Original Articles.

THE OPERATIVE TREATMENT OF UTERINE FIBROIDS.[1]

BY E. W. CUSHING, M.D., BOSTON, MASS.

OF all the advances in surgery achieved during the last few years none has been more surprising or more gratifying than the improvement in the methods and in the results of the operative treatment of fibro-myomata of the uterus; while at the same time the more accurate knowledge of the clinical history and morbid degenerations of the neoplasms, which has recently been obtained, has introduced entirely new views as to the indications which call for operation and as to the dangers which are incurred by neglecting such growths until the life of the patient is actually endangered by their presence.

It is not very many years since, on the one hand, a uterine fibroid was regarded as a wholly benign growth almost sure to cease increasing, or to diminish, at the menopause; while, on the other hand, the results in the few cases subjected to operation were so unsatisfactory that there was but little encouragement for surgeons to persevere in attempting to remove these growths. Thus Mathews Duncan could say, "Whoever heard of any one dying of a fibroid tumor?" while physicians everywhere sharing his views created a body of professional sentiment which has come down to the present day, regarding such growth as comparatively innocuous, and strongly discouraging all operative interference, even in extraordinarily severe cases, until the life of the patient was in imminent danger. On the other hand, as good operators as Sir Spenser Wells, a man already distinguished in abdominal surgery and experienced in the removal of ovarian tumors, would entirely refuse to interfere with uterine fibroids; and if by chance one was disclosed on opening the abdomen for the removal of an ovarian tumor, far from proceeding with the removal of the growth, they would close the abdomen and in confusion lament the error of their diagnosis.

As the natural consequence of these views and conditions, hysterectomy was only performed as a last and desperate resort in patients who were sinking from hæmorrhage, or from exhaustion incident to the growth or degeneration of the tumor. And it is little wonder that the mortality was high. The pioneer work in this operation was done in Massachusetts by those determined operators, Burnham and Kimball, of Lowell. Burnham's first operation was performed June 26, 1855, the patient being still alive in 1884. It is conceded that this was the first removal by abdominal section of the uterus and appendages for fibroid disease. Burnham operated 15 times with 12 deaths, a mortality of 80 per cent.; while his mortality in 338 cases of abdominal section of all kinds, including the hysterectomies, was 25 per cent., that from 238 complete ovariotomies being 20 per cent.[2]

By improvement of technique, and by the growth of institutions where a large number of cases could be operated upon under improved conditions by trained surgeons, the mortality from hysterectomy was gradually reduced from 80 per cent. to 60 and 50 per cent. and finally to about 35 per cent., where it stood some ten years ago at the beginning of the era of advances in abdominal surgery. Since then the reduction of mortality has gone on progressively; but it is of the utmost importance to remember that the improved results are not all due to the improvement of surgery, but are due to the fact that the operation is now performed before the patients are so reduced as to have thrown away most of their chances of recovery.

Nevertheless, grim and lamentable cases still occur too often, where, either from timidity on the part of the patient, or oftener from bad advice and mistaken ideas on the part of her medical adviser, the time for favorable operation has passed by. The chances of recovery have been cruelly thrown away by miserable delay and worse than useless treatment, until the patient is delivered to the surgeon sinking under her burden, a subject for a hazardous and gruesome operation, and likely then to die, leaving grief to the friends, blame to the surgeon and discredit to the profession.

We are passing through the same change in theory and practice in regard to fibroid tumors which has already been accomplished in regard to ovarian growths. With the gradual enlightenment of the profession and of the public, it is now rare to find the formidable cases of huge neglected ovarian tumors which were formally so frequently brought to surgeons for operation. No one will now maintain, as was formerly done, that an ovarian cyst should not be removed until its presence actually threatens the life of the patient. Instead of throwing away the chances of the patient by delay, by treatment, by repeated tappings, all competent physicians now recommend removal of an ovarian cyst as soon as its presence is detected, with the result that the operation in these early cases has become practically free from mortality; it is approached with confidence; it is accomplished with facility; it is a grateful interlude between the serious acts of important abdominal surgery.

