os uteri. The vaginal wall is put on the stretch and is cut through between the tips of the instruments. It is then easily separated from the bladder and parametria, and a triangular portion is cut away. This extension of the wound into the lateral vaginal fornices exposes the connective tissue on either side of the cervix—the right and left parametria. When the wound is closed from side to side, the tissues which previously lay at the sides of the cervix are united in the middle line in front of the cervix, which is thus pushed back towards the hollow of the sacrum. This manoeuvre tilts the fundus forward, so that the uterus becomes anteverted. The suturing begins at the cervical end of the wound, for, as the stitches are tied one after another, this end of the incision, with the cervix behind it, disappears from sight; and, if the incision has been broad enough, cannot be seen again. The closing of the lower part of the wound corrects the cystocele, and thus anterior colporrhaphy, done as above described, remedies both the retroversion and the cystocele, whose combination is the characteristic feature of classical prolapse. Interrupted sutures are used, for if a continuous suture, or even a series of mattress sutures, be employed, the incision is shortened, and thus the cervix is pulled downwards and forwards. This spoils the operation, whose special aim is to push the cervix upwards and backwards. To complete the treatment the vaginal outlet is restored to its normal size by repairing the perineum, the upper part of the posterior vaginal wall being left alone.

The modification of this operation which I have been using in cases of prolapse complicated by considerable hypertrophy of the cervix is as follows: The cervical canal is dilated, and a circular incision is made round the cervix with a knife. The vaginal wall (also the bladder, if necessary) is then snipped free with scissors and is pushed back from the cervix, which is next deeply split into anterior and posterior lips. These lips are then amputated so as to leave the uterus about 3 in. long, and a few sutures are inserted in the stump of the cervix to control bleeding.

The vaginal wall is next incised for an inch or so on either side of the circular wound already made, the new cuts extending directly to the right and to the left. The anterior vaginal wall is now separated from the parametric tissues and from the bladder, and a triangular portion, with its apex near the urethral orifice, is cut away.

In closing the wound thus made the stump of the cervix is stitched into the posterior part of the incision. The first suture brings together the central point of the posterior margin of the vaginal incision and the mucosa lining the posterior wall of the cervical canal. The second and third sutures unite vaginal wall and vaginal mucosa right and left of the first; and so on, until the sides of the vaginal incision come together in front of the stump of the cervix. By this time the newly constructed os is beginning to disappear upwards and backwards. The lateral edges of the vaginal wound, with the subjacent connective tissue, are brought together in the middle line from behind forwards, and the line of suture disappears from view as the later sutures are tied and the urethral end of the incision is reached. Finally, the perineum is repaired as before.

This method of operating has been found convenient both when the elongation of the cervix is mainly supravaginal and also when the vaginal portion is chiefly involved. It is not necessary to discuss the various causes of hypertrophy of the cervix; but, before leaving this subject, I should like to express complete scepticism as to the existence of the so-called tensile elongation which was supposed to be produced by the dragging upon the cervix of prolapsed vaginal walls. Such a change might possibly occur after the uterus has been fixed to the abdominal wall by a ventrifixation. But if the uterus is not fixed above, how can it be lengthened by pulling on it below? The theory of tensile elongation seems to be a relic of the times when the uterus was thought to be held up by the broad and round ligaments. Now that the cervix is well known to be the most firmly attached portion of the organ, the theory of tensile elongation may surely be allowed to drop gently into oblivion. All the forms of cervical hypertrophy and elongation can easily be explained without its assistance.

A "SUPPURATING" BRANCHIAL CYST.

BY

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AND

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The following case is, perhaps, sufficiently rare to be worth recording:

Mrs. B., a young married woman, was seen by my partner, Dr. C. A. Robinson, towards the end of 1911, when about five months advanced in her first pregnancy. She then had a small swelling on the left side of the neck, beneath the sterno-mastoid muscle, which was of recent appearance. Deciding that the swelling was neither malignant nor tuberculous, Dr. Robinson advised that it should be left alone for the time. It did not fluctuate, and was thought to be a small fibrous or fatty tumour. As pregnancy advanced it gradually increased in size.

The patient was confined early in April, 1912. Later in the month we saw her together. The swelling was then large, occupying the upper half of the neck, and extending well forwards into the anterior triangle and also backwards into the posterior triangle beneath the sterno-mastoid muscle. It fluctuated very distinctly and was not tender. The patient gave no history of enlarged glands or carious teeth, but there was a history of tuberculous disease in her family. With an exploring syringe thin turbid fluid was found. An attempt to drain the cavity at its lower end, by an incision under local anaesthesia at the posterior border of the sterno-mastoid, proved unsatisfactory.

On May 5th, 1912, under an anaesthetic, the former incision was enlarged, after another incision had been made along the posterior border of the sterno-mastoid, near its upper end; a large amount of thin turbid fluid was evacuated, and a good sized drainage tube passed through from one opening to the other. As the amount of discharge diminished the tube was gradually shortened, being left in at the lower end, as the upper incision soon healed. When, however, the tube was removed it was found that a reaccumulation of fluid occurred, and it was clear that the cavity had not been closing up inside to the extent supposed.

