavity and of removing all the extravasated blood, the retention of which so seriously adds to the dangers of the case, as well as closing the rents in the uterus, if it be within reach, with both deep and superficial sutures, as in the improved Cæsarean section. Another advantage is that, if the patient be excessively prostrate, the operation may be delayed until she has somewhat rallied from the effects of the shock, whereas delivery by the feet is generally resorted to as soon as the rupture is recognized, and when the patient is in the worst possible condition for interference of any kind.

Jolly has carefully tabulated the results of the various methods of treatment, and, making every allowance for the unavoidable errors of statistics, it seems beyond all question that the results of cœliotomy are so greatly superior to those of other plans that I think its adoption may be fairly laid down as a rule whenever the fœtus is no longer wholly within the uterine cavity.

COMPARATIVE RESULTS OF VARIOUS METHODS OF TREATMENT AFTER RUPTURE OF UTERUS.

Treatment.	No. of cases.	Deaths.	Recoveries.	Per cent. of recoveries.
Expectation	144	142	2	1.45
Extraction *per vias naturales*	382	310	72	19
Cœliotomy	38	12	26	68.4

Of course, this table will not justify the conclusion that 68 per cent. of the cases of ruptured uterus in which cœliotomy is performed will recover; but it may fairly be taken as proving that the chances of recovery are at least three or four times as great as when the more usual practice is adopted.[1]

Porro's operation has been suggested instead of simple cœliotomy. In seven cases tabulated by Godson, in which this operation was performed after rupture of the uterus, the mothers all died;[2] but this does not prove that this plan, which adds little to the dangers of the case, should not be adopted. It has, at least, the advantage of effectually preventing the possibility of the recurrence of rupture in a future pregnancy.

[Supra-vaginal hysterectomy, unless preceded by a true Cæsarean section, has no right or title to the name of "Porro," any more than the same operation for a uterine fibroma has. The method has two very serious objections to its performance: 1, it is generally fatal in its results; 2, we have no right to unsex a well-formed woman because she has had the misfortune to rupture her uterus, when a better result may be attained by carefully suturing the laceration.—ED.]

Lacerations of the cervix are of very common occurrence. Occasionally, after delivery, they may cause hemorrhage, when the uterus itself is firmly contracted; or secondary hemorrhage during the puerperal month. As a rule they are not recognized, and it is only of late years, and chiefly owing to the labors of Emmet, that their important influence in producing various chronic forms of uterine disease has been realized. In the large majority of cases the lacerations are lateral, either on one or both sides of the cervix. If they give rise to hemorrhage, the local application of styptics is probably the best resource. Whether it is advisable to treat severe forms by the immediate application of silver sutures, as recommended by Pallen,[3] is a subject as yet too little understood to justify the expression of an opinion.

[1] *American Puerperal Celiotomies.*—After a search of several years, I have thus far collected forty cases in the United States, with twenty-one women and two children saved. One mother and child were saved by an immediate operation with a pocket-knife, in 1869. I presume that a general record of American operations published and unpublished would show a saving of about 50 per cent., which is much lower than that claimed by Trask and Jolly, collected from published reports, and less than I thought myself a year ago. Take Trask's foreign cases, twenty, and our own forty, and we have native and foreign, sixty, with thirty-seven recoveries and twenty-three deaths. I look upon our own statistics as much more reliable, because many of the unpublished cases were searched out by correspondence.—Harris's note to last American edition.

[2] A successful case has recently been reported by Professor Slavjansky, of St. Petersburg.

[3] Transactions of the Intern. Med. Congress, vol. iv.

It is, perhaps, needless to say that the operation must be performed with the same minute care that has raised ovariotomy to its present pitch of perfection, and that special attention must be paid to the washing out of the peritoneum, the removal of foreign matters, and to the careful suturing of the uterine wound, whenever that is practicable.

Recapitulation.—To recapitulate, I think what has been said justifies the following rules of treatment after rupture:

1. If the head or presenting part be above the brim, and the fœtus still *in utero*—forceps, turning, or cephalotripsy according to circumstances.
2. If the head be in the pelvic cavity—forceps or cephalotripsy.
3. If the fœtus have wholly, or in great part, escaped into the abdominal cavity—cœliotomy.

As to the subsequent treatment, little need be said, since in this we must be guided by general principles. The chief indication will be to remove shock, to rally the patient by stimulants, etc., and to combat secondary results by opiates and other appropriate remedies.

Drainage has been recommended in cases in which cœliotomy has not been resorted to, and the results are said to have been good. Mann[1] advises that a large piece of drainage-tube should be bent in the middle, at which point a free opening should be made. This bent portion is passed for about half an inch through the laceration, the free ends are fastened together beyond the vulva, and covered with an antiseptic dressing. After forty-eight hours the wound should be regularly irrigated with 2 per cent. solution of carbolic acid.