Now, in regard to uterine fibroids a similar course of reasoning will apply, *mutatis mutandis;* like ovarian tumors, they are apt to grow, and when of large size they are very likely to degenerate and to cause the death of the patient; unlike ovarian tumors, they are peculiarly apt to injure the health and exhaust the vitality of the patient by repeated and protracted hæmorrhage, and they are liable to slough and to suppurate. In a considerable proportion of cases the myomatous uterus becomes affected with malignant disease. The tumor is liable to cause dangerous symptoms or fatal consequences by pressure on the ureters or on the intestine. If, therefore, there were any such certainty or probability of the continued growth of fibroid tumors that there is of the increase of ovarian tumors, the rules which are applicable to the latter class would at once govern our practice in regard to the former; the immediate removal of uterine fibroids as soon as discovered would be the rule. But here is precisely the difference between the two classes of tumors. Many women have fibroids which are small, which do not grow, and which cause no symptoms. In many others the tumor slowly increases during the years of functional activity of the uterus, but ceases to grow (or even diminishes) after the menopause. It is, therefore, obviously not necessary to operate on every tumor of this kind; and the establishment of the indications for surgical interference becomes in the highest a matter of individual judgment

[1] Read before the Obstetrical Section of the Suffolk District Medical Society, November 24, 1893.

[2] A full report of Burnham's 338 cases was published by his grandson, Dr. H. P. Perkins, Jr., in the Annals of Gynæcology, May, 1888, vol. i, page 339.

and experience, to be determined by the nature of each separate case. Wherever there is a chance for difference of opinion, it is safe to assume that doctors, like other people, will disagree; but the more opinion can be founded on sound pathological knowledge and on the records of wide observation, and the more questions in dispute are illuminated by experience and elucidated by discussion, the nearer shall we approach to a consensus of opinion and to the establishment of definite rules of practice. In nothing is this more evident than in the treatment of fibroid tumors, and in no department of surgery is professional opinion crystallizing more rapidly into definite rules of procedure, based on accurate knowledge.

The latest aspects of this question are not as yet presented in the text-books, but are earnestly discussed in medical societies and medical journals in this and in other countries. Particularly, at the last two meetings of the American Gynecological Society and at the Pan-American Congress a great deal of attention was devoted to the subject of uterine fibroids; and while there are numerous individual differences of opinions, yet it is plain that those most interested in the subject, and whose opinion is based on the widest experience, have modified their views greatly within the last few years and are now approaching unanimity of opinion.

In the first place, it is practically conceded that electricity is powerless to prevent the growth of fibroid tumors; and it has been abandoned by many very competent men who, a few years ago, were adopting the new treatment with enthusiasm. It will, in many cases, arrest and control hæmorrhage; in many others it will allay pain and nervous symptoms; in not a few, however, it will set up very serious suppuration, or cause peritonitis of various grades, leaving adhesions which afterwards seriously complicate any operation which may become necessary.

It is substantially agreed that tumors, even of moderate size, require operation if they are growing, if they cause hæmorrhage, if they occasion pain or pressure symptoms, or if they are complicated by salpingitis. There is some difference of opinion as to the size which a tumor should have obtained to warrant removal. One would operate on growths as large as the fist, another on nothing smaller than a cocoanut, but none would countenance waiting until the tumor was larger than the adult head as was so frequently done only a few years ago, and as is still advised by some conservative, but ill-informed practitioners. It is agreed that the dangers of operation increase in direct proportion to the size of the tumor, the age of the patient, the reduction of vitality caused by repeated hæmorrhage and disturbance of the nutrition; that the fatal cases are usually the neglected ones; that the difficulties of operation and consequent dangers are enormously increased by the presence of adhesions, by the complications of salpingitis, of pyo-salpinx, or of cystic or purulent degeneration of the ovaries; that incarcerated tumors may press on the ureters and bladder, while large ones drag these organs out of place, often leading to serious and fatal disease of the kidneys; that a very large proportion of tumors commence to grow or continue to grow after the menopause; that even a larger proportion of those which, having arrived at large size at the time of the menopause, then cease to grow, do not diminish but degenerate, becoming soft and decomposed, and by sloughing or septic absorption lead to the death of the patient or to an operation *in extremis*. It is agreed that an operation for removal of an ordinary fibroid of the uterus by a competent surgeon upon a healthy patient is not much more dangerous, if at all, than is the removal of an ovarian cyst, and that all improvements of technique tend to reduce the danger of operative interference in uterine tumors to such an extent that they are more and more coming under the rules which are applied to ovarian tumors.

