Septic Thrombosis (Puerperal) of the Pelvic Vessels.

WITH A REPORT OF AN ACUTE CASE IN WHICH THE INFECTED OVARIAN VESSELS WERE EXCISED.*

By W. BLAIR BELL, B.S., M.D. (Lond.),
Assistant Gynæcological Surgeon, Royal Infirmary, Liverpool.

WHEN a new operative procedure of importance is on its trial it is necessary to report unsuccessful cases, otherwise we may get a wrong impression of the merits of the method by forming our opinion upon the reports of successful cases only. Besides, we may be able to obtain much more valuable information for our future guidance from an unsuccessful case, if it is properly investigated, than we can from any number of successful ones.

The case I wish to record was one of unusual severity, and one which presented many points of great interest, and, I venture to think, of instruction in regard to a condition of which we know too little and in which, hitherto, expectant methods of treatment have usually been quite ineffective.

I saw Mrs. J., a secundipara aged 36, in consultation with Dr O'Connell of Wavertree, on March 30th last, and I am indebted to him and his partner Dr. Brown for the temperature chart (fig. 1) and for the following notes of the progress of the case before I saw her. The patient, although in comfortable circumstances, was attended by a midwife during her second confinement on March 18th. As far as was known she went on well until about March 23rd, on which day Dr Brown saw her. This short interval rather indicates infection at the time of the confinement, for we may be sure she had been ailing one or two days before medical assistance was sought. The nurse said that the parturition was normal in its course. Dr. Brown found that the "lochial discharge was not offensive, but rather more red than normal," that the uterus was large but not tender, and that the patient complained of pain on the left side. On the 25th March there was a fall in the morning temperature (see fig. 1), but the pulse was more rapid. On this day Dr. Brown gave an intra-uterine douche. On the 27th March Dr. O'Connell and Dr. Brown curetted the uterus and douched with a lysol solution, but only "a few slightly offensive shreds of membrane" came away. On the 28th March, 10 cc. of polyvalent serum were injected; this was followed by a slight rise in temperature. Her condition was worse on the 29th

* Read before the North of England Gynæcological and Obstetrical Society, April 23rd, 1909.

FIG. I.

Temperature chart kept by medical attendant prior to admission to Hospital.

FIG. II.

Temperature chart after admission to Hospital.

March, when her morning temperature was over 103°F., and her pulse over 130. She had had several slight rigors in the last few days. The bowels had been kept open regularly.

It was on the morning of the 30th March, the twelfth day since her confinement, that I saw her with Dr. O'Connell. Her temperature was then 103·5°F., and her pulse rate 130; her respirations were 35. The patient's appearance was bad: she looked very yellow, and seemed to be drowsy. She was, however, quite intelligent, and could answer all questions.

On examining the abdomen, there was no free fluid to be detected, nor was there the slightest tenderness on palpation. The whole abdomen moved with respiration. The uterus could be felt, enlarged and extending well up above the pubes. It was not tender.

Examination of the vulva disclosed no laceration. There was a minute superficial abrasion or split about $\frac{1}{4}$ inch across, and of no depth, at the edge of the fourchette. The vagina and cervix were carefully examined with an electric speculum, but no laceration of any part could be seen. The external os was closed, and the cervix was rather dark in colour.

On bimanual palpation there was no tenderness of the uterus nor in the fornices. The uterus was made out to be about the same size as it should have been immediately after parturition, although it was now twelve days since that had occurred. It was anteverted and quite mobile, and there was no local effusion to be detected. I thought, however, that per rectum I could feel some thickening high up on the right side, but I could not be sure as I did not want to disturb any clots in the veins, if such were present. There were no thrombosed vessels to be felt in the lower part of the broad ligaments.

In view of the finding of Dr. O'Connell and Dr. Brown when they examined the interior of the uterus, and assisted by the fact that there was no local reaction, by the length of time since parturition, and by the patient's condition—her pulse, temperature and general appearance—I came to the conclusion that the case was one of septic thrombosis in the ovarian veins. But I could not refuse to take into account the size of the uterus and the possibility of the infection being localized there. I therefore expressed the opinion that the interior of the uterus should be explored, and if nothing was found ligature and excision of the ovarian vessels should be carried out at once. I may say incidentally that we were placed in a somewhat responsible position as the patient's husband, an officer on board ship, was not expected home for a fortnight. However, the patient and her brother both agreed to the course proposed, so she was immediately removed to the Royal Infirmary—about a mile distant—for operation. On admission she had a slight rigor, the temperature was 104·2°, pulse 136, respiration 32 (see fig. 2).

