shows a large, solitary, interstitial myoma measuring about 4½ in. from above down. The lower part shows the uterine cavity containing a fetus and placenta. The placenta lies in the lowest part of the specimen. The cervix is seen projecting from the anterior wall of the tumour, somewhat above the middle. In the original relations the cervix pointed downwards towards the vagina. The uterine cavity has assumed a globular shape since removal, but in the original position the sacral promontory made a deep dent into the posterior uterine wall. The fetus is of the male sex, and in the sixth month of development.

Pathological Report.

For the following pathological report on this tumour I am indebted to Captain M. J. Stewart, M.B., pathologist to the Leeds Infirmary:

The tumour is situated in the anterior wall of the uterus, immediately above the cervix. It presents the typical whorled appearance and firm consistency of a uterine fibromyoma, but it shows, in addition, a number of large irregular cavities with irregular shaggy walls and apparently possessing a lining of softer, whiter tissue. Seven such cavities are cut across in a sagittal section of the growth. Parts of the tumour are the seat of great vascular engorgement; elsewhere there are very pale, non-vascular areas. The tumour is well encapsuled by a thinned-out layer of myometrium, as well on the endometrial as on the peritoneal aspect.

One or two tiny fibroids are present elsewhere in the uterine wall.

Histologically the tumour presents the usual appearances of a uterine fibromyoma, with considerable excess of fibrous tissue. There are many areas of necrobiosis, and the large cavities seen with the naked eye are found to be degenerative pseudocysts, each lined by a broad layer of completely necrotic tissue. Certain parts of the growth show numerous thin-walled, dilated blood vessels, mostly filled with blood, but free from thrombosis. Occasional small foci of polymorphonuclear accumulation are seen.

CASE II.—Myoma Uteri threatening to Obstruct Labour : Caesarean Section with Myomectomy.

Mrs. B., aged 36, was sent to me by Dr. W. Bell of Skelmanthorpe in May, 1916. She had been married thirteen years, but was now pregnant for the first time. Dr. Bell had diagnosed pregnancy, with a tumour in the pouch of Douglas, and he sent her for an opinion as to the best method of treatment. I found a normal uterine pregnancy of about seven months, and there was in the pouch of Douglas a swelling, due to a myoma, which seemed likely to cause serious obstruction to normal delivery at term. There were no bladder symptoms. I advised that she should be allowed to go to term and then be treated by abdominal section. Two months later she entered a Leeds nursing home, and I operated when labour was nearly due (July 5th).

There was a tumour behind the uterus, fixed by adhesions. I first opened the uterus and removed a living male child, which weighed 7lb. The placenta came away without any trouble, and the uterus was sutured with iodized catgut in the usual way. Then I found it easy to break through the adhesions which bound the tumour to the pelvic floor. The tumour was compressed, and had the size and shape of a Bath bun. It was attached to the posterior uterine wall by a well-defined pedicle. This was divided, and the attachment was stitched over with catgut. The tumour was in a state of degeneration. The patient made an excellent recovery, and suckled her baby, which thrived well. A pathological report by Dr. Stewart is appended. By this operation it was possible to save the child, conserve the uterus, and obviate all danger of puerperal sepsis from a degenerating, bruised, or infected myoma.

Pathological Report.

Microscopically this is a fibromyoma, which has undergone complete necrosis except for a very narrow zone at the periphery.

THE TECHNIQUE OF CAESAREAN SECTION.

BY

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OSTEOMALACIA is extremely common in Kashmir. It occurs in multiparous women, and the symptoms show themselves soon after childbirth. The deformity is characteristic, and well shown by *x* rays. The pelvis simply yields to weight and pressure. The subpubic angle becomes very acute, or the rami may be almost parallel. Sometimes the hand cannot pass; the sacral promontory projects downwards and forwards. There is considerable variety in the external pelvimetry. In three cases the measurements were as follows: Iliac crests, 26, 25½, 24 cm.; great trochanters, 28, 29, 24½ cm.; anterior superior spines, 24, 22, 25 cm.; external conjugate, 21, 15, 18 cm.

In cases for which relief is sought before labour sets in Caesarean section presents no special difficulty or danger,

and the results are as satisfactory as those of an uncomplicated ovariectomy; the great peril is sepsis. Even in cases admitted a few weeks before parturition a vaginal examination may reveal the presence of a foul tampon, containing perhaps quince seeds. Such plugs are handed on by native midwives from case to case, and are always intensely septic.

The cases which give rise to most anxiety are those which are admitted after from one to four or more days' labour, and in which perhaps successive midwives have tried weird septic local applications, or even used unskilled and lacerating force. In such cases we used to think craniotomy the less objectionable method of delivery, but they always stood a chance of dying, in any case, of initial puerperal septicaemia. If the child is also sacrificed the result is indeed deplorable; so it seemed better, by improving the method of operation, to try to save both lives. The cause of failure in these cases was usually peritonitis, either from extension from the uterus or from contamination occurring during the operation, when septic fluid from the interior of the uterus is apt to infect its environment.