Another consideration is worthy of mention here, namely, that the diagnosis of pelvic growths is frequently so obscure; and the examinations on which it is based are even more frequently so insufficient that growths are often called fibroids which really belong to other and more dangerous categories. I have seen not a few cases where supposed fibroids of the uterus were really cases of cancer of the ovary, cancer of the uterus, solid ovarian tumor, pyo-salpinx with induration of the pelvic roof, impacted dermoid cysts, etc. Other surgeons have had similar experiences. The chances of operation have been lost or the results of surgical interference unduly jeopardized in these cases by well-meant delay based on the supposition that the growth was a fibroid of the uterus and therefore required no operation.

Having now noticed at some length the indications for operation in fibroids of the uterus, we may consider the different operations proposed for their relief or their removal. Those which have received any extended trial are:

(1) Removal of the uterine appendages (Hegar, Tait).

(2) Tying uterine arteries from vagina (Franklin Martin).

(3) Myomectomy or removal of the tumor, leaving the uterus intact.

(4) Removal of submucous fibroids through the os uteri and vagina.

(5) Vaginal hysterectomy.

(6) Supra-vaginal hysterectomy: *a*, stump fixed in abdominal wound; *b*, stump fixed just below abdominal wound, but outside of abdominal cavity (Kelly); *c*, stump turned forward into vagina (Byford); *d*, stump intra-peritoneal (Schrœder); *e*, modified by Martin, Zweifel, etc.; *f*, stump extra-intra-peritoneal, the arteries being tied in broad ligament and the stump covered by peritoneum (Eastman, Chrobak, Dudley, Goffe, Baer).

(7) Total extirpation: a combined operation, tumor from above and cervix from below, with clamps below (M. D. Jones); with ligatures (A. Martin, Boldt). Total abdominal extirpation (A. Martin, L. Stimson, Krug, Polk and others).

The time at our disposal this evening will not suffice for the discussion of the technique of these various forms of operation; and probably such a treatment of the subject would not be of general interest. As may naturally be supposed, opinions are somewhat divided as to the choice of methods and as to certain details of operation and procedures which on the whole are essentially similar. Nevertheless, I believe it will be of interest to point out the indications which would govern me in selecting one method or another, omitting here historical details and questions to priority or invention.

(1) As to the removal of uterine appendages. This operation, introduced by Hegar and Tait, and resting

very largely on the authority of these names, and especially on the strong recommendation of Tait, gives excellent results in the case of small tumors where the principal difficulty is monthly hæmorrhage. Few operators, however, at present are willing to trust to it where the tumors are large and rapidly growing. It is hard to see how the artificial induction of the menopause will do more than the natural change of life; and this, as stated above, notoriously does not control the continual growth of tumors which are large and show a tendency to increase rapidly. Even Tait does not claim that it is of any use in cases of solitary soft myoma or in fibro-cystic tumors.

In the light of facts recently placed in evidence concerning Tait, his statistics have far less weight with the surgical world than was the case a year or two ago. The chief objections to this method, when the tumor is large, are, first, the possibility of degeneration of the growth, and, secondly, the difficulty of employing drainage. My own experience with this method has been very satisfactory. I have used it a good many times for small tumors, but only once for one larger than a cocoanut, which was firmly bound in the pelvis. This case died; and I have always been sorry that I did not perform a hysterectomy, inasmuch as I could not use drainage when the tumor was in the pelvis. In all the other cases menstruation ceased entirely, and the growth diminished or gave no further trouble. Other surgeons, however, report cases where the tumors continue to grow in spite of this operation, necessitating subsequent hysterectomy. The chief indication for the choice of this operation is the fact that the tumor is growing in the fold of the broad ligament, leaving the appendage readily accessible.

