the axillary artery and along the subclavian in the neck, rising some 1½ inches into the posterior triangle. Pulsation was visible. The murmur was audible when sitting beside the patient, and widely distributed over the whole chest, the neck, and upper extremity on auscultation. The pulse rate varied with the mental condition of the patient, which was excitable, between 96 and 120. There was neuralgic pain in the neck and scalp and down the distribution of the brachial plexus. The pupils were equal, but flushing of the face and profuse sweating followed any exertion. I concluded the tumour in this case to be mainly due to dilation of the trunk above the point of obstruction on account of its outline, the absence of any restriction of movement in the upper extremity, and the non-occurrence of subcutaneous ecchymosis at the time of the attack of severe pain. Difficulties arose as to undertaking any active form of treatment for this patient, which, to be satisfactory, needed an antecedent period of absolute rest, and he passed from my observation. I think, however, operation by ligature above and below the communication would have been possible. The case affords a good example of the course the condition may sometimes take if precaution is neglected.

On May 17th, 1909, when in Toronto, Dr. Gustin, jun., wrote saying that the patient had died, apparently from gradual heart failure. I wired at once that a necropsy should be performed, and Dr. Grey, of St. Thomas, kindly removed the heart and aorta, which he brought to Toronto for my inspection. Unfortunately, he did not know anything of the position of the aneurysm, and thought it was near the heart. The organ was uniformly and moderately hypertrophied; the valves were not involved and there was only moderate sclerosis of the aorta. Professor J. J. Mackenzie, of Toronto, who was greatly interested in the case, very kindly, on a later occasion, secured the vessels of the left arm, made the dissection, and had drawings made for me (see illustration). It will be seen that the axillary artery between the thoracico-acromial and the internal mammary is dilated and somewhat fusiform, with greatly thickened walls. The axillary vein is also greatly enlarged, with thickened walls. The most remarkable circumstance is that no communication could be found between the dilated vessels; whether or not a communication existed lower down (which is not likely) was not determined, as under the circumstances in which the specimen was procured it had to be rather roughly got out. Possibly the orifice of the communication gradually closed, though I have not met in the literature a case in which this is recorded.

I am greatly indebted to Dr. Gustin, of St. Thomas, and Professor Mackenzie for their kind help in following up this case.

Oxford.

THE VISCERAL COMPLICATIONS MET WITH IN HYSTERECTOMY FOR FIBROIDS

AND THE BEST METHODS OF DEALING WITH THEM.¹

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TWENTY years ago abdominal hysterectomy for fibroids was performed by clumsy methods and attended by a high mortality. In the Middlesex Hospital during 1892 the uterus was removed on account of fibroids three times; two of the patients died as a result of the operation, but in 1912 there were 71 abdominal hysterectomies for fibroids in the same hospital, and all the women recovered—a marvellous improvement in 20 years. To-day hysterectomy for fibroids is a common operation, with a mortality varying from 1 to 5 per cent. in the hospitals of London, general and special. I have chosen 1892 for comparison with 1912 because it is the year in which Baer of Philadelphia introduced the method now known as subtotal hysterectomy and inaugurated a new era in the surgery of the uterus. The technique of the operation varies very little with different surgeons, and I believe that the small mortality attending this operation can be further reduced. During the last ten years discussion has mainly centred around the subtotal and the total operation. I do not propose to discuss technique, but I believe some valuable information can be obtained by a consideration of the visceral complications associated with fibroids. So many of these tumours have been removed that there are surgeons who can count their hysterectomies in hundreds, and I

believe that some useful facts can be collected if they would be willing to relate their experience in regard to the effects of fibroids on the circulatory system, the thyroid gland, the renal organs, and especially in relation to diabetes. These are conditions on the borderland of medicine and surgery. It will also be interesting to learn how surgeons deal with certain visceral lesions which occasionally complicate fibroids, such as cancer of the colon, injury of the ureters, and gall-stones.

Cardiac Lesions.

Fibroids are often present in women suffering from chronic cardiac disease, and it has been maintained by several writers that uterine fibroids cause degenerative change in the muscular tissue of the heart. It is true that many patients with fibroids have valvular lesions, a consequence of rheumatic fever, and in many women who have been reduced to a condition of profound anæmia by a submucous fibroid the heart yields a loud murmur on auscultation. I have had careful observations made on the cardiac condition of women with fibroids, and there is nothing which can be described as peculiar to the influence of these tumours. It has been my practice for many years in selecting house surgeons to choose officers who have filled a resident appointment under a physician. All patients with fibroids, before being set down for operation, are the subjects of a careful medical examination.

