to symptoms should be removed, and that the mortality from such operations is practically *nil*.

The prominent feature and the element of danger in the 2 cases whose histories have been given was the size of the tumor. There are, however, as I have said before, other dangers which are no less to be feared. Thus in these 19 cases there were 2 where there was found malignant degeneration. I say malignant degeneration, though I believe pathologists are in doubt whether such cases are the occurrence of cancer alongside of a fibroid, independently, or an actual change of a fibroid into a cancer, with the probabilities in favor of the former. At least, Dr. Whitney says he never has seen a case where there seemed to be an actual change of one tissue into the other. Dr. Whitney's report of one is as follows: "The examination of the tumor of uterus removed June 11th showed a large fasciculated growth in the fundus, white and fibrous looking. The examination showed it to be a fibromyoma. The fundus of the uterus was enlarged, the cavity filled with a shaggy growth, and the walls extensively infiltrated with a soft, opaque new growth. Microscopic examination showed it to be made up of irregular masses of gland-like tissue in places filled quite solid with epithelial cells. The diagnosis is a fibromyoma combined with adenocarcinoma of the uterus."

The second case which showed a malignant change was a very interesting one. The tumor was about the size of a fetal head, and was of a multiple variety. One nodule had developed low down in the cervix, and it extended towards the left in the base of the broad ligament, so that its removal without cutting the ureter was almost impossible. A portion of it was therefore left. The greater part of the mass, according to Dr. Whitney's report, which I will not give in detail, was composed of nodules of varying size, which had undergone marked calcification, and at one part had become cystic, with rather gelatinous contents, and fragments of anemic necrotic tissue. In one small nodule projecting from the fundus there was a condition which, according to the microscopical examination, justified the diagnosis of a calcifying sarcoma, which Dr. Whitney did not regard as of a very malignant type. The patient returned home in a month, but there was a rapid growth of a malignant character in the course of a few weeks, and she died about four months after the operation.

It will be noticed that in the last case there was in addition to the other conditions a beginning anemic necrosis. This same change occurred also in 2 other cases, both large tumors, but both of which made good recoveries from the operation. One of them was distinctly septic before the operation, and it was undertaken only after a consultation and with grave doubts as to the outcome, but the recovery was absolutely uneventful.

To sum up these grave conditions incident to what are so often called benign and harmless tumors, we have 2 cases of death where the tumors were large, 2 cases of malignant degeneration, and 3 of anemic necrosis, 1 of the latter cases presenting malignancy as well. We thus have out of 19 cases 6 where life was threatened by the presence of these growths. With this array of possibilities before us it seems to me that when patients present themselves with tumors of moderate size, which are clearly causing symptoms which interfere with the patient's en-

joyment of life, that their removal should be urged. By this statement I do not mean that every fibroid tumor should be operated upon. Many give rise to absolutely no symptoms. They may either grow not at all, or so slowly that the menopause may be reached and the tumors atrophy, without in any way proving a source of disturbance. But when a tumor is causing hemorrhage, is causing pain and discomfort, is a source of embarrassment, as it well may be in a single woman, the operation may be prescribed, as not the only, but on the whole the best, course to pursue.

Modern methods of operating have lessened the weight of some objections; thus in young married women who do not contemplate with equanimity the loss of the uterus and an absolute end to all possibility of pregnancy, the hope that a myomectomy can be done may be held out. Increased experience shows that this may be done in the case of tumors of considerable size, and many a woman would be willing and glad to part with her tumor if she need not thereby lose uterus and ovaries.

I therefore find myself, as my experience in the history of these tumors, if left to themselves, enlarges, and the fear of a fatal issue in operating for small tumors lessens with improved technique, advising their removal at an early stage if symptoms are present. How strongly I urge the operation depends somewhat upon the circumstances under which the patient lives. If she is where I or some careful practitioner can watch her, and examine her from time to time, note the effect of any hemorrhage which may be present, observe the rate of growth of the tumor, and be prepared to operate or advise operation before the patient's general health has been undermined, I do not urge immediate operation so strongly. Should she desire an operation, however, I should accede willingly, as I believe a patient has a right to decide for herself in such a matter. In the case, however, of a patient who lives at a distance, who cannot be watched, and who cannot command skilled oversight or service, I should urge operation without delay.