(2) As for tying the uterine arteries from the vagina hoping thereby to check the growth of the tumor, this is an operation recently suggested by Martin, of Chicago, but I have no personal experience of it. As the procedure is easy and safe, it seems not unphilosophical to try it in cases where the tumor is not so large that there would be danger of its degenerating or sloughing from the sudden cutting off of most of its blood-supply.

(3) Myomectomy, or removal of the tumor, leaving the uterus intact, may be a very simple or a very formidable operation, according to whether the growth is pediculated or is imbedded in the wall of the uterus and inclosed by a capsule consisting of uterine tissues. In the first case it is a safe and quick operation to constrict a pedicle and fasten it with pins in the angle of the abdominal wound. It is not so easy to treat the pedicle intra-peritoneally. As is the case in ovarian tumors, if the growth is cut away, the stump of the pedicle retracts, the vessels are hard to isolate and secure, the wound in the uterus gapes, and stitches used to close it are apt to bleed. The best method of intra-peritoneal treatment is to reflect the peritoneum from the pedicle, commencing at the lower part of the tumor, then to sew through the pedicle the shoemaker's stitch of catgut before cutting it, tightening and tying the ligature as the tumor is cut away, and covering the stump with reflected peritoneum.

The removal of large myomatous nodules from the uterus has been principally practised and recommended by Martin of Berlin, and is fully described in his work. It is not often that suitable cases occur for this operation, since usually the large nodule is accompanied by smaller ones; and where it does not seem that the patient will be cured by the removal of the uterine appendages, surgeons perform hysterectomy rather than to make and then close considerable cavities in tissues as retractile and vascular as are those of the uterus. The singular celerity and dexterity of Martin enables him to obtain results which are satisfactory, while those less gifted would not suceed as well.

(4) I shall say little concerning the removal of submucous fibroids through the os uteri. There is little new in this question, except that the ecraseur and the wire loop have fallen into innocuous desuetude, being replaced by simpler and more surgical methods of cutting and tying the pedicle, if there is any. While sublimate irrigation and packing with iodoform gauze have diminished the dangers of sepsis from cavities left in the uterine wall by the enucleation of submucous nodules, the difficult and hazardous operations which were formerly performed for the removal of large submucous growths have mostly been supplanted by hysterectomy. My experience would lead me to believe, however, that where a fibroid tumor of the uterus in the abdomen is complicated by the presence of a sloughing fibrous polyp which has been extruded from the uterus, it is the safest to remove the polyp first by vaginal operation, leaving the hysterectomy to be performed at a later date when the cavity of the uterus is free from infection.

(5) Vaginal hysterectomy offers an easy and safe way of treating cases where the uterus is of moderate size and where there is much hæmorrhage which is not easily relieved by curetting. It may also become an operation of necessity, when in attempting to remove a submucous growth, the uterus is perforated. Vaginal hysterectomy may fairly be considered as a rival of the removal of the appendages, as in suitable cases it is just as easy, is fully as safe, and because the uterus is of no use after the removal of the appendages, but may be very annoying to the patient, since it is heavy and is apt to become retroverted.

(6) A discussion of the various methods and modifications of supra-vaginal hysterectomy would alone form a voluminous paper. Of the two great varieties into which it is divided, the extra-peritoneal treatment of the stump by fixing it in the angle of the abdominal wound has been popular, and on the whole has given the best results of any method devised. Keith, Bantock, Tait, in England, and in this country Price and his followers, use a wire loop to constrict the pedicle, which is tightened by a small ecraseur or *serre-nœud*. The Continental operators, and some in this country, prefer the use of an India-rubber constrictor made of an ordinary piece of tubing; and if this is properly used, it is in my judgment far superior to the wire loop. The principal point to be observed is that it should pass twice around the pedicle, above one pin and below the other; in this way it can be made to lie on the skin instead of being buried in the wound. If the pedicle is properly made, it is slender; by exposure to the air it becomes entirely dry, does not slough nor smell badly, and when properly adjusted the dressings need not be touched at all until about the tenth day, when the constrictor and the stump are removed together. The other points to be observed are infinite care in cleansing the vesico-uterine fold of the peritoneum, the accurate coaptation of the abdominal peritoneum around the stump and below the constrictor, and the use of the glass drainage-tube in all complicated cases. The tube should be separated from the stump by two

