Previous History.

She had had no illnesses except constant attacks of epigastric pain since the age of 16. In her first pregnancy she was very well throughout, and had none of the usual unpleasant symptoms. Since January, 1908, she had had repeated attacks, sometimes twice a day, of temporary faintness lasting for two to three minutes, associated with a general feeling of weakness. She had no vomiting, but felt sure she was pregnant.

History of Attack.

At 5 a.m. on May 19th she awoke with severe pains in the lower part of the abdomen. They lasted fifteen minutes, but did not prevent her from getting her husband's breakfast at 6 a.m. She then felt as well as ever, and was able to do a full day's washing. While scrubbing the floor at 5 p.m. she was seized with very severe pains in the lower part of the abdomen. She lay down on the couch, and felt herself getting very weak. She had a hazy idea of Dr. Reidy's visit, and of being carried upstairs. I saw her with Dr. Reidy at 11 p.m. on May 19th.

Condition on Examination.

The woman was absolutely blanched, restless, and unaware of her surroundings. Her breathing was hurried, short, and gasping. The pulse could be felt at the wrist only with difficulty, and it could not be counted. The abdomen was slightly distended and tense, but nothing was made out on palpation. Vaginal examination was quite negative.

Diagnosis.

The history of four months' suppressed menstruation, together with the sudden onset, severe abdominal pain, and obvious internal hæmorrhage, at once suggested the diagnosis of ruptured tubal pregnancy.

Operation.

Dr. W. A. Reidy gave chloroform. The abdomen was opened in the middle line below the umbilicus, and a large quantity of fluid blood at once escaped. On introducing my hand I found a fetus 4½ in. long quite free among the intestines; the umbilical cord had been torn close to its attachment. The right tube was greatly enlarged and funnel shape. It had been ruptured at the extremity. I ligatured the tube, removed the enlarged portion, and left the ovary intact. The left appendages were normal. I then removed several large clots of blood and pieces of the placenta from the pelvis. There was some slight hæmorrhage deep in the pelvis which I was unable to see or locate. To control this bleeding I placed a gauze plug in the pelvis, and then sewed up the abdomen, bringing the plug out through the lower angle of the wound.

The general condition of the patient was still very bad. Six pints of saline were run into a vein at the elbow with very satisfactory results, the pulse improving very rapidly.

After-History.

May 20th.—Plug removed and not replaced. Slight oozing of blood.

May 21st.—Considerable oozing of blood through lower angle of wound.

May 23rd.—Bowels open after calomel.

May 26th.—Stitches removed. Wound completely closed.

The patient made a good recovery. There was no temperature above 99° F. during her stay in bed. Her only trouble was that she was unable to pass her urine for the first week. She came downstairs at the end of four weeks.

Present Condition.

December, 1908.—She menstruated six weeks after operation, and regularly since. The abdominal scar is quite sound, and there is no trace of a hernia.

The case is interesting from several points of view. Rupture of a pregnant tube is rarely delayed until the fourth month. The chief interest, however, lies in the conditions under which the operation was performed. The room was small and almost completely filled by a large, wide, and low bedstead, which had to be pushed against the wall on one side and left 3 ft. clear on the other. The patient lay in, not on, a large feather bed. The light was very bad; a small tin lamp was nailed to the wall above my head and another lamp stood on a table at the foot of the bed. It was practically impossible for Dr. Reidy to give me any assistance beyond handing me instruments.

No sponges were used, their place being taken by a roll of cyanide gauze taken straight from its package. The case ran an aseptic course throughout, and the precautions taken may be of interest. All instruments, needles, and ligatures were boiled. The operation area was surrounded with towels which had been boiled in water for five minutes. Skin and hands were cleaned with soap and

water and lysol. The nursing was entirely left to her neighbours, who were colliers' wives.

I publish this case in the hope that it will encourage other general practitioners to deal with these cases themselves. Delay of even an hour or two may make all the difference between success and failure. I am convinced that sepsis is not difficult to attain even in a cottage.

I am deeply indebted to Dr. Reidy for his skilful treatment of the patient after operation, and for his help in preparing these notes.

PYELITIS OF PREGNANCY TREATED WITH COLI VACCINE.

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The following case is a very typical example of a moderately virulent infection of the right renal pelvis during pregnancy:

S. T., aged 20, was sent to my out-patient department by Dr. Mackay suffering from acute pain in the right side of the abdomen. She was at the fifth month of her second pregnancy, the first pregnancy and labour having been normal in every respect. During the present pregnancy she had been very much troubled with constipation.