On a dozen occasions I have removed the uterus containing large fibroids, although the heart has furnished murmurs, clearly due to valvular lesions, when an examination by a competent physician has shown that compensation has been satisfactory and that an operation would not be attended with unusual risks. Indeed, in some instances the removal of a uterus, big with fibroids, from a patient with valvular disease will relieve an embarrassed heart. For example, a stout woman aged 50 with a large ovarian cyst and a fibroid of the size of a football suffered from dyspnoea due to a dilated heart and myocarditis. The anæsthetist would not risk a general anæsthetic, but we felt that if the tumours could be removed great relief would follow. The tumours were removed under an intradural injection of novocaine. Convalescence was rapid, the cardiac symptoms disappeared, and the patient soon became robust, and has since led an active and useful life.

The heart is a very adaptable organ, and it is comprehensible, when we consider the size and vascularity of some fibroids, that the extra amount of work thrown upon it would lead to its enlargement. I believe that some cases of sudden death which occur within a few days of hysterectomy for fibroids happen in women the subjects of chronic, but unrecognised, disease of the heart. Some of these deaths are attributed to pulmonary embolism, but no death should be so assigned unless there has been a post-mortem examination and the embolus found. On this occasion I do not propose to discuss fatal post-operative pulmonary embolism, except to remind surgeons that recorded statistics indicate its occurrence in 1 per cent. of women who submit to abdominal hysterectomy for fibroids. I have recently published evidence which indicates in no uncertain way that it is often due to the exuberant use of buried sutures for closing the incision in the abdominal wall.

The Thyroid Gland.

From time immemorial it has been known that some mysterious relationship exists between the thyroid gland and the genital organs. No explanation has been found. The brilliant suggestion of Gaskell (in his fascinating account of "The Origin of Vertebrates") that the mammalian thyroid is the representative of the uterine glands of a palæostracan ancestor (of which the scorpion is a type) stimulates but fails to satisfy. To-day the matter is further complicated by the discovery of a relationship between the hypophysis and the genital glands on evidence at which even the most practical surgeon cannot scoff.

On three occasions I have removed a uterus containing fibroids from women who at the time of the operation possessed goitres. I have been surprised on seeing the patients six months after the hysterectomy to notice marked diminution in the size of the goitrous thyroids. In 1908 a spinster, aged 44, suffered from menorrhagia due to multiple fibroids, but she had exophthalmic goitre, and the thyroid was much enlarged. It occurred to me that as the removal of the uterus for fibroids causes a goitre to shrink such a

¹ Introduction to a discussion at the Medical Society of London on Oct. 27th, 1913.

sequel might be expected if hysterectomy was performed on this patient. After careful consideration I removed the uterus with the ovaries and tubes by the subtotal method. The operation was performed at the Middlesex Hospital and lasted 12 minutes. Chloroform was used for the anaesthesia. Before operation the patient's temperature was 99° F., and the pulse-rate 130. 20 hours after the operation her temperature was 102° and the pulse rate 140 per minute; but the thyroid gland had markedly decreased in size and the eyeballs were less prominent. 48 hours after the operation she was in a desperate condition. The temperature was 104°, pulse rate 180 per minute, and the thyroid gland had further diminished in size. The patient died 56 hours after operation. A post-mortem examination was not permitted. This experience confirms the opinion that women with well-marked exophthalmic goitre are bad subjects for any operation.

Diabetes.

The presence of sugar in the urine is, as a rule, a contra-indication to hysterectomy for fibroids. All patients requiring hysterectomy who come under my care have their urine carefully examined for sugar. It is a serious responsibility to operate on a patient whose urine contains sugar, but the risk must be faced in exceptional cases.

A widow, aged 43, passed sugar in the urine to the extent of 5 grains per ounce. She suffered from menorrhagia, her menstrual periods lasting on an average ten days, the excessive bleeding depending on a large submucous fibroid. The patient wished to re-marry and was deterred from doing so, not by the glycosuria, but the menorrhagia. She wished to have the tumour removed and was willing to face the risks. I performed a subtotal hysterectomy. The operation was followed by a quick and uneventful convalescence. The patient married again, and was in good health three years after the operation.