When the patient was placed in the lithotomy position it was

noticed that the hæmorrhoidal veins looked congested, and on examination of the cervix I pointed out that it was a deep purple colour, which I took to indicate venous thrombosis. However, on proceeding to dilate the cervix there was a gush of sanguineo-purulent fluid from the interior of the uterus. It was not offensive. A swab of this was taken for examination (see pathological report). The cavity of the uterus measured $5\frac{1}{2}$ inches in length. A careful search with the finger failed to discover any retained products of conception or any septic infiltration of the uterine wall. Consequently, I contended myself with washing out the uterus with a solution of iodine (3ij of the tinctura iodi to the pint of water), and packing with iodoform gauze.

In view of this finding in regard to the local condition I thought it right to see what free drainage of the uterus would do towards the alleviation of her symptoms, before proceeding to an abdominal section, which I felt would be a hazardous undertaking in her serious condition. Continuous rectal salines were employed. That night her temperature went down to 102.2° and her pulse dropped to 128. The next day her temperature slowly rose to 104.2° in spite of changing the pack and washing out the uterus. The next morning (April 1st) the temperature dropped to 101.2° F, but again rose during the day. Another 10 cc. polyvalent serum were now injected and the pack was removed. I decided that if the patient improved at all to open the abdomen and attack the affected vessels. She had a very bad night. Next morning her pulse was very rapid and weak and her temperature was over 104° , but it dropped towards the middle of the day when the second operation was performed. Before operation blood was withdrawn from a vein for bacteriological examination (see report).

An injection of gr. $\frac{1}{4}$ morphine and gr. $\frac{1}{20}$ strychnine was given, and light ether anæsthesia kept up by Mr. Fingland. On opening the abdomen a slight quantity of clear free fluid was found, and a swab of this was taken for bacteriological examination (see report). The ovarian vessels on the right side were found to be thrombosed and to form a well defined mass the size and shape of a banana. The peritoneum was therefore slit up and the mass followed to the mesocolon. Here one seemed to arrive at the end of it. The whole was therefore ligated and excised, the peritoneum being closed over the wound. There was no thrombosis of the internal iliac veins. On the left side there was only one limited thrombus in the ovarian vein. This was quickly excised, and the abdomen closed.

After the operation continuous subcutaneous salines were used owing to the intolerance of the rectum, and 2 cc. pituitary extract (1 gramme in 1 cc.) was given hypodermically. This latter immediately raised the blood pressure from 80 to 90 mm. of mercury. That night her temperature ran up to 106.2° . It dropped during the early hours of the morning

FIG. III.

Right ovarian vein, near the uterus.

There is pus in the interior, and the walls of the vessel are converted into granulation tissue. $\times 20$.

FIG IV.

Right ovarian vessels -some distance from the uterus.
Only a few leucocytes are to be seen in the clot. $\times 20$.

FIG. V.

Aseptic thrombus in the left ovarian vein. $\times 20$.

to 101°, but following a rigor it shot up to 106·6°, when the patient died.

Such is the tragic history of the case.

PATHOLOGICAL REPORT BY DRs. ERNEST E. GLYNN AND G. LISSANT COX.

Bacteriological Examination.

1. *Pus from uterus* (first operation). Smears showed a number of Gram positive diplococci. Pus inoculated on to agar and nascar. Sterile at end of 36 hours probably because *uterus had been washed out with lysol 3 days before*.

2. *10 cc. blood from median basilic vein—withdrawn when Temp. 103°*. Cultures sterile after 48 hours incubation at 37°.

3. *Swab from clear peritoneal fluid* (second operation). Sterile. No organisms found in smears and none grown.

4. *Swab from pus from right ovarian vein* (second operation). Smears showed similar diplococci to those found in 1. From this pus a pure culture of streptococci with many involution forms was grown.

Histological Examination of Vessels Excised at the Second Operation.

A. *Sections of right ovarian vessels near the uterus* (see fig. 3).

The lumina of the ovarian artery and veins are filled with pus and the walls converted into granulation tissue, which shows that the inflammation is of some standing. Some of the smaller vessels are normal, others contain red thrombi. A section stained by Gram's method showed some cocci.

B. *Sections of the same vessels further from the uterus* (see fig. 4) show laminated thrombi with a few leucocytes, but there is no actual pus. There is no attempt at organisation.

C. *Section of the left ovarian vein* (see fig. 5). This vein is also thrombosed, but the microscopical appearances suggest that the thrombus is aseptic.

Post-mortem Report.

The right ovarian vein beyond the portion excised is thrombosed as far as its junction with the inferior vena cava. There is extensive extravasation of blood into the cellular tissues surrounding the right ovarian vessels. The vena cava and common iliac veins are normal. There are no signs of thrombosis in the remaining portion of the left ovarian vessels.