HYSTERECTOMY FOR MYOMA IN AMERICA.¹

BY ERNEST W. CUSHING, M.D.,

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IN the development of the operation of hysterectomy America has had a large share, both by original inventions and by adopting and perfecting the work of Continental and British operators. Although the earlier surgeons worked in isolation, and in ignorance of the methods of each other and of European operators, yet during the last generation a constant succession of ambitious youths and of successful and mature surgeons has taken advantage of the unbounded courtesy of distinguished European operators, and especially those of Germany, to complete their education or to improve their practice, respectively, by observations in the great clinics of the Old World.

A complete review of the evolution of hysterectomy in America would be too voluminous for this occasion and the writer would refer to an article already published by himself on that subject.² It may suffice to

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, March, 28, 1900.

² Evolution in America of Abdominal Hysterectomy and the Total Extirpation of the Uterus. *Zeitschr. f. Geb. u. Gynäk.*, 1895; *Annals of Gynecology and Pediatrics*, June, 1895.

point out the principal contributions of Americans to the development of this branch of our art and we find that the country which first gave to the world ovariectomy for tumors (McDowell, 1809) gave it also :

The first successful hysterectomy (mistaken diagnosis), Burnham, 1853.

The first intentional hysterectomy, success, Kimball, 1853.

A very early if not original use of the position, with the elevated pelvis, and head to the light, Noeggerath, 1873.

The first application of galvanism to uterine myomata, Cutter, 1874.

The first application to the treatment of uterine myomata of Battey's operation of ablation of the appendages, Trenholme, 1876.

Valuable modifications of the intraperitoneal method of treatment of the stump, Marcy, 1881.

A series of improvements in the technique of the extraperitoneal method of treating the stump by which intraligamentous tumors and those deep in the pelvis can be removed, J. Price and his pupils, 1886.

Total abdominal extirpation of myomatous uterus by use of clamps (first resuscitation of the operation in America since those of Freund had been abandoned), Jones, 1888.

First separate ligation of the uterine arteries in their continuity, and total extirpation by this method, Stimson, January, 1889.

Method of total extirpation by use of a staff, Eastman, 1889.

Total abdominal extirpation, fastening stump of vagina to abdominal incision, for prolapse, Polk, 1889.

Methods for making the stump intra-abdominal, but extraperitoneal, Polk, 1888; Kelly, 1890; Byford, 1890; Baer, 1892.

Total abdominal extirpation of the uterus with suppurating appendages as a matter of election, Baldy, Krug, Polk, 1893.

Enucleation of the stump as well as the myoma by the use of a serrated gouge, without severing the uterine arteries, Eastman, 1894.

Total extirpation of the uterus in cases of extra-uterine pregnancy, where the tube which is not pregnant is diseased, Krug, 1894.

A collection of the results of the work of thirty-five American surgeons up to 1895, including operations for myoma, cancer and salpingitis, showed that during this transition period, when operators were experimenting and learning their art, and while the aseptic technique was being introduced into our hospitals, out of 1,188 cases there were 164 deaths, or a mortality of 13.8%. Since that time there has been an enormous improvement, so that at present abdominal hysterectomy is comparatively a safe operation. In the hands of good operators there are often series of 60 or 75 or more cases without a death, and in the hands of general practitioners the mortality is lower than would be expected.

The changes in methods of performing hysterectomy for myoma may be briefly summarized as:

(1) Entire abandonment of the extra-abdominal treatment of the stump by *serrenceud* or rubber ligature.

(2) The wide trial and substantial rejection of vaginal hysterectomy, as an operation of election in cases of myoma and salpingitis.

(3) The establishment of indications for the retention of the cervix uteri, as compared with total extirpation of the uterus.

(4) The adoption of a method substantially the same by most operators.