The illness started three weeks before admission with aching in the right renal region, beginning behind, but spreading rapidly round to the front of the abdomen and downwards toward the right iliac fossa. The pain was quickly followed by a rise of temperature and a general feeling of malaise. There was no frequency of micturition nor any sign of cystitis.

In spite of a fortnight of incomplete rest in bed at home the symptoms became more marked, and the patient's general condition began to give cause for anxiety. During the first

three weeks the temperature had been irregular, and when I saw her it was 103° F. The pulse was rapid and feeble; the tongue dry and furred. The patient looked pale and ill, and complained of intense pain over the right side of the abdomen. On examination the maximum point of tenderness on deep pressure was below the twelfth rib behind, and there was a definite history of the pain having started here, and of it having spread downwards and forwards into the appendicular and right iliac regions.

There was slight rigidity over the right half of the abdomen, and it was interesting to note the extremely well marked superficial tenderness, which is so often a characteristic sign of pyelitis occurring during pregnancy. The uterus was enlarged to about the fifth month of pregnancy and seemed quite normal. The patient was admitted and was put on a milk diet and a mixture consisting of urotropin (10 grains) and potassium iodide (3 grains). The urine contained pus and a few epithelial casts. It was acid in reaction. There was no tenderness over the bladder, nor was there any evidence of cystitis. A pure culture of *Bacillus coli* was obtained from a catheter specimen of the urine, and a vaccine was prepared. After four days' rest in bed, on the milk diet and medicine, the temperature and pain did not abate; 10 c.cm. of the *coli* vaccine was then injected. The temperature dropped almost immediately and remained normal, except for one small rise two days later. The pain decreased in severity in a marked manner, so that within a few hours the patient hardly complained at all. She had one or two attacks of slight pain during the rest of the time she was in hospital, but the improvement in her general condition was most satisfactory. The pyuria persisted, but for more than forty-eight hours at a time the urine would be free from pus, and then a large quantity would be passed. After being in hospital a month and a half, the patient went out apparently well in

general health and with the pregnancy unharmed. About three weeks later the pain returned and her general health again became impaired, and she was readmitted. There was, however, no recurrence of the pyrexia, and the patient picked up rapidly with rest in bed and proper dieting. She remained in hospital until full term, when a healthy child was born normally. Four days after delivery the urine was free from pus, and remained so up till now (three weeks later).

There was no difficulty about the diagnosis in this case. The acute onset of the pain, localized at first behind and below the right costal margin, and then spreading rapidly along the course of the right ureter, accompanied with pyrexia and pyuria, left no doubt as to the true nature of the disease. One very prominent feature of these cases is the somewhat diffuse area of great superficial tenderness, which seems to be confined to the cutaneous distribution of the anterior branch of the twelfth dorsal nerve. Pyelitis of pregnancy has to be distinguished in its early stages from pleurisy at the base of the right lung and in the later stages from appendicitis and enteric fever. The knowledge that pyelitis is a fairly common complication of pregnancy, a careful inquiry into the history of the pain, and the fact that the tenderness is most marked behind and below the twelfth rib and along the course of the ureter, together with the intense hyperaesthesia, without much rigidity over the right side of the abdomen, will easily settle any doubt in most cases. The presence of pus in the urine will also give a definite clue to the condition, but it is not by any means safe to negative pyelitis if pus is absent from any given specimen. Several specimens must be examined, and it often happens that the pus does not appear in the urine until some days after the onset of the pain and pyrexia.

No doubt constipation plays a prominent part in the etiology of pyelitis, and almost without exception the infection is due to an invasion of the renal pelvis by the *Bacillus coli*. The renal pelvis is probably infected direct from the colon by means of the lymphatics. It is impossible to accept the ascending theory, because one cannot see why the infection should nearly always be right-sided, and, moreover, the bladder seldom shows signs of infection. In the few cases that I have seen in which the disease was ushered in with cystitis, the infection has been bilateral; and no doubt in these cases, which are far more serious, the infection was ascending. This condition is very different to what may be called simple pyelitis of pregnancy, which, as a rule, runs a very definite and satisfactory course.

The above case shows clearly what I have noted in many of these cases—namely, that the pyuria persists up till the time of delivery, but all the virulency appears to pass out of the organisms as soon as the acute stage is over. Nevertheless, the patients require a considerable amount of care after the acute stage is passed, and they still maintain the pale toxic look which is so characteristic of chronic *coli* absorption. The patient during this quiescent interval should lead an invalid's life. She should be kept warm, and take only very gentle exercise, and her food should consist mostly of milk and farinaceous stuffs. She should take no red meat, and very little fish and other white foods. Alcohol should be strictly avoided. Iron tonics and special attention to the bowels should be insisted upon, and occasional doses of urotropin given. She should accustom herself to drink a considerable quantity of water, especially in the early morning, for flushing purposes. One of the diuretic saline waters will probably be found useful in combination with the urotropin.