or three stitches, that is, by an interval of about three-quarters of an inch, and can be removed as usual on the second day without interfering at all with the stump. With these precautions the objections to this treatment, which have been the principal cause of the introduction of other methods, are not well founded. There is no need of having a bulky pedicle or a sloughing stump or a large opening predisposing to hernia. Contrary to the general opinion on the subject, it requires a higher degree of real surgical skill, care and perfection of technique to treat the pedicle in this way properly than to remove the uterus entirely; but the saving of time, of shock, of hæmorrhage and exposure of the intestines, which can be obtained by this method, must weigh strongly in its favor as against the more recent methods of operation which have lately come in fashion and which are considered more ideal. The method has served me well in all sorts of difficult cases — in big tumors, in adherent tumors and in tumors complicated by pyo-salpinx, and even where there was perforation of the intestine; and I know that in feeling that it should not be abandoned lightly in favor of other methods, I have the full support of Bantock, of Price, and of many other operators, whose excellent results entitle their opinions to the utmost consideration.

In spite of the good results obtained by the extra-peritoneal method of treating the stump, some operators have always insisted that this was not the best procedure that could be devised, but that like the corresponding treatment of the pedicle in ovariotomy, it was merely a temporary method and a halting-place in the march of progress towards an ideal method. First, Schrœder, and then Martin, of Berlin, were the great maintainers of this theory; and their method, as is well known, consisted in making the stump with an anterior and posterior flap which were brought together by silk or catgut sutures. Unfortunately, owing to the treacherous nature of uterine tissue, the stumps would slough if tied too tightly, while if tied less firmly they would ooze or bleed; so that the results would not compare with less ideal but more practical methods. Zweifel has now so modified this method by an interlocking stitch of silk in the broad ligament and of catgut across the cervix, that he has obtained admirable results; while Martin has abandoned it in favor of total abdominal extirpation. The intra-peritoneal method of Schrœder has, however, also been modified in this country in such a manner that the uterine arteries are tied in the broad ligament outside (but near) the uterus, when the cervix is cut away low down, and is then either dilated, burned or drained after the method of Eastman, which has been followed by Chrobak and others on the Continent, or is simply left untouched according to the method of Baer; in either case the peritoneum is united above the stump. The only difficulty with this operation is that there is a tendency to suppuration below the peritoneum; and if much of the stump is left, it is very apt to slough, owing to the entire deprivation of nutrition of the part. This not unnaturally leads to the conclusion, that where the uterine arteries were so securely ligated as to make the stump liable to slough, it was best to remove it *in toto;* and this method has been adopted with great enthusiasm by Martin in Germany, and by L. Stimson, Krug, Polk, Boldt, Edebohls and others in this country. As one step in arriving at this operation, the body of the uterus was removed from above and the cervix from below, as in vaginal hysterectomy, but with the introduction of the Trendelenberg posture it is so easy to remove the whole from above, that it is now usually done in that way. Martin attaches the vagina to the peritoneum all around with catgut sutures, the ends of all of which are brought out through the vagina. Stimson and Polk use simply four sutures, one each in front and behind and one on each side, the ends of these are brought out from the vagina and the space between is occupied with a packing of iodoform gauze. Polk and Mann strongly recommend the additional use of a glass drainage-tube in the abdominal wound. Other operators close the vagina with catgut and unite the peritoneum above it with a sero-serous continuous catgut suture. Many consider a glass drainage-tube desirable in all these cases, although not all consider it essential.

This, then, at last would seem to be the ideal operation for the removal of fibroids, the only objections being the time required and the resultant shock. The abdomen is widely open for from one to two hours, according to the dexterity of the operator and the character of the case; this is a very serious consideration, and without desiring to depreciate the march of progress toward the ideal, I will say that this operation is not one for beginners, but for dexterous, experienced and skilled surgeons.

