ENDOSCOPY OF THE UTERUS.

WITH A DESCRIPTION OF A HYSTEROSCOPE.*

BY

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CHARLES DAVID, in a Paris thesis (1908), described a method of endoscopy of the uterus, in which he employed an instrument consisting of a sheath into which fitted the cystoscope, closed at the far end by a glass crystal and containing near it an incandescent lamp. By enclosing the lamp he hoped he avoided blurring of the visual field due to the bleeding following the introduction of the instrument, but this instrument was never taken up.

Dr. Rubin of New York has described¹ the technique which he has been employing during the last few months, in making endoscopic examinations of the uterine cavity. The hysteroscope which he has used is a modification of the cysto-urethroscope devised by McCarthy, and can only be used combined with gas inflation. He makes his observations without anaesthesia.

Since last May I have been experimenting with simpler means of uterine endoscopy before hearing of Rubin's work, but under general anaesthesia. Patients in England are not so docile as in America, and do not bear so well manipulations which may be decidedly uncomfortable without an anaesthetic. I first began with a tube angled like a uterine sound, to facilitate introduction of the cervix in the usual way. This tube, after introduction, was straightened out by a device designed by Messrs. Davidson of Great Portland Street, which held it fixed in the straight position. The light was at the proximal or ocular end, reflected into the tube, as in one type of sigmoidoscope. With this instrument I obtained some views of the endometrium, but only fleeting ones, as blood oozing out and mucus soon obscured the view. After the examination of a few cases I soon found that it was unnecessary to have an angled tube, as a straight one is easily introduced after the cervix has been dilated up to 10 or 12 mm.

The next problem was to get rid of the obscuration of the view by blood and mucus. Constant irrigation by sterile water or saline did not solve the difficulty, as it was found impossible to get rid of air bubbles, which spoilt the view. I then thought of continuous suction, as used by Dr. Chevalier Jackson for bronchoscopy. I determined to try a hysteroscope made on the bronchoscope principle. The George P. Pilling Company, surgical instrument makers in Philadelphia, have made for me suitable tubes for uterine work. There are two tubes made of brass, each 28 cm. long, one having a bore of 6 mm. and the other of 9 mm. The light is at the distal end, and is furnished by a dry battery on the current from the main, after it has been run through a suitable resistance. The distal end, which carries the light close to the opening, is bevelled at an angle of 45 degrees, and the edges are rounded off so that there is nothing to scratch the endometrium. In the wall of this tube are three channels—one for the rod which carries the light, and one on each side for suction; either channel can be used for irrigation if need be. When in use the suction channels are connected by rubber tubing to a bottle with a rubber cork, which is kept a partial vacuum by means of an electric suction apparatus. I have found the Mennell pump satisfactory; it can be used with any voltage, which is a great convenience. The 9 mm. tube is intended for general use; the smaller (6 mm.) is reserved for the post-climacteric uterus, or for cases where dilatation to over 10 mm. is difficult.

For an endoscopic examination the patient is prepared

by placing a glycerin tampon against the cervix for two nights to make it easily dilated. I usually slowly dilate up to 12 mm. The hysteroscope is then very gently introduced; a swab on a sponge holder is used as an obturator, and prevents the lamp becoming obscured by blood during the passage through the cervical canal. The suction apparatus should be set going previous to the introduction. When the instrument is passed in almost to the fundus, the swab on its holder can be withdrawn, and only introduced again should the lamp become smeared. With the suction apparatus working briskly, the lamp end of the tube only requires swabbing out three or four times during an examination.

The whole endometrium is then carefully scrutinized by turning the instrument about and by partially withdrawing and reinserting the lighted end. The whole lining of the uterus cannot be seen at once; it has to be examined piecemeal. There is an aluminium handle to the instrument, which is intended to give one direction during use.

I find that the more cases one examines the more one can see. The first time a cystoscope is used it is with very little profit to the observer; and so with the hysteroscope one needs practice to become familiar with the appearances of the endometrium in its functional changes during the menstrual cycle and in its alterations from pathological causes.

So far I have examined some fifteen cases, and have been able to see and remove a large fibroid polypus and diagnose a case of fungous endometritis. I derived great help in removing the polypus by being able to trace up the pedicle to its origin on the anterior uterine wall, near the fundus, and snip it through at the right spot by sight, avoiding buttonholing the uterine wall, which can happen when the weight of the polypus has caused a partial inversion of the uterus. The difference between the appearance of the mucous membrane of the uterus during menstrual life and after the menopause is striking; in the latter case the membrane is much paler and smoother. I have also been able to bring into view the ostium of a Fallopian tube.