She need not be confined to bed, but should take plenty of rest, preferably in the sunshine. If, after the acute symptoms have abated for some time, the patients are treated in the manner outlined above, the pregnancy will in all probability pass on to a normal delivery at term, and at the same time there need be little fear that there will be any permanent damage to the kidney. Should the pyuria persist after delivery, some permanent damage to the kidney substance must be suspected, and the patient should be warned that she may have a recurrence of the disease in future pregnancies, which will possibly result in the formation of a pyonephrosis. One must also not neglect to search for a renal calculus or tubercle bacilli if the urine does not remain free from pus some time after the child is delivered. I have once seen a pyonephrosis develop during the second pregnancy in a patient who had had an attack of pyelitis at the fifth month of her first

pregnancy, but recurrence in future pregnancies is a very rare exception.

With regard to the vaccine, it is, of course, impossible to be sure whether the sudden drop of the temperature and the cessation of the pain in the above case was due to the vaccine or whether it was simply coincidence. I have seen improvement follow the injection of 10 c.cm. *coli* vaccine in other cases of pyelitis, and have no doubt that this treatment should be given a fair trial. If, however, the temperature and pain persist for more than ten days and infection appears to increase in virulence, in spite of the vaccine, dieting, and the administration of potassium iodide and urotropin, the uterus should be emptied.

On several occasions I have seen rapid recovery from pyelitis after spontaneous delivery. No doubt the presence of gestation in the uterus causes pressure on the ureter and prevents free drainage.

The uncomplicated cases of pyelitis run such an even and satisfactory course and the signs and symptoms are so typical that any mistake in the diagnosis must be a matter for regret. The greatest danger lies in mistaking this condition for appendicitis, and since the general appearance of the patient and the acute onset of pain and pyrexia are very similar in both diseases, a hasty conclusion may lead to a disastrous laparotomy.

If the symptoms are prolonged and the infection does not abate within a fortnight on suitable treatment, it becomes a question as to whether the kidney substance itself has not become infected. In one case in which the kidney was explored we actually saw small abscesses in the kidney substance; and although the section of the kidney did no good, for there were many unopened abscess-cavities and drainage was impossible, the patient eventually made an excellent recovery, and the pus completely disappeared from the urine after the birth of a living full-term child. If the kidney becomes infected, the possibility of renal pyaemia may be thought of; but since the infection seldom affects both kidneys, there need be little fear of uraemia or anuria.

For practical clinical purposes I should divide the cases of simple *coli* pyelitis of pregnancy into three groups: (1) Mild, (2) moderate, and (3) severe. For the mild forms rest in bed, a milk diet, careful regulation of the bowels, and the administration of potassium iodide and urotropin will probably be sufficient. For the moderate the same treatment should be adopted, with the addition of a *coli* vaccine; and for the severe forms, when this treatment does not meet with success, the uterus should be emptied. It is not advisable to attempt to drain the pelvis of the kidney through the loin, because the patients cannot well stand the shock of the operation, and moreover, if the kidney itself is infected there will be many small foci which cannot be effectively dealt with. By far the safest way to effect free drainage is to relieve the pressure of the uterus upon the ureter. The labour, of course, should be set going by passing a sound or a bougie.

ACUTE INVERSION OF THE UTERUS.

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The following case is of interest, not only on account of its rarity, but of other points to which attention will be drawn:

On August 23rd, 1908, I was called to Mrs. W., aged 31, a primipara, who had been in labour for nine hours when seen at 5 a.m. The child was found to be in the fourth position of the vertex, with the head imperfectly flexed. At 8.30 a.m. the os was fully dilated, and an attempt was made to improve the flexion of the head. The head being still unrotated two hours later, Dr. S. J. J. Weakley was called in; the forceps was applied under chloroform; the head rotated easily, and the child was safely delivered in twenty-five minutes. The patient soon recovered consciousness. The pulse-rate was then 108.

Only one contraction of the uterus was noticed during the first half-hour after the birth of the child, and 1 c.cm. of ergotin was therefore given hypodermically. The patient was prevented from bearing down during this period. The uterus remained soft for half an hour longer, when a sudden violent and painful contraction occurred. This was immediately followed by the protrusion from the vulva of the inverted uterus, with the placenta attached. Very little haemorrhage had taken place up to this point. The placenta was easily and quickly peeled off the inverted fundus, which was at once pushed back by the