A *résumé* of my experience may prove interesting. From January 1, 1890, to November, 1893, I performed hysterectomy for fibroid tumors of the uterus 33 times at the Charity Club Hospital; and from June 25, 1892, to November 1, 1893, I performed the same operation 14 times in my private sanitarium, and three times in private houses, making a total of 50 cases, of which I have accurate records, with 10 deaths, or 20 per cent. Of these cases there were: extra-peritoneal stump, 29, with 4 deaths, or 13.7 per cent.; extra-intra-peritoneal stump, 18, with 4 deaths, 22.2 per cent.; abdominal total extirpation, 3, with 2 deaths, or 66.6 per cent. Besides these, I have had one case of vaginal hysterectomy for fibroids, which recovered; two cases where the operation was primarily to remove large, sloughing, fibroid tumors which had been extruded through the uterus, and in which it seemed at the time best to remove also the body of the uterus from which the growth originated, and which was the seat of other myomatous nodules. Both of these cases died: one on the second day, from uræmia caused by long pressure of the tumor on the ureters and secondary disease of the kidneys; the other sank on the third day after operation, without rise of temperature, dying apparently from cardiac failure due to repeated hæmorrhages, septic absorption before the operation, and the shock of the delivery of the tumor, which, when I first saw the patient, was hanging between her thighs, larger than a child's head, and extremely offensive. During the same period I have removed the uterine appendages some ten times for small uterine fibroids, often combining the operation with ventro-fixation of the uterus. All of these cases recovered, except one who died of chronic sepsis four weeks after the operation. Besides these cases I have had a number of ordinary fibroid polyps, which were removed without difficulty; but I have not taken the trouble to look up the exact number.

Now, in considering the results obtained by the different methods of operation, it is necessary to examine the causes of death in those cases of each class which

ended fatally, in order to discover which operation offers the best chance of recovery, and which is best adapted for any particular class of cases. And first, as to the four deaths which occurred in 29 cases where the stump was treated extra-peritoneally. Three of these occurred at the Charity Club Hospital, and two came close together, and were accompanied by three other deaths from sepsis following particularly simple operations. I think that all these deaths were due to the poisoning of the house by one of the cases of sloughing fibroid above referred to, although they occurred some time after the death of that patient; it seemed impossible to get good results, and I was compelled for a time to suspend abdominal work in that place. It was on the presentation of these facts to the management of the Charity Club that it was decided to build a new building adapted to the serious work which had to be performed there. I am happy to say that the new hospital gives such facilities as can never be obtained in an old dwelling-house used as a hospital, and that there is but little danger of an occurrence of an epidemic of sepsis within its walls. This leaves two deaths to be accounted for among the 29 cases where the stump was treated extra-peritoneally; of these, one occurred at the Charity Club Hospital after the removal of a very large tumor from a woman considerably passed the menopause. The other case was at my sanitarium, in a patient who had a large myoma complicated by pregnancy, requiring a Porro operation; in each case the death was due to obstruction of the bowels. The occurrence of these two deaths set me to reflecting on Keith's remarks concerning the tension of the broad ligament which is occasioned by the traction of the stump when treated extra-peritoneally, and led me to try the intra-extra-peritoneal treatment which was so warmly advocated by Eastman, Chrobak, Baer and others.

Eighteen cases treated by the latter method gave four deaths, or a mortality of 22.2 per cent.; these deaths all came near together, and were particularly painful to me because three of them occurred in patients where there were no particular complications, where the tumors were not inordinately large, and where the operation could have been performed by the extra-peritoneal method with excellent prospects of success.