(5) The disuse of drainage whenever possible.

(6) The common employment of the operation by general practitioners, operating in the small hospitals which are springing up in all towns in the country of 3,000 or more inhabitants. Each of these hospitals has from four to six visiting physicians and surgeons, among whom there are sure to be several desirous of performing surgical operations, and ready to attempt the most difficult ones, with a zeal often in inverse ratio to experience and training.

This generalization of the operation at present works to its disadvantage, but as each of these new hospital acts as a training school for surgeons, by degrees good surgery is diffused throughout the country; the ablest men come to the front and by the American system of individual initiative, free competition and the free judgment of colleagues in each locality, the benefits of surgery, and very good surgery, are brought within reach of multitudes who otherwise would be unable to obtain it.

Before performing hysterectomy for myoma the most careful operators take great pains in cleansing not only the abdominal wall and the vagina but also the uterine cavity, since the danger of infection is now almost wholly from the cervical, respectively vaginal, canal. Personally the writer is confident that this precaution has been the chief feature in reducing the mortality of the operation in his hands from some 10% to practically nothing.

The abdomen being opened, the tumor is brought outside if possible; the round ligament on one side is tied and cut; then the ovarian artery on the same side is tied and clamped and cut between ligature and clamp. By making an incision through the peritoneum covering the uterus, passing from the insertion of one round ligament, just above the limit of the bladder, to the insertion of the other round ligament, the bladder can be separated from the tumor; a similar incision is then made through the peritoneum on the posterior surface of the tumor, which can then be brought outside of the abdomen even in difficult cases. The broad ligament being now open it is easy to find and feel, or even to see, the uterine artery on one side. This is tied securely, and clamped close to the uterus, and cut between ligature and clamp. The cervix uteri is now cut across, some traction being exerted and the knife being directed obliquely downward, so that the part of the stump remaining on the uterus is wedge shaped. It is well, though apparently not essential, to disinfect the cervical canal when this is cut across, by pushing into it a sound wrapped in cotton soaked with peroxide of hydrogen or sublimate solution. The stump is then seized with double tenacula, so that the flaps are brought together — not including the peritoneal surfaces in the grasp of the tenacula. The incision is then continued until the cervix is nearly severed, when, just as the last of the muscular tissue is cut, the other uterine artery is seen and clamped, when the round and broad ligaments are clamped and divided and the whole tumor is removed. It only remains to tie the second uterine artery, and the arteries of the round ligament and the ovarian artery, on the side last cut and to unite the flaps of the stump with a continuous catgut suture in the muscular tissue, with a second layer of continuous seroserosal catgut suture uniting the peritoneal surfaces. The two layers of the broad ligaments are then brought together with a fine continuous catgut suture, burying the ends of the uterine arteries with their ligatures.

The toilet of the peritoneum is made and the abdomen closed without drainage.

If it is thought best to remove the whole of the uterus, the operation is quite similar, until the first uterine artery is tied, but instead of cutting across the cervix uteri the incision is carried down at the side until the vault of the vagina is reached, clamping the lateral vaginal arteries as they are cut. Then with scissors the cervix is liberated, keeping close to the uterine tissue and clamping the posterior vaginal artery. The end of the vaginal portion is seized with double tenacula and lifted up and freed from the tissues on the other side, clamping the vaginal arteries and the uterine when it is reached. After applying mass ligatures of catgut to the small vaginal arteries and ligating the uterine artery carefully, the muscular walls of the vagina are united with a continuous catgut suture and above this the peritoneum is united with a seroserous continuous suture, when the operation is finished as above stated. If owing to the enucleation of subperitoneal masses, or for any other reason, drainage is desired, it is easy to pass a rope of gauze from above downward into and through the vagina, closing the sides of the opening in the vagina with sutures which close the lateral vaginal vessels and approximate the muscular and peritoneal surfaces and drawing the peritoneum which covers the bladder down to the incision in the vagina. Gauze drainage is, however, much less used than was the custom three or four years ago, the rule being to avoid drainage whenever possible.