The following case is more instructive. A married woman, aged 69, had a large uterine fibroid. There was free bleeding from the vagina at frequent but irregular intervals which led me to suspect that cancer existed in the body of the uterus as well as a fibroid. The patient was diabetic, the urine containing 10 grains of sugar per ounce. I performed subtotal hysterectomy in 1904. The uterus contained a large submucous fibroid and a cancerous mass of the size of a tennis ball. The patient recovered; she was alive and well in 1912—eight years after the operation.

I am sure, as a rule, it is a wise thing to abstain from performing hysterectomy on diabetics, especially young women. I have gathered from facts related to me by surgeons that such operations are attended with a high mortality. In some cases hysterectomy has been performed without the surgeon suspecting the presence of sugar in the urine until diuresis and the odour of the patient's breath or coma led to an examination of the urine.

Before leaving the subject of diabetes in relation to hysterectomy, there is one aspect of it which is worth consideration. A large amount of evidence has been accumulated which tends to show that there is some interaction between the hypophysis and the genital glands. In acromegalic women menstruation is suppressed, and in some of them the urine contains sugar. Experimental evidence has also been adduced which is supposed to prove that the hypophysis enlarges temporarily during pregnancy. Marek reported the following observation. A woman, aged 26, was in the eighth month of pregnancy when she noticed that her gloves and boots became too tight. Her fingers thickened and the rings on them had to be removed with a file. She became sleepy and thirsty; sugar appeared in the urine. Gradually she assumed the coarse skin, thick lips, and projecting lower jaw so characteristic of acromegaly. The child survived its birth and in a few months the signs of acromegaly in the mother disappeared.

A large submucous fibroid produces similar changes in the uterus to those set up by the growth of a foetus. Glycosuria occurs with sufficient frequency, as a complication of normal pregnancy and of fibroids, to make it conceivable that the uterine changes incidental to the growth of the fibroid may influence the hypophysis and thus be indirectly responsible for the glycosuria.

Some years ago it was the fashion to tell a woman who wished to have her uterus removed for fibroids that after the operation the skin thickens and she would grow fat and coarse. Experience teaches that the reverse is true. Women

with large submucous fibroids are more or less in a condition resembling chronic pregnancy. Such patients sometimes become gross and fat and acquire a thick skin like acromegalics, but after a successful hysterectomy these unpleasant conditions disappear, as in Marek's patient. We know nothing of the condition of the hypophysis in patients who have had the uterus removed for large fibroids. I hope pathologists who have an opportunity of inquiring into this matter will help us.

The Renal Function.

The close relationship of the uterus, bladder, and vesical segments of the ureters leads to many complications when the uterus is occupied by fibroids and the changes which follow in the bladder, ureters, and kidneys, if the tumour is of such a size and shape as to cause retention of urine, are well known. The urine of patients with a large cervical fibroid, or a fibroid of the body of the uterus impacted in the pelvis, often contains slight traces of albumin. This is not a contra-indication to operation, and the albumin quickly disappears after the tumour has been removed. Some years ago systematic examinations were made of urine drawn from patients under my care within the first 36 hours after pelvic operations, such as ovariectomy and hysterectomy, and it was found in nearly every case to contain the colon bacillus. I am unable to offer any explanation of its presence. This is worth mention, obstetric physicians are unable to make anything better than a guess as to the mode by which the urinary system is invaded by the colon bacillus in that troublesome condition known as pyelonephritis of pregnancy. Chronic urinary troubles of septic origin do occur in association with uterine fibroids, but I have never seen anything comparable to the acute suffering, which is sometimes seen in pregnant women, when the colon bacillus invades the kidneys and ureters. One of the most serious accidents that happens in the course of hysterectomy is an injury to both ureters. This is serious enough when the accident is detected in the course of the operation, but is more unfortunate if it remain undetected until the nurse draws attention to the emptiness of the patient's bladder. No reliable estimate of the frequency with which ureters are injured in the course of hysterectomy for fibroids is forthcoming. British surgical literature contains few references, but it is only necessary to turn over the pages of the *Zentralblatt für Gynaekologie* to be satisfied that they are often cut. At the present time, when a ureter is injured in the performance of abdominal hysterectomy the surgeon endeavours to anastomose the cut ends. Failing in this, he implants the proximal end in the bladder wall. Urologists do not approve of this; they insist that when a ureter is engrafted into the bladder it becomes sclerosed by chronic ureteritis, which narrows and finally obliterates its lumen. This sclerotic obliteration does not happen in every case. Lockyer, in removing a fibroid which burrowed between the layers of the broad ligament, wounded the bladder and divided the right ureter. He repaired the hole in the bladder and removed the kidney. During the 24 hours following the operation the bladder remained empty. Lockyer reopened the abdomen and found the left ureter cut; he engrafted its proximal end into the bladder through the wound, which had been already sutured. Convalescence was retarded by a urinary fistula, but Lockyer's resourcefulness was rewarded, for the woman recovered and was in good health three years later.