I believe endoscopy of the uterus is going to prove useful in diagnosing the uterine causes of genital bleeding, since it can reveal such lesions as glandular hyperplasia of the endometrium, polypi, retained products of conception, chorion-epithelioma, and carcinoma. A piece of tissue can easily be removed for microscopic purposes by direct vision. The diagnostic curettage has often been a disappointment to me and, I am sure, to others. The scrapings removed in this way do not really give the pathologist a fair chance.

The instrument and the method of using it here described have the advantage of extreme simplicity. Uterine endoscopy is in its infancy, but from the limited experiences I have had of it I believe that it will be of great use as an aid to diagnosis, and of some therapeutic value also.

REFERENCE.

¹ Amer. Journ. Obstet. and Gynecol., September, 1925.

THE TREATMENT OF UTERINE FIBROIDS
BY MYOMECTOMY.*

BY

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It should be an axiom that when surgical intervention is necessary an innocent tumour should be removed, but the organ which contains it should be left, unless the removal of the tumour alone is a more dangerous operation, or the organ that is left is useless. Myomectomy must from its very nature be a higher ideal than hysterectomy, whether total or partial. Why, therefore, have surgeons and

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* Presidential address to the Ipswich Clinical Society.

gynaecologists continued until quite recently to neglect myomectomy?

I trust I shall be able to demonstrate that the mortality of myomectomy is about the same as that of hysterectomy, and that the uterus which is left is a useful organ. The first recorded case is that of Atlee of Philadelphia in 1844. The patient bravely endured the operation, which was, of course, performed without an anaesthetic. It lasted nineteen and a half minutes—a very creditable time. One fibroid, weighing nearly 2 lb., was removed, and though peritonitis supervened the patient recovered and was completely cured. Atlee very wisely says that this case goes far in testing the propriety of gastrotomy, as the operation of opening the peritoneal cavity was then called.

After this the history of myomectomy was one of continued opposition until quite recently. In 1898 Alexander of Liverpool pleaded strongly for it, but his opinion was against the consensus of opinion, probably because the mortality was then higher than that of hysterectomy.

Indications and Contraindications.

The indications for myomectomy are:

1. The fact that the woman is of child-bearing age—that is, up to 40—should indicate the advisability of myomectomy, and is, in fact, its all-important indication.
2. All pedunculated and single tumours should be removed and the uterus left.
3. There are cases in which hysterectomy would otherwise be indicated, but in which there are so many adhesions between the womb and other organs that myomectomy is the easier and safer operation. I recently operated on a woman who, five years previously, had had removed, for a tuberculous affection, the left ovary and tube and the right tube. At the operation it was found that there was in the uterus a single fibroid undergoing red degeneration. The womb was bound down by many adhesions. Myomectomy was a comparatively simple operation; hysterectomy would have been most difficult. There are other cases in which the enucleation of one or more fibroids renders the following hysterectomy a far easier operation.
4. Some patients object to the loss of the uterus. In these cases, even if over age, myomectomy is advisable.

The contraindications are as follows:

1. If the patient is above child-bearing age, all things being equal, hysterectomy is, as a rule, the operation of choice; but when only one or two fibroids are present, if they can be easily and safely removed by myomectomy, then certainly that is the correct operation.
2. It has been taught that only in cases in which there are a few fibroids is myomectomy advisable, but neither the number nor the position of the tumours should debar us from performing myomectomy. The only index for guidance is the ease, rapidity, and safety with which the operation can be performed. If it is possible to shell out the fibroids more easily and quickly than to perform hysterectomy, then myomectomy holds the field. I have removed as many as nineteen tumours from the uterus in one case and completed the operation in twenty-two minutes. That patient is alive and well, and has had one baby.
3. Coexisting disease of the ovaries and tubes is a contraindication to myomectomy.
4. When the patient is blanched from excessive loss of blood, then the operation of choice is that which will take the shortest time to perform, and not, as has been taught, hysterectomy. I have shelled out a single fibroid, measuring 6 inches in diameter, from a patient who was blanched from a loss lasting three weeks. The operation lasted eighteen minutes. Hysterectomy would certainly have lasted longer.
5. If malignant, naevoid, or septic degenerations are present, then myomectomy is contraindicated.

Myomectomy is indicated during pregnancy under the following conditions: (1) when pre-existing tumours grow rapidly; (2) when acute pain is produced by red degenera-

tion; (3) when pressure symptoms make life a burden; (4) when the position of the tumour makes it almost certain that it will produce obstruction during labour.

If any of the above conditions exist operation is advisable. If the fibroids are fairly superficial and not too numerous then myomectomy should be performed and the pregnancy allowed to continue to term. If the tumours are too numerous to be dealt with in this way the pregnancy should be allowed to continue to term, and at that stage Caesarean section, followed by hysterectomy, should be the operation of choice.

The Results of Myomectomy.

Unless the results are superior or equal to those of hysterectomy the operation is not an advisable one.