Lacerations of the vagina occasionally take place, and in the great majority of cases they are produced by instruments, either from a want of care in their introduction, or from undue stretching of the vaginal walls during extraction with the forceps. Slight vaginal lacerations are probably much more common after forceps delivery than is generally believed to be the case. As a rule, they are productive of no permanent injury, although it must not be forgotten that every breach of continuity increases the risk of subsequent septic absorption. When the laceration is sufficiently deep to tear through the recto-vaginal septum or the anterior vaginal wall, the passage of the urine or feces is apt to prevent its edges uniting; then that most distressing condition, recto-vaginal or vesico-vaginal fistula, is established.

It must not be supposed that fistulæ are often the result of injury during operative interference. That is a common but very erroneous opinion both among the profession and the public. In the vast majority of cases the fistulous opening is the consequence of a slough resulting from inflammation, produced by long-continued pressure of the vaginal walls between the child's head and the bony pelvis, in cases in which the second stage has been allowed to go on too long. In most of these cases instruments were doubtless eventually used, and they get the blame of the accident; whereas the fault lay, not in their being employed, but rather in their not having been used soon

[1] Centralblatt f. Gynäk., 1881, Bd. v. S. 377.

enough to prevent the contusion and inflammation which ended in sloughing.

When vesico-vaginal fistulæ are the result of lacerations during labor, the urine must escape at once; but this is rarely the case. In the large majority of cases the urine does not pass *per vaginam* until more than a week after delivery, showing that a lapse of time is necessary for inflammatory action to lead to sloughing. In order to throw some light on these points, on which very erroneous views have been held, I have carefully examined the histories, from various sources, of 63 cases of vesico-vaginal fistula.

Statistical Facts.—1st. In 20 no instruments were employed. Of these, there were in labor

Under 24 hours	2
From 24 to 48 "	8[1]
" 40 to 70 "	2
" 70 to 80 "	7
" 80 hours and upward	1
	20

Therefore out of these 20 cases one-half were certainly more than forty-eight hours in labor, and 6 of the remaining 10 were probably so also. In only one of them is the urine stated to have escaped *per vaginam* immediately after delivery. In 7 it is said to have done so within a week, and in the remainder after the seventh day.

2d. In 34 cases instruments were used, but there is no evidence of their having produced the accident. Of these there were in labor

Under 24 hours	2
From 24 to 48 "	8
" 48 to 72 "	10
" 72 hours and upward	14
	34

The urine escaped within twenty-four hours in 2 cases only, within a week in 16, and after the seventh day in 15.

So that here again we have the history of unduly protracted delivery, 24 out of the 34 having been certainly more than forty-eight hours in labor.

3d. In 9 cases the histories show that the production of the fistula may fairly be ascribed to the unskilled use of instruments. Of these there were in labor

Under 24 hours	7
From 24 to 48 "	1
" 48 to 72 "	1
	9

The urine escaped at once in 7 cases, and in the remaining 2 after the seventh day.

These statistics seem to me to prove, in the clearest manner, that, in the large majority of cases, this unhappy accident may be directly traced to the bad practice of allowing labor to drag on many hours in the second stage without assistance, and not to premature instrumental interference. This question has recently been elaborately studied by

[1] But of these in 7 no precise time is stated. Six of them are marked *very tedious*, therefore they probably exceeded the limit.

Emmet, who gives numerous statistical tables which fully corroborate these views. His conclusion, the result of much practical experience of vesico-vaginal fistulæ, is worthy of being quoted: "I do not hesitate," he says, "to make the statement that I have never met with a case of vesico-vaginal fistula which, without doubt, could be shown to have resulted from instrumental delivery. On the contrary, the entire weight of evidence is conclusive in showing that the injury is a consequence of delay in delivery."[1]

Treatment.—As to the treatment of vaginal laceration, little can be said. In the slighter cases antiseptic vaginal injections will be useful to lessen the risk of septic absorption; and the graver, when vesico-vaginal or recto-vaginal fistulæ have actually formed, are not within the domain of the obstetrician, but must be treated surgically at some future date.

[**The Rational Treatment of Rupture of the Uterus.**—The three rules given on page 459 are those found in obstetrical works of high authority, but are not based upon the teachings of abdominal surgery as shown by the results of operations recorded within a few years. Reasoning from analogy and the fearful mortality of cases delivered *per vias naturales* after uterine rupture, we are forced to the conclusion that something more is needed than the delivery of the woman and the removal of the placenta if we hope to reduce the proportion of deaths, which is very great except after cœliotomy—a method of delivery capable of saving nearly 50 per cent. There is no objection to delivering the fœtus by the natural channel, provided it can be readily done; but we have very little reason to anticipate a favorable result if we rest our efforts here. Children entirely escaped into the abdominal cavity have been drawn back through the rent and delivered by the vagina, and the women have recovered. In one well-authenticated case the woman was thus saved in our own country on four occasions. But we are not to expect such results, as a fatal issue is far more frequent than a recovery under such circumstances. Our object should be to save the life of the mother and, if at all possible, that of the fœtus, and all our efforts should be directed to this end. We may console ourselves with having delivered the woman prior to her death, but to prevent this fatal issue should be our chief aim. The general impression among ovariotomists is, that blood is not an innocent fluid in the abdominal cavity; and the remarkable results of the operations of Dr. Keith, of London, formerly of Edinburgh, are attributed to the care he exercised in preventing the secondary escape of blood into the abdominal cavity. The late Dr. Ludwig Winckel, of Müllheim, Germany, who performed the Cæsarean operation fourteen times and cœliotomy after rupture of the uterus four times, was of the impression that the liquor amnii was innocuous if only a short time in contact with the peritoneum; and the same may be said of blood, ovarian fluid, parovarian fluid, and, to some degree, also of urine. Rupture of the bladder is now cured by sewing up the rent and carefully cleansing the abdominal cavity of blood and urine. But these fluids are all capable