The following method appears to have given a higher standard of success than that which we obtained formerly.

After preliminary douching with potassium permanganate solution, cleansing of the abdominal wall with 1 in 500 solution of mercury iodide in spirit, painting with tincture of iodine, and isolation with sterile towels, an incision is made about eight inches in length. The peritoneum is opened at one point, and the rest of the wound cut with scissors. A large swab is now placed behind the uterus, which is displaced forward from the abdominal cavity. The upper angle of the abdominal wound is then clamped firmly together, embracing the lower segment of the uterus. A swab is now placed in the peritoneal cavity on either side of the cervix. A moist warm sterile towel is drawn tightly round the uterus where it emerges from the abdominal cavity. The uterus is now opened, the incision being clean but not extending over the fundus. The placenta, if anterior, must be extracted at once. If posterior, the child is extracted, and a pause is made till the uterus contracts. The placenta is then removed, together with the whole of the membranes. Haemorrhage from uterine sinuses is controlled by finger pressure, and about twelve interrupted catgut sutures are inserted into the muscular wall, avoiding decidual surface and peritoneum. As these are tied the muscular surfaces are brought into accurate apposition by an assistant. A second row of catgut sutures is now carried continuously from end to end, including superficial muscle and a two-millimetre edge of peritoneum. A continuous line of fine Lambert suture is used to cover the wound securely with peritoneum. The uterus is next carefully cleansed, an inch and a half removed from each Fallopian tube, and the proximal end folded. The intra-abdominal swab is removed, and the omentum brought over the front of the uterus and stitched lightly so as to retain it in contact with the uterine wound. Soiled towels are then removed, and with cleansed hands and instruments the operation is completed. If, however, the case has been attended by city midwives before admission it is regarded as septic, and suprapubic drainage is provided.

From 1914 to 1916 we performed twenty-two Caesarean sections. Of these patients, nineteen recovered, two died, and one left the hospital in a feeble condition, with chronic septic peritonitis. Probably she succumbed.

Of the fatal cases, one was a very severe puerperal eclampsia, with profound coma, and a temperature of 106.8°, in whom the operation failed to give relief, and she died the same evening.

Three typical cases may be appended.

CASE I.

B., aged 22. In labour three days. Great contraction of pelvis. Uterus very prominent. A curious transverse depression over Bandl's line. Ergotin citrate and pituitary extract hypodermically. Caesarean section. Subperitoneal rupture of front of uterus above Bandl's ring. Pus in uterus. Head firmly impacted in brim. Operation completed as described above, with suprapubic drainage. Fowler's position. Frequently repeated large saline enemata. Infant died thirty-six hours later with cerebral symptoms. Mother's temperature ranged for a month between 100° and 102°, and on the thirteenth day reached 103.2°. There was much discharge from drainage tube, and about the fifteenth day encol was found to pass through from the drainage tube to the vagina. The patient was convalescent by the thirty-sixth day.

CASE II.

B. D., aged 25. Contraction of pelvis. General dropsy. Mitral incompetence, with failure of compensation. Lips cyanosed; face pale. Urine, 18 ounces in twenty-four hours. Treated with digitalis and iron. Urine increased to over 50 ounces. Caesarean section seventeen days after admission. No drainage. Before operation the pulse-rate was between 100 and 112. Afterwards

the average was 120 to 140 till the end of the first week. On the third day the patient developed an attack of bronchitis, and the sputum was found to contain pneumococci. This subsided after a week, and the patient made a rapid recovery.

The first case is representative of the badly infected class; the second was a complicated case, but not infected. The third case is typical of an uncomplicated Caesarean section for osteomalacia.

CASE III.

A., aged 24. Symptoms of osteomalacia. Marked contraction of pelvis. Admitted May 3rd, 1916. Operation May 23rd. Evening temperature 99.4°. This was maintained next day. On the third day the temperature was normal. On the fourth day it rose to 100.4° in the evening, with a pulse of 144; this subsided after a soap-and-water enema.

In this case, after admission, a dirty tampon was found in the vagina, so antiseptic douches were given daily before operation.

If the eclampsia case is excluded, it will be seen that the mortality in 21 cases was approximately 9½ per cent.

The general conclusion is that careful technique gives such good results, even in complicated cases of Caesarean section, that this operation may be regarded as definitely superior to that introduced by Porro. Craniotomy should be reserved for those cases in which the child is dead.

GONORRHOEA TREATED BY ELECTROLYSIS: A NEW ELECTROLYTE.

SOME NOTES UPON CAUSES OF FAILURE WITH
THE METHOD.

BY

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In June, 1915, I published in the *BRITISH MEDICAL JOURNAL* a description of a new method of treating acute gonorrhoea, and subsequently other articles dealing with other states of the disease.