On June 2nd the patient was again anaesthetized; the old incisions were reopened and the intervening tissues slit up on a director along the posterior edge of the sterno-mastoid, thus laying the cavity completely open. On digital exploration the cavity was found to extend far forwards into the anterior triangle of the neck and upwards nearly to the mastoid process. Its lining wall was perfectly smooth, with no suggestion of granulation tissue. There was no sign of a connexion with the cervical spine (caries) nor any trace of broken-down gland tissue. The cavity was swabbed clean and packed with iodoform gauze. It was at this stage that we suspected the condition might be a suppurating cyst (possibly branchial), as the diagnosis of retropharyngeal abscess or abscess due to a breaking-down tuberculous gland found no support at this operation, and the smoothness of the wall of the cyst was suggestive. The wound was dressed daily for some time, but granulation tissue was not readily formed. With a view to destroying the lining membrane, iodized phenol was applied. This was successful as far as the anterior (and larger) portion of the cyst was concerned, as it gradually filled up completely.

The upper part of the cyst did not heal in like manner, in spite of careful packing with gauze, and thus a sinus was left, 3 in. long, passing upwards along the posterior border of the sterno-mastoid. This sinus was drained by a small tube and was repeatedly treated with iodized phenol, but did not heal; removal of the tube at once resulted in accumulation of thin purulent fluid.

The patient was loth to undergo another operation and went on in this state for several months. Finally she consented, and the third operation was done on February 4th, 1913. She was then about five months pregnant (a second time). A solution of methylene blue in hydrogen peroxide was first injected into the sinus, so as to stain the whole cavity and any side tracks which might otherwise have been overlooked. On slitting up the sinus it was found to lead into a small cavity, the wall of which consisted of dense fibrous tissue; the lining membrane was greyish and irregular with a granular surface. The wall of the cavity and sinus, with a good deal of surrounding scar tissue, was dissected out almost completely. Part of the fibrous wall which was closely adherent to the internal jugular vein was left. The cavity was packed with iodoform gauze, and the latter, soaked in iodoform and glycerine emulsion, was used for the subsequent dressings. The patient stood the operation well. The cavity filled up remarkably quickly. Two or three small portions of lining membrane which had been left behind had to be touched with iodized phenol, which destroyed them successfully.

Healing was complete one month after operation. A piece of the tissue removed was sent for microscopical examination to the Clinical Research Association, and the following is the report:

We agree that this specimen is a suppurating branchial cyst or dermoid. It is lined by epidermis, and shows much leucocytic infiltration beneath the lining membrane, and in the

surrounding tissues. There are the usual masses of lymphoid tissue associated with it. There is no evidence of tubercle or new growth.

Even if, at the second operation, we had definitely known the nature of the case, it would have been practically impossible to dissect out the wall of the cyst, owing to the size of the latter, and the fact that it extended forwards deeply into the anterior triangle, so as to be almost in contact with the pharynx. Therefore the treatment adopted was probably the best in the circumstances, even although a further operation was necessary to complete the cure.

There was no obvious cause why the cyst should suddenly enlarge and "suppurate" (the fluid was not true pus), unless the fact of pregnancy occurring had any bearing on the matter.

The report of the Clinical Research Association, together with our knowledge of the anatomical relations and the nature of its contents, confirm us in the view that this was a branchial and not a dermoid cyst.

TWO CASES OF PENETRATING WOUND OF THE HEART TREATED BY OPERATION.

BY

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It has been my lot to have the opportunity of operating on a penetrating wound of the heart on two separate occasions within such a short space of time as three months; I am therefore happy to be able to place before my colleagues the details of such an uncommon experience in the hope that they may prove useful to some and interesting at any rate to others.

CASE I.—*Penetrating Wound of the Left Ventricle: Operation Two and a Half Hours after Injury: Complete Recovery.*

Whilst acting as Resident Surgeon at San Fernando Hospital, Trinidad, B.W.I., on October 19th, 1912, I was hurriedly summoned, about 3.15 p.m. to see a case just brought in and reported to be dying. I found the patient to be a well-nourished coloured boy, aged 14, suffering from severe shock and haemorrhage apparently caused by a small stab on the left side of the chest.

History.

The following history of the wound was obtained: About 1.30 p.m. on that day he was in the street just near his house playing at "rounders" with his friends, when, on stooping hurriedly to pick up the ball, the handle of an ice-pick (an instrument similar to the large blade of an ordinary penknife fitted on to a wooden handle about 4 or 5 in. long) which he had in his left coat pocket, pressed hard against the front of his left thigh, thus driving the blade into his chest. On rising he felt some sort of pain in his chest, and to his surprise saw the ice-pick securely stuck in his side. This he forcibly withdrew, and for a few minutes felt none the worse, but, as he was bleeding from the wound, he hurried to his house to remove his blood-stained clothing. The pain over his heart now became very severe, and he could breathe only with difficulty, and, as his condition seemed to be rapidly getting worse, he was put into a cab and quickly brought to the hospital, where he arrived as before mentioned in a moribund condition about one and three-quarter hours after the accident.