Many years ago I was present at a hysterectomy when a gynaecologist cut 3 inches out of a ureter, mistaking it for an adhesion. He tied the proximal end of the cut ureter with a silk thread. The patient, a middle-aged woman, recovered without an untoward sign and remained well. This led me to take a special interest in this method of dealing with a cut ureter. In 1909 I expressed the opinion that it is possible and probable that a ureter has been tied in the course of a hysterectomy, and the patient has recovered without anyone having a suspicion that such an accident happened.

Dr. J. D. Barney collected and classified the reports of 62 cases in which the ureter was injured. Of these, 16 were bilateral and 46 unilateral. The majority of the accidents occurred in the course of hysterectomy. He notes that sudden occlusion of the ureter by a ligature often produces no symptoms: sometimes it is followed by pain and tenderness in the kidney which subside spontaneously. In some

instances the accident is followed by hydronephrosis and he reiterates the opinion, which I have already expressed, that there is strong probability that a ureter is often unconsciously tied in the course of hysterectomy. If gynaecologists would tell us how they treat cut ureters this discussion would be justified, for if it is only necessary to tie the proximal end of the cut ureter the way out of an embarrassing accident would be greatly simplified.

Fibroids and Cancer of the Colon.

Fortunately, uterine fibroids rarely contract adhesions to the intestines unless the uterus and Fallopian tubes have been the seat of infection, gonorrhoeal or puerperal. It is unusual for the surgeon to be hampered with bowel complications when he undertakes hysterectomy for fibroids, but he may have to deal with cancer of the sigmoid flexure of the colon or the upper part of the rectum. It has happened to me on several occasions in the course of removing the uterus for fibroids to find cancer of the sigmoid flexure. After completing the hysterectomy I excised the cancer in the colon and joined the cut ends of the bowel by an end-to-end anastomosis.

In the case of a woman blanched from profuse and oft-repeated uterine bleeding, due to a cervical fibroid, I removed the uterus and its neck (total hysterectomy), but whilst adjusting the intestines preliminary to closing the incision detected a cancerous focus in the sigmoid flexure of the colon. The patient had sustained a serious operation, and in her weak condition I did not think it wise to excise the bowel. She made an excellent recovery and was kept under observation. Two months later I excised the growth and she recovered easily from the operation, and was alive and in good health two years later.

The growth of cancer in the colon is often slow and insidious, and there is a massive form of colic cancer which, during its symptomless stages, is indistinguishable, especially when the mass lies in contact with the uterus, from a subserous fibroid. The diagnostic signs are sometimes especially deceptive if there should at the same time be a few small hard fibroids in the uterus. Sometimes I have undertaken an abdominal operation hoping to find an impacted fibroid, but have found a hard cancerous growth in the sigmoid flexure impacted in the pelvis, and the operation has ended in colotomy. In happier cases I have started on the operation with strong suspicions that the patient had a malignant mass in the bowel, but found an impacted fibroid. It is a most evil combination when a fibroid of moderate size occupies the uterus and a massive cancer of the sigmoid flexure adheres to it. I am not alone in such experience; some of my gynaecological colleagues have occasionally stumbled on a cancerous pelvic colon in mistake for a fibroid and have assigned the patients to their surgical associate for the operation of resection.

Uterine Fibroids and Gall-stones.