These four deaths occurred after a series of 13 consecutive recoveries by the intra-extra-peritoneal method, and just when I was flattering myself that I could remove fibroids without fatal results. Besides the cases that died, one other had a considerable discharge of pus from the vagina, no doubt coming from the cervix uteri. The study of these cases revealed one important point in all of the first ten, that is, in nearly all of those who recovered, so much of the uterus was removed that very little of the cervix was left; this was widely dilated, the canal thoroughly burned with the thermo-cautery, and occupied by a twist of iodoform gauze providing free drainage for the space left below the peritoneum and leaving very little of the cervical tissue to be nourished indirectly by anastomosis. In all of the cases that died the dilating and burning of the cervix was omitted; and although gauze was drawn through the undilated cervix from above downward, it is probable that drainage was not sufficient. Probably, too much cervical tissue was left to be properly nourished after the ligation of the uterine arteries. We are thus met with the same difficulty as in Schroeder's operation where a cervical stump is left; if the blood-supply is entirely checked, it sloughs, otherwise it bleeds. One of these cases was of a nature that probably could not have been saved as the tumor had degenerated; the patient was some fifty-four years old, and she had suffered from a series of very severe chills, fever and profuse sweats at intervals of two or three days for three months before she came into my hands. Her physician, Dr. Thurlow, had recognized the nature of the trouble and insisted on the necessity of operation, but the patient obstinately maintained that she had chills and fever, and would not consent to surgical interference until she was evidently failing. The tumor was removed without accident, but the patient showed symptoms of shock while on the table, and did badly from the first. She had a severe chill and sweat the day after the operation, had almost complete suppression of the urine, and died on the fourth day. The tumor weighed over seventeen pounds, and contained over a quart of pus and much broken-down tissue. At the autopsy there was a little purulent-looking fluid on the stump; no signs of general peritonitis. There was multiple abscess in one of the kidneys. Neither of the ureters had been included by the ligatures. Leaving this case out of consideration, I have ten cases of the Eastman-Chrobak operation where the cervical stump was short and was dilated, burned and drained; all of these recovered. There were six cases which were meant to be done by Baer's method, without dilating or burning the stump; and three of these died, besides the hopeless case above reported.

The results of the latter cases, which occurred last summer, lead me to try total abdominal extirpation, in order to get rid of the stump entirely, as advised by so many advanced operators of the day; although I have tried this three times, and lost two cases, yet here again the studies of the causes of the deaths show how misleading are percentages which give only the mortality, without describing the cases.

The first patient had cardiac disease, with compensatory hypertrophy of the heart. She had a large fibroid, which was growing rapidly in a young woman under thirty years of age, and occasioned very profuse and exhausting hæmorrhages, leaving the patient in a deplorable state. She entered the Charity Club Hospital last summer, and insisted on operation in such a way that I could not refuse it, although the extra risk was pointed out to her. The tumor rose high in the abdomen and was freely movable, and it seemed probable that it could be removed in a few minutes with extra-peritoneal treatment of the stump. On opening the abdomen, however, it was found that the tumor had lifted up the broad ligament on each side, and that to make a stump it must be widely separated from its investment of peritoneum. When this was done, the stump was so small that it was a very little matter to remove it entirely. The patient, however, did not react well. She suffered no pain whatever, but was ominously quiet, with a slightly subnormal temperature, and died on the third night, her temperature rising that very evening.

The next case was an ordinary one and recovered without any trouble whatever.

The last case was in a middle-aged woman who had carried a small fibroid tumor for several years, and until past the menopause; during the seven months preceding operation, it had begun to grow very rapidly, so that the specimen, which I showed at the last meet-

ing of the Suffolk District Society, weighed some twenty-five pounds. The tumor was firmly adherent to the abdominal wall and to the omentum, obtaining nourishment chiefly from the latter through a multitude of vessels of which the veins were dilated and looked like bunches of earth-worms. The ovaries were cystic, and with the tubes were firmly bound down to the pelvis. From the rapid growth I feared that the tumor was sarcomatous, and thought the safest way was to remove all. The patient never rallied well from the long operation, never got fairly warm in her hands and feet, although everything possible was done for her; and she died septic on the third day.

The conclusions of my own experience briefly summed up are as follows:

(1) That electricity is useless and dangerous, and has no place in the armamentarium of the surgeon.

(2) That no method will compare with that of extra-peritoneal treatment of the stump in favorable cases, that is, where the abdominal walls are not too thick and the tumor can be lifted out so that a constrictor can be applied around the whole pedicle, including the uterine appendages; that the advantages of this method lie in its rapidity, in the short time during which the abdomen is open, in the entire protection of the intestines from exposure and from handling, and in absence of shock; that with proper care there need be no sloughing of the stump, and little or no suppuration of the wound. I show here two stumps, each removed on the tenth day, with the ligature still in position; they are perfectly dry, hard and inoffensive. This, then, for me is the operation of election for the present, especially in private practice and in all cases where patient is not strong and is ill prepared to withstand the shock of the longer operation required by other methods of treatment of the stump.