State on Examination.

He was cold and collapsed, with large beads of perspiration on his forehead, and the pulse could hardly be felt at the wrist. There was acute dyspnoea, and he was extremely restless, and insisted on lying on his left side, as he felt he would die if made to lie on his back. The stab was a small vertical penetrating wound about one-third of an inch long, situated between the fifth and sixth ribs on the left side of the chest, about one inch within the nipple line, and extended in an upward and backward direction, but with a probe no opening into the chest wall could be discovered. The area of cardiac dullness was definitely increased, but the heart sounds could be heard fairly distinctly. There was no haemorrhage from the wound.

Diagnosis.

The position and direction of the wound, the severe shock and signs of internal haemorrhage, the increased area of cardiac dullness, the intense dyspnoea, and the absence of haemoptysis and cough, all pointed to an injury of the heart. Hot water bottles were quickly procured, and a warm saline enema with 15 drops of adrenalin given, while strychnine gr. $\frac{1}{4}$ and adrenalin $\text{m} \frac{1}{2}$ were injected hypodermically, and the

patient was put to lie on his left side, with his head low. I also gave instructions to get the operation theatre and all necessaries ready as quickly as possible in case there should be no improvement in his condition.

Operation.

About 3.50 p.m., as the patient showed no signs of improvement and was, in fact, fast sinking, I decided on operating at once. An intravenous infusion of normal saline with 10 drops of adrenalin was given, but the fluid flowed extremely slowly and only about $\frac{3}{4}$ ij could be infused altogether, this, no doubt, being due to the failing circulation. The area around the stab was infiltrated with about $\frac{3}{4}$ ij of a solution of cocaine and adrenalin in normal saline (cocaine gr. j, adrenalin $\text{m} \times$, normal saline $\frac{3}{4}$ iv) and the wound prolonged upwards and downwards. The opening into the thorax between the fourth and fifth ribs now became clearly evident, and a probe which was inserted was seen to move with the heartbeats, thus confirming the diagnosis. As the patient was now having great pain and seemed very distressed, Dr. Greaves, assistant surgeon to the hospital, administered some chloroform, but after a few minutes respiration ceased and the pulse could no longer be felt. Artificial respiration was immediately resorted to, a capsule of amyl nitrite given as an inhalation, and an injection of strychnine and digitalis given hypodermically. The case now seemed quite hopeless, but after about three minutes voluntary respiratory movements could again be detected. I therefore hurriedly continued the operation, and exposed the fourth and fifth ribs, and with a pair of rib scissors cut away their costal cartilages. At this stage the patient became very restless, and seemed to be in great pain, necessitating the administration of a little ether by the open method. The pleural cavity was rapidly exposed, and a quantity of clots of bright red blood escaped with every movement of respiration, and for a time neither the pericardium nor the lung could be seen. I quickly removed the clots and swabbed out the cavity as far as possible. The pale, collapsed left lung now came into view in the upper part of the wound, and was hurriedly examined, but no injury was found. I then pulled up the pericardium with a pair of Spencer Wells forceps, and at once saw a small hole, through which bright arterial blood was slowly pumping.

This opening was immediately enlarged sufficiently to allow of a thorough examination of the heart, large clots were removed from the pericardial cavity and the apex of the heart was seized with a pair of Spencer Wells forceps and pulled half out of the thorax, when a vertical penetrating wound of the left ventricle about $\frac{1}{2}$ in. long was seen near the interventricular septum about half-way between the apex and the aorta—pumping bright arterial blood with every contraction of the left ventricle.

I hurriedly stitched this with some very fine silk by pulling the heart well out of the thorax with the forceps, thus steadying it sufficiently to allow the stitching, but on relaxing the heart once more the pumping was noticed to be still going on. The stitches had been too tightly inserted, and had cut through the muscle of the left ventricle, making the opening larger than before. I therefore removed these stitches and used rather thicker silk, pulling less tightly and taking great pains that the stitches should not enter the ventricular cavity for fear of thrombus formation. It was necessary to insert five interrupted sutures before the haemorrhage could be checked. During this procedure, which lasted quite twenty-five minutes, the anaesthetist noticed that the patient's pulse was very much stronger and he was taking the ether well. The removal of the blood from the pericardial cavity, and the stimulation of the heart by the forceps and stitching had evidently markedly improved the heart beats.

It is interesting to note here that whilst the heart was being pulled on to enable the stitches to be inserted, the beats gradually diminished and weakened, but immediately returned to the normal on being relaxed into the thorax.

As soon as I had satisfied myself that the wound was securely sutured and there was no more danger of haemorrhage, the pericardial cavity was thoroughly irrigated with normal saline and all clots removed, and the opening into the pericardium was stitched with catgut. The pleural cavity was then also thoroughly irrigated and all clots removed, and the pleura and pectoral muscles