It is important in this connexion to consider the following points: (1) the mortality; (2) whether the operation cures the symptoms and whether recurrence of fibroids is common; (3) whether patients are capable of child-bearing after the operation.

1. Bonney has recorded a mortality of 2 per cent. for myomectomy with a mortality of 1.5 to 0 per cent. for hysterectomy, but he points out that his mortality has been gradually dwindling. Giles has recorded a mortality of 0.93 per cent. as against 0.73 per cent. for hysterectomy. The Mayo Clinic, out of 504 myomectomies, had a mortality of 0.8 per cent. Personally, as could be expected, I have had very few cases in comparison to these authorities, but up to the present I have had 12 myomectomies with not a single death.

2. If symptoms recur this clearly shows either that small fibroids have been left or that a thickening of the uterine mucosa or uterine polypi are present. Bonney advises that the uterine mucosa should always be opened so as to allow of these conditions being diagnosed and dealt with. It is also important that all fibroids, however small, should be removed. Giles reports that there had been no recurrence of fibroids in 90 per cent. of the cases and that menorrhagia had recurred in 9.3 per cent. after operation. The Mayo Clinic reports that out of 504 myomectomies only five later required hysterectomy, a percentage of less than 1. In my series of 12 cases I have, up to the present, had no recurrences and no menorrhagia. I believe this is due to the following of Bonney's advice.

3. The question whether patients become pregnant after the operation is, I think, the important point, and clearly shows the superiority of myomectomy to hysterectomy. Since it has been shown that its mortality is practically the same as that of hysterectomy, and is after all as preventable a mortality, and since it has been shown that the recurrence of menorrhagia is rare, then the birth of but one child in a whole series of myomectomies shows the superiority of this operation to hysterectomy for fibroids. Giles has shown that 26 per cent. of women who could have children have become pregnant. The Mayo Clinic has reported that out of 504 cases, whether married or not and whatever the ages, 24 have had children, 28 children had been born to these women, and 5 more were then pregnant.

In my series of 12 cases, one woman has had one child, one has had two children, and one has had three. These six children are all living. One other woman became pregnant, but developed eclampsia and abortion had to be procured. Out of the remaining seven women, three have been operated on too recently for any report to be made. One is an unmarried woman and four have remained sterile. I have little doubt that more babies could have been born had the mothers so desired.

The operation is normally one of only moderate difficulty, but at times, for various reasons, it becomes one of extraordinary difficulty. The abdominal incision should be made vertically to one or other side of the linea alba over the rectus muscle. An incision of 6 to 7 inches is usually sufficient. The rectus is drawn outwards and the uterus exposed in the ordinary way. The Trendelenburg position is often of very great assistance. If possible an anterior incision should be made over the fibroid. Bonney makes a great point of this so as to prevent adhesions between the small intestines and the posterior surface of the uterus,

but it is quite simple to graft a piece of omentum over the incision and thus prevent adhesions. The incision is made through the capsule to the fibroid, which as a rule shells out easily. If any difficulty occurs it is far easier and quicker to carry the incision right through the tumour, the cut surface of which is then gripped with a volsellum and easily shelled out, than to make a long search for the demarcation between the capsule and the fibroid. If there are two or more fibroids, and they are situated close to each other, it is easy to carry incisions down to the other fibroids from the bed of the first, and to shell them out through the same opening. If this is impossible multiple incisions are as easy to deal with as one incision.

In the case of a fibroid with a thick stalk the usual practice has been to excise the stalk as well as the tumour. This, however, leaves a large raw surface. It is preferable to make the incision convex on one side of the stalk so that there should remain a portion of the capsule to stitch over the raw surface. When many fibroids are removed a very shapeless uterus is left, but as involution takes place the most shapeless uterus soon recovers its shape, size, and functions. The uterus from which I removed nineteen fibroids was a shapeless mass, but on examination to-day a practically normal-sized uterus can be felt; this patient has had one child.

The great danger is haemorrhage. As a rule the bleeding can be controlled by pressure. If this is not sufficient, temporary pressure can be applied to the ovarian and uterine arteries with intestinal clamps, care being taken not to apply pressure to the Fallopian tubes by making an opening through the broad ligament, so that one blade of the clamp can be passed through it. The two great secrets of success are (1) to remove all fibroids, however small; only an educated finger can feel a small fibroid through the thickened uterine wall; (2) to obliterate all cavities from which fibroids have been removed; unless this is done there is danger of haemorrhage. Ligatures of silk should be used unless the uterine mucosa has been opened; then catgut is indicated. The sutures can be passed as mattress sutures or circularly round the cavities so as to obliterate them in layers. Finally, a layer of Lembert sutures should be passed through the peritoneum to cover the last line of sutures. Ochsner's recommendation, that sutures should be tied tight enough to stop haemorrhage, but not so tight as to bleach the tissues, should not be forgotten.