(3) For the intra-extra-peritoneal treatment, I should always in future leave as little of the cervix as possible, dilate it, burn it and drain it. This method is applicable to cases in which it is difficult to apply the former one, owing to thickness of the abdominal walls or the rigidity of the pelvic floor, or the presence of dense adhesions requiring drainage. I see little advantage to be gained from leaving any cervix. To avoid the great danger of sloughing of the stump, it must be amputated well below the level of the internal os, after separation of the bladder from the cervix and ligation of the uterine arteries. When all this has been done, there is no difficulty or loss of time in removing all the uterine tissues. Drainage should usually be employed, both through the vagina by gauze and by a glass tube at the bottom of the pelvis, as there is pretty sure to be free oozing.

The fact remains, however, and must never be forgotten, that for either of these methods of operation, by intra-extra-peritoneal treatment or by total abdominal extirpation, the operation is prolonged from half an hour to an hour. During this time the pelvis is exposed to the air and to much handling; considerable blood may be lost, which runs in among the intestines; there is an added shock from the large amount of ether consumed; and the whole burden of proof is, in my judgment, still on those who would use these operations in cases in which the extra-peritoneal treatment can easily and quickly be performed.

ACCORDING to Dr. Squibb, American chloroform is on the whole purer than that used in Europe.

TWELVE CONSECUTIVE AND SUCCESSFUL OPERATIONS FOR APPENDICITIS.

BY JOHN W. KEEFE, M.D., PROVIDENCE, R. I.,
Visiting Surgeon to St. Joseph's Hospital, Surgeon to Out-Patients at the Rhode Island Hospital.

(Concluded from No. 12, page 284.)

CASE VII. M. O'G., male. Age thirty, weaver. First case operated upon in Rhode Island between the attacks.

Admitted to St. Joseph's Hospital May 7, 1893. Family history good. No evidence of transmitted disease; good moral habits. He has since infancy been delicate, although he has had no serious illness until August, when he was taken with pain while at work; pains at first general abdominal, later becoming localized in the right iliac region. He has had attacks since, on an average, every two weeks. Some attacks lasted ten days, while others but one or two days. He was obliged to remain from work so often that he finally had to give up his position in the factory. He had a cyanosed and anxious expression of countenance, weak pulse and poor general appearance. There was pain on deep pressure over McBurney's point.

May 9th. Patient's abdomen made aseptic previous night, and bowels evacuated. Ether breakfast.

Operation. Patient etherized. Present, Drs. Collins, Day, Mitchell, Noyes, Black, Mahoney, Barry and O'Neil. Abdomen scrubbed again with soap and water, ether and corrosive-sublimate solution. Sterilized towels about the field of operation. Instruments sterilized by steam. An incision three inches long was made, a little to the right of and parallel with the border of the rectus muscle, through the abdominal wall. After considerable search the appendix was found, very much enlarged and bound down by firm adhesions to the inner and posterior aspect of the cæcum. Following the longitudinal muscular fibres of the cæcum materially aided in finding the base of the appendix. The adhesions were so firm that I removed three-quarters of an inch of the appendix, thinking that was all there was left of it; but with the finger I was able to break up the adhesions between the appendix and cæcum, disclosing one and one-half inches of appendix still remaining. A catgut ligature was tied around the base of the appendix, and allowed to remain; the appendix was severed with scissors, and a Paquelin cautery used to sear the end of the stump. While searching for the appendix several mesenteric glands were noticed having the appearance of tubercular infiltration. All of the coats of the appendix were thickened. The abdominal cavity was flushed with boiled water and sponged dry. A catgut continuous suture was used to approximate the peritoneum, and four silver-wire sutures through the entire abdominal wall. Silkworm-gut sutures through skin completed the operation. An iodoform dressing was applied. Patient made a good recovery from the operation. Patient rested well during the night. Treatment consisted in giving a drachm of hot water every fifteen minutes.

May 10th. Temperature, morning, 101°, pulse 103; evening, 102.5°, pulse 104. No nausea. Patient of a nervous temperament, discontented, and worries a great deal. He has a cough, with slight expectoration.

May 11th. Temperature, A. M., 101°; P. M., 102°. Peptonized milk, one drachm every fifteen minutes. Pulse strong.