At present I wish to describe a new solution which I have used with improved results, and to give the reasons for its composition. Having tested it by experiments in the laboratory it has been on clinical trial since September, 1916, and I now use it instead of the sodium iodide and iodine mixture previously described.

During electrolysis of a sodium salt—for example, sodium iodide—the iodine is liberated at the positive and sodium at the negative electrode, and in urethral treatment this latter is the mucous membrane. Further, the amount of this alkali formed increases with the strength and time of the current's flow. This alkali formation is an undesirable feature, since the normal reaction of the urethra is never alkaline. Hitherto the free iodine in the mixture was used to neutralize this alkalinity, although one could not use it strong enough to fully neutralize the sodium set free. I have therefore tested a mixture of sodium chloride and monochloroacetic acid and found only a transient and slight alkalinity during electrolysis of a mixture of these substances with a current not exceeding 3 milliamperes. Monochloroacetic acid being a substance of high electrical resistance, it remains as a free acid available to neutralize the sodium of the saline as it appears at the negative electrode.

The strength I use is sodium chloride 1 per cent. and monochloroacetic acid half per cent. It will be noticed that such a fluid is substantially a slightly acid physiological salt solution. This fluid was tested by emulsifying cultures of staphylococci with it, and passing a current through half of the suspension, the other half being unelectrolyzed. Cultivations on agar were then made from each half, and showed a decidedly lethal effect in the electrolyzed, but scarcely any germicidal effect in the control (staphylococci in the mixture at room temperature for half an hour). I have found in both acute and chronic gonorrhoea that this fluid is well tolerated in stronger concentrations than the above, but the results were not quite so good, possibly because they do not so nearly approximate to the tonic strength of normal saline. With this fluid I find that acute cases seldom need more than twelve electric treatments, of which not more than six are given consecutively; during the second week I give three more, and two or three more during the third week. The

technique is almost the same as already described: the stylet within the catheter is made the positive and the pad the negative electrode, and the current flows at a strength of two or three milliamperes for half an hour. With this fluid, however, I make no reversal of the current, as the composition of the fluid is designed to avoid the necessity for reversal. Although short of perfection as yet, in the rapidity of curing acute gonorrhoea the results obtained in the last six months have been more uniformly successful than before in this method of treatment.

Causes of Failure.

Besides describing the above, however, I feel compelled to deal with some of the causes of failure which have come to my notice in the last year, there being no reason why others should obtain results inferior to mine if—and it is a very important proviso—they will strictly follow out the method, doing neither more nor less than directed.

I can best illustrate these causes of failure by detailing the main faults which dominated the so-called trial of the method at a London venereal hospital. It must be clearly understood that I only go into this matter that others may profit by realizing the mistakes and confusion to which these cases were submitted.

Although the work done was considerable and conscientious, the results were disappointing to the operator and staff, and probably to the patients.

It was not until several months after this so-called trial was made that the operator requested me to account for the differences between his results and those I describe and usually obtain. Accordingly I devoted about an hour and a half to a survey of about twenty charts and case records which had been carefully compiled, and, instead of any mystery, the causes of failure were as clear as the daylight. The worst mistakes were as follows:

1. All but about one-quarter of the cases had received from twelve to twenty-two consecutive treatments instead of the six or seven specifically directed.

2. About four-fifths of the cases had been submitted to irrigations or injections besides electrolysis.

3. In only four or five cases had electrolysis been the only treatment, and even in these various compounds of mercury and silver solutions had been used instead of the fluid I described.

4. In defiance of the instruction, this operator did not lubricate the catheter, and passed it after some manoeuvre of previously filling the urethra with water. The treatment was found painful—nor, I think, need one be surprised.

So these things had been done to about twenty patients with acute gonorrhoea, and treatment by electrolysis had been judged accordingly and a commentary made in the medical press. The only interesting item I noticed in the series was the operator's selection of four or five of his best results, and in each of these electrolysis had been the only local treatment, though even in these a variety of metallic compounds had been substituted for the solution directed to be used.

It is, of course, easy for other workers to avoid the mistakes recorded above, but in justice to the method and its value in gonorrhoea I think such misuse of any serious work should not occur.

Principles of the Electrolytic Method.

As there is still some misapprehension as to the principles of the method, I hope a brief repetition of its essential aims may be excused.

There are two remedial agencies which Nature brings into action in each case of gonorrhoea.

The first is the production of gonococcal antibodies which are essential for the phagocytosis or arrest of the organisms by the leucocytes. As, however, in the acute stage of the disease we can do little to increase these by vaccines or the like, we can only take care to prevent their waste by any unnecessary lavage or other dilution by excessive fluid intake through which the supply of these valuable substances to the affected parts may be hindered.

The second natural agency, however, is that of phagocytosis or the arrest of the gonococci by the leucocytes, both of which are voided from the body in the form of the discharge, and it is here that we can certainly assist Nature. If we can facilitate the voidance of the gonococci