Gall-stones are common in women; so are fibroids; and it sometimes happens that women come under observation with the two conditions giving so much trouble that the surgeon is puzzled to know which should be dealt with first. On three occasions I have removed a calculus gall-bladder in the course of hysterectomy for fibroids. In each instance the uterus was so large as to require for its removal an incision reaching nearly to the ensiform cartilage. In these circumstances the removal of the gall-bladder was a simple operation. In one instance the inflamed gall-bladder adhered to a large subserous fibroid. In two other instances of this combination I removed the gall-bladder six months after the hysterectomy. The only definite rule which I think can be laid down in the matter is this: If a woman deeply jaundiced in consequence of a stone impacted in the common duct also suffers from a uterine fibroid, which so troubles her as to make it desirable to remove the uterus, I should prefer to remove the stone from the common duct first because it is well known that cholæmia predisposes to hæmorrhage. Hysterectomy in a woman with persistent jaundice is an operation which would place her life in the gravest peril from post-operative bleeding.

The pelvic complications of uterine fibroids, such as ovarian cysts, pregnancy, pyosalpinx, inflamed appendix, and the like are so common and so well understood that they have no place in this discussion. We are anxious to obtain the experience of those who perform hysterectomy

for fibroids, especially in relation to such complicating conditions as heart disease, goitre, diabetes, renal disease, and cancer of the intestine. Fatal accidents in technique (such as hæmorrhage and shock) occur occasionally like railway collisions and deaths from lightning, but post-operative deaths from heart disease, pulmonary embolism, and injuries to the ureters will be fewer if we profit by the experience of those who have faced these difficulties. In this way the risks of hysterectomy for fibroids, though small, will be reduced, and small as they are, I am sure we have not reached the irreducible minimum.

Brook-street, W.

A CASE OF PITUITARY TUMOUR AND SELLAR DECOMPRESSION.

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MANY cases have now been recorded by Hirsch, Cushing, and others in which decompression has been done by the intranasal route for the relief of the symptoms caused by pituitary tumour. An inspection of the inner surface of the base of a skull will make it at once evident that it would be quite impossible to remove any tumour through the floor of the sella turcica whose size exceeded that of a walnut on account of the lateral relationship of the internal carotid arteries as they approach the anterior clinoid processes; moreover, the size of the speculum which it is possible to introduce by means of this intranasal route would make the delivery of any larger tumour impossible except by means of scraping it away piecemeal with a sharp spoon. Owing to the hæmorrhage that is produced, and the impossibility of delimiting the extent of the growth when approached by this method, removal piecemeal is probably quite impracticable. Pituitary tumours probably rarely cause recognisable symptoms before they have reached a much larger size than that already suggested, and, indeed, the tumours that are found in this region at necropsies vary in size from that of a golf-ball to a tangerine orange, or even larger. The symptoms produced by a tumour of the pituitary body may be divided into three groups: (1) those produced by pressure upon neighbouring structures, particularly the optic chiasma and optic nerves; (2) those produced by general rise of intracranial pressure; and (3) those due to interference with the glandular function of the pituitary and its internal secretion.

Briefly, these symptoms may be as follows: 1. Gradual failure of vision due to optic atrophy, usually of the primary type, but sometimes preceded by a slight degree of optic neuritis. In addition to general lowering of visual acuity, special characteristic phenomena are central scotomata, bitemporal hemianopia, and complete blindness in one eye, with persistence of the nasal field only in the remaining eye. Lateral pressure upon the cerebral peduncles is not usually sufficient to produce any definite paretic phenomena, though extensor plantar reflex may be found, and weakness of the legs and a tottery gait may be complained of. 2. Intense optic neuritis from rise of general intracranial pressure is rarely seen, as also may be convulsions, hemiplegia, slow, irregular pulse, slow breathing, torpor, failing memory, &c. 3. Acromegaly, gigantism, infantilism, and the various combinations described due to perverted secretion or failure of secretion of either the anterior or posterior lobe, or of both. The following case was of interest firstly in the making of the diagnosis, and especially from the extraordinary change and improvement resulting at first from the operation of sellar decompression.

A woman, aged 38, was brought to one of us (W. H.) on Nov. 11th, 1912, complaining of persistent headache, sleepiness and apathy, occasional tottery gait, and gradual failure of vision during the past 18 months. Three months previously she had had a fall, striking her left temple, and her symptoms had become rapidly worse since that time. On