Uterus. Length 6½ inches. Some venous thrombosis in the wall; no signs of pus or abscesses, and no remains of placental tissue or membranes. Placental site on fundus. Interior of the uterus apparently healthy.

Kidneys. Weight 6 oz., congested, no pyæmic abscesses.

Spleen. Weight 9 oz., considerably enlarged, very soft.

Liver. 4 lbs. 2 oz., pale and soft, otherwise normal.

Lungs. Congested and emphysematous; one caseating focus, size of a bean, in the left lower lobe. Some puckering and scars at both apices.

Heart. Normal.

This complete pathological report is of great interest and contains many details which are of considerable clinical value.

First there is the fact that although the smears from the uterus showed an involution form of streptococcus, this would not grow in culture media. The pathologists are of opinion that this was because the uterus had been washed out with lysol *three days previously*. This seems to be an extraordinary and important matter, indicating that though organisms were still present their power of multiplication was checked.

Secondly it was found that while the uterine end of the right vein was septic and contained pus (fig. 3), the other end of the piece excised (fig. 4) contained a clot invaded only by a few leucocytes. In other words bacteriologically the operation might be considered successful.

Thirdly there is the fact that the blood of the patient was sterile—at any rate intermittently. This condition is a favourable factor in the prognosis, and an indication that operative procedures might prove successful.

The outstanding lesson, however, to be learnt from this case is that having made a diagnosis of septic thrombosis of the ovarian veins one should immediately act upon it, and not be turned aside by any considerations whatsoever.

But of course it is not easy to make such a diagnosis in the first place; and, in the second, some may ask how far are we justified, if we can make it, in saying that the patient is bound to die unless we operate? In regard to the latter point I think no one will deny that as far as we know most of these cases do die. Early operation must therefore be aimed at, even though the patient is not dying at the time. It is our only chance of success in these acute cases.

In regard to the diagnosis. If we find the patient in a deeply toxæmic condition, with a freely movable uterus, and there is no evidence of effusion, and no tenderness of the uterus, whatever its size may be, I think the indications point very strongly towards sepsis in the veins. But if superadded to these signs we observe, at some time remote from parturition, that the cervix, especially the mucous lining, is of a deep purple colour, then I think we should feel confident of our diagnosis. This last sign, which I have not seen mentioned elsewhere, appears to me to be of considerable

practical importance. In this case I pointed it out, and made the conjecture as to its significance, before I had proof of my diagnosis. Had I operated on the veins then I might have saved my case. I allowed myself to be turned from my purpose by what I found in the uterus, which as I have already said was much enlarged and contained purulent fluid but was *not tender*. This last point should have had more weight with me. I think it is of great importance, and indicates that the main focus is not situated in the uterus.

I do not wish to imply that the purple hue of the cervix indicates more than thrombosis of any of the main pelvic veins. In this case I excluded, by rectal examination, thrombosis of the veins in the lower part of the broad ligaments, and was therefore able to make a positive diagnosis of ovarian thrombosis. The main point however is to be able to diagnose that septic thrombosis of any, or all, of the pelvic veins is the causal factor of the patient's condition. It has been conclusively shown by the statistics of Trendelenberg and Lenhartz that of the cases of puerperal sepsis that die, in at least half the fatal lesion is septic "thrombo-phlebitis." This alone should be enough to make any thinking surgeon, once he has made his diagnosis, grasp at the only possible means of salvation.

These patients, however, cannot stand much; *the earlier we operate the less there will be to do*. I have no doubt if I had been able to operate early enough, I should have found the vessels on the right side no worse than I found those on the left, and I might have doubted whether it was the operation that had saved the patient. We must not, I think, be led from our purpose by considerations of that sort; but having made a definite diagnosis apply the ligature to all the thrombosed vessels always and early.

I have not discussed any special details of technique, nor have I referred to removal of the uterus, for I do not want to confuse the main point at issue in a variety of other considerations which are only indirectly correlated.

As far as one can gather from the literature—and this has been collected in a recent paper by H. N. Vineberg*—the cases which so far have been successfully operated upon have been of a subacute type, but I see no reason to doubt that early interference in the acute cases also will eventually lead to a considerable lessened mortality in puerperal pyæmia; but a long series of cases alone can prove that it is the operation that is responsible for the result. At the same time we must not lose sight of the fact that continuous saline infusions, and possibly vaccines and sera, will always play a large part in the successful treatment of these desperate cases.

* Vineberg, H. N. "Ligation of pelvic veins for puerperal pyæmia. Report of a case." *American Journal of Obstetrics*, March 1909.