[1] The Principles and Practice of Gynecology, p. 669.

of setting up peritonitis, and blood by its decomposition is particularly apt to give rise to septic poisoning; then why let it remain in the abdominal cavity in cases of ruptured uterus? If it is important to cleanse this cavity from blood and ovarian fluid in ovariotomy, and from blood and amniotic fluid after the Cæsarean section, then why should we be content with delivering the fœtus in cases of rupture of the uterus, when we know that the peritoneal cavity still contains a compound fluid which may destroy the woman if not removed and the parts cleansed? We have also an additional risk in the fact that the uterine rupture may gape and allow the lochia to escape into the peritoneal cavity, thus providing another element for septic poisoning. I am, then, fully persuaded that in all cases of rupture, where it is evident that blood and liquor amnii have escaped into the abdominal cavity, we ought to open the abdomen, cleanse out the cavity, and close up the rent by deep-seated and superficial sutures of carbolized pure silk. In cervico-vaginal rupture the closure of the rent may not be so important in the sense of safety to the woman, as there is generally a natural drainage into the vagina; neither is cœliotomy itself so imperatively demanded as in cases where the fundus or body of the uterus is rent. But it becomes important to close the torn cervix in view of future trouble from ectropium and erosion. As in the Cæsarean operation, promptness of action is all-important if we hope to save the patient. I know that these views upon the treatment of ruptured uterus are in advance of those held by British obstetrical writers, but they are certainly logical deductions from the experience of such operators as Dr. Keith, Mr. Lawson Tait, and others, and from the well-known results of promptly performed cœliotomies in rupture accidents in the United States. The removal of the uterus after rupture has as yet only added to the risk, and I do not believe we are justified in resorting to it where there is no pelvic obstruction.—Ed.]

CHAPTER XVII

INVERSION OF THE UTERUS.

Inversion of the uterus shortly after the birth of the child is one of the most formidable accidents of parturition, leading to symptoms of the greatest urgency, not rarely proving fatal, and requiring prompt and skilful treatment. Hence it has obtained an unusual amount of attention, and there are few obstetric subjects which have been more carefully studied.

Fortunately, the accident is of great rarity. It was only observed once in upward of 190,800 deliveries at the Rotunda Hospital since its foundation in 1745; and many practitioners have conducted large

midwifery practices for a lifetime without ever having witnessed a case. It is none the less needful, however, that we should be thoroughly acquainted with its natural history, and with the best means of dealing with the emergency when it arises.

Acute and Chronic Forms.—Inversion of the uterus may be met with in the acute or chronic form; that is to say, it may come under observation either immediately or shortly after its occurrence, or not until after a considerable lapse of time, when the involution following pregnancy has been completed. The latter falls more properly under the province of the gynecologist, and involves the consideration of many points that would be out of place in a work on obstetrics. Here, therefore, the acute form alone is considered.

Description.—Inversion consists essentially in the enlarged and empty uterus being turned inside out, either partially or entirely; and this may occur in various degrees, three of which are usually described, and are practically useful to bear in mind. In the first and slightest degree there is merely a cup-shaped depression of the fundus (Fig. 155); in the second the depression is greater, so that the inverted portion forms an introsusception, as it were, and projects downward through the os in the form of a round ball, not unlike the body of a polypus, for which, indeed, a careless observer might mistake it; and, thirdly, there is the complete variety, in which the whole organ is turned inside out and may even project beyond the vulva.

Fig. 155.

Partial inversion of the fundus. (From a preparation in the Museum of Guy's Hospital.)

The symptoms are generally very characteristic, although, when the amount of inversion is small, they may entirely escape observation. They are chiefly those of profound nervous shock, viz., fainting, small, rapid, and feeble pulse, possibly convulsions and vomiting, and a cold, clammy skin. Occasionally severe abdominal pain and bearing down are felt. Hemorrhage is a frequent accompaniment, sometimes to a very alarming extent, especially if the placenta be partially or entirely detached. The loss of blood depends to a great extent on the condition of the uterine parietes. If there be much contraction on the part that is not inverted, the introsuscepted part may be sufficiently compressed to prevent any great loss. If the entire organ be in a state of relaxation the loss may be excessive.

The occurrence of such symptoms shortly after delivery would of necessity lead to an accurate examination, when the nature of the case may be at once ascertained. On passing the finger into the vagina we either find the entire uterus forming a globular mass—to which the placenta is often attached—or, if the inversion be incomplete, the