I think Bonney's advice, that in every case the uterine mucosa should be opened and the uterine cavity examined for thickening or polypi, is most important. I feel sure that menorrhagia following myomectomy is often due to simple causes which could easily have been put right at the time of the operation.

The number of fibroids removed from my series of 12 were: 19, 17, 13, 11, 8, 6, 6, 1, 1, 1, 1, 1. The time taken at the operation is an important matter. The shorter the time the less the shock, and the more fibroids can be removed. My times have been 22, 30, 25, 28, 20, 30, 21, 25, 28, 18, 39 (when an appendicectomy was also performed), and 25 minutes. The woman from whom 19 fibroids were removed has had one baby; the woman with 13 fibroids has had two children; one with one fibroid has had three children; and the one with 17 fibroids became pregnant but had eclampsia.

I have had in my series one cervical fibroid which weighed over 2 lb., and in one case I removed a large fibroid with red degeneration at the fourth month of pregnancy. The woman was taken with acute abdominal pains. The womb reached nearly to the ensiform cartilage and was very tender. The tumour shelled out very easily; it weighed over 2 lb. The pregnancy was not disturbed and the patient has since had two other children.

I have little doubt that myomectomy is the correct operation, not, it is true, for all fibroids, but for a very large number for which hysterectomy is done to-day. It seems but reasonable that an operation with so low a mortality, which cures the patient's symptoms in so large a proportion of the cases, and which permits of the continuation of child-bearing, especially in these days when children are so badly needed by the nation, should become the operation of choice in the not distant future.

THE TREATMENT OF THE PAROXYSMAL STAGE OF WHOOPING-COUGH.

BY

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WHOOPING-COUGH is still one of the chief killing diseases of infancy and early childhood. Hitherto there has been discovered no drug capable of allaying the paroxysms which, especially in infants, so often end in convulsions and death. The following series of observations was carried out at the instance of the late Dr. Claude B. Ker, superintendent of the Edinburgh City Hospital for Infectious Diseases, to find whether the reputation enjoyed by *Drosera rotundifolia* in Scandinavian countries¹ and amongst many general practitioners² of this country, as a specific in the treatment of the paroxysmal stage of whooping-cough, is justified, by putting the drug to a definite clinical hospital test.

Method.

1. Whooping-cough cases were selected in pairs, each pair being as similar as possible in respect of (a) stage of disease, (b) severity of spasms, (c) age.

2. Tincture of *Drosera rotundifolia* was given in known strength to one member of the pair, and using the other as a control, either with or without another antispasmodic, both were compared from time to time as regards improvement in the number and severity of the paroxysms.

To facilitate comparison the beds of each pair were placed beside each other in the ward when possible. As a continuous record of the paroxysms and whoops had to be kept day and night, a sheet of paper was placed in a prominent position in the ward, and the sister or nurse by day and the night nurse by night marked up the number of whoops in each paroxysm opposite the name of the patient immediately on termination of the paroxysm.

Drosera rotundifolia was given in the form and dose in which it is usually prescribed—that is, min. iij t.i.d. of a tincture of 1 in 10 proof spirit. The 10 per cent. tincture was made up in teaspoonful doses of varying strengths, and in four cases the dose was gradually increased by the addition of 1 minim daily to min. xij t.i.d. to test the effect of dosage.

The controls of the majority of the cases were treated with tincture of belladonna, the antispasmodic in which the late Dr. C. B. Ker had the most faith. The dose given was min. ij t.i.d., increasing by 1 minim daily till the pupils were widely dilated. In other cases the controls were not treated with any antispasmodic.

In all, 31 pairs of cases were investigated over different periods from February to April, 1925. In 11 of the 31 pairs of cases observations had to be abandoned on account of one or other of the pair dying or being removed to another ward (where control was not practicable) in less than three weeks after commencement of the drug.

Summary of Results.

(a) In 16 pairs of cases, using tincture of belladonna as the control, 8 showed greater improvement under tincture of belladonna, 3 under tincture of *Drosera rotundifolia*, and in the remaining 5 pairs of cases no appreciable difference between the two drugs as regards rate of improvement was found.

(b) In 4 pairs of cases, where the control was not treated with any antispasmodic, more rapid improvement was observed in the control of one pair, and in the other 3 pairs of cases no appreciable difference was found.

(c) In 4 cases where tincture of *Drosera rotundifolia* was increased from min. iij to min. xij t.i.d. by 1 minim each day, no difference in the rate of improvement was noticeable. In 2 of these cases the patients developed enteritis after about a week, which stopped in one case a day after the tincture of *Drosera rotundifolia* was stopped, but in the other case enteritis continued after cessation of the drug, and death followed twenty days later. In the latter case there was also a bronchopneumonic element.