The method of cutting across the cervix (Kelly), or removing it wholly (Pryor), before securing the second uterine artery is of advantage in rendering the operation more rapid and also because in case there are difficulties on one side, such as an adherent sacculum, or a mass of subperitoneal myoma, it is more easy to enucleate and remove such an obstacle after the uterus is liberated on one side and the cervix divided, for then the whole tumor can be more readily lifted out of the pelvis and whatever remains adherent can more easily be felt and seen. The operation is more satisfactory to perform and to witness if the surgeon is really skilful and dexterous and has an exact knowledge of his anatomy. For those in whom these qualifications are not very evident, and for all beginners in hysterectomy, it is safer to tie the arteries of the round and broad ligaments and the uterines on each side before dividing the cervix or removing it.

It remains to consider the indications for total hysterectomy in cases of myoma, as compared with leaving a portion or the whole of the cervix uteri. In general it is better to leave the cervix:

(1) Because it makes the operation shorter and easier and gives less chance of hemorrhage during the operation and does not open so much cellular tissue for oozing and decomposition of blood after the operation.

(2) Because there is somewhat less chance of infection of the wound where only the small cervical canal is cut across and instantly closed by the double tenacula than when the whole vault of the vagina is opened.

(3) Because the vaginal portion of the cervix is a seat of sexual feeling and worth preserving on that account, and if the cervix is present the women do not feel so much mutilated as when it is gone.

(4) Because the lower parts of the broad ligaments

with the cervix form a better support to the pelvic contents than does the simple union of the vault of the vagina.

Total hysterectomy should be performed: (1) When the cervix is enlarged and diseased; (2) when the cervical canal is suppurating or septic; (3) when there is any suspicion of malignant disease, and (4) when vaginal drainage appears desirable.

IMMEDIATE REPAIR OF PERINEAL TEARS.¹

BY E. S. BOLAND, M.D., BOSTON.

EVEN the frequency of these injuries and the troublesome effects associated therewith, or entailed thereon, would not justify me in presenting this matter to this section had not our honored chairman requested it.

Frequency.—While such injuries are more common in primiparae, they occur very often also in those who have already borne children. No figures are available, but probably 80% of all primiparae receive some degree of tear, and among multiparae at least 20% will have the same injury. It would not be exact to say that the injury is overlooked, for it is more often not looked for at all, for its occurrence has sometimes been regarded as a reflection on the skill of the accoucheur—a groundless belief in the main, as will be admitted by those who have observed carefully the progress and termination of many cases of labor.

Causes.—No theory of prophylaxis or treatment would be satisfactory without some consideration of the causes of these injuries. Excluding the cases due to precipitate labor, narrow pubic arch, disproportionate size of the fetal head or trunk, or faulty adaptation of the head diameters, to the pelvic outlet, it may be said that vaginal and perineal tears are due to imperfect distensibility of the soft parts at the pelvic outlet. The more advanced the age of primiparae after twenty-five years the greater the liability to tears. Given a labor of normal duration and normal presentation, the vulvar orifice ought to stretch enough to permit the delivery and then resume its original size and shape.

Degree.—The degree of tear will vary from a mere nick in the mucous membrane of the fourchette down into the rectum and to a greater or less distance up into the rectovaginal septum, with all intermediate degrees of extent, together with, at times, radiating tears from the more commonly longitudinal one, the frequency of tears to the extreme extent mentioned above being, of course, quite rare; while those about half through the perineal body and running from one to three inches up the posterior vaginal wall, and down or back on the cutaneous surface to within a half inch of the sphincter ani are quite common and are the ones which will need our help oftenest.

While the average direction of the tear is, roughly speaking, parallel with the long axis of the vagina, a considerable variation of the situation and direction of the tears may be evident on exposing the vagina. There may be a central perforation of the perineum if the latter is lax and the labor very forcible and quick, and the vulvar ellipse be unstretched and untorn. The injury may be in two parallel lines leaving a central ridge of the perineal body, or a divergent tear may run up the inner face of one or both labia.

¹ Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, March 23, 1900.