

sufficiently delicate to discover small quantities of albumen, and is at the same time free from the objections that have been referred to. With this object I would recommend the invariable adoption by the medical officers of the company of the well-known test of boiling a small quantity of the urine in a test-tube, then adding a drop or two of concentrated nitric acid, and again boiling. Without the certainty that this or some other equally satisfactory test has been employed, it is often very difficult for the medical adviser of the company to be satisfied that a sufficient examination of the urine has been made, and that the statement that there is no albumen, or, especially, that there is a trace of albumen, is justified. On the understanding that the above condition is fulfilled, for the purpose of arriving at a decision with regard to the eligibility of a proposer in whose urine albumen has been discovered, three groups of cases may be adopted—viz., (A) in which the urine contains a large, or fairly large, quantity of albumen; (B) in which the urine contains only a small quantity or minute trace of albumen, associated with the conditions to be afterwards stated; and (C) in which the urine contains a small quantity of albumen unassociated with any distinct evidence of important disorder in health.

A. *The urine contains a large, or fairly large, quantity of albumen.*—If the precipitated albumen exceed one-eighth of the urine after it has stood at rest for twenty-four hours, the proposal should be rejected, unless there exist some disease, considered to be temporary, of the bladder or urethra, when the decision may be deferred until recovery from the temporary disease.

B. *The urine contains a smaller quantity than one-eighth of albumen.*—The proposal should be rejected if there be—(1) Enlargement of the heart; (2) increase of arterial tension; (3) increase in the quantity of urine, to the extent of more than fifty ounces in the twenty-four hours; (4) unduly low specific gravity, 1010 being regarded as the lowest density consistent with health—the specific gravity must, however, be determined only in a sample of the mixed urine of twenty-four hours; (5) a sediment containing epithelial, fatty or granular tube-casts; (6) with increased quantity and low specific gravity of urine, a sediment containing hyaline tube casts; (7) dropsy, or a history of dropsy, within the last two years; (8) a history of lead poisoning, or the existence of conditions rendering this form of poisoning probable; (9) a history of scarlet fever after twelve years of age; or (10) evidence of gout or of syphilis, or a history of these diseases.

C. *The urine contains a small quantity of albumen, unassociated with any evidence of important disorder in health.*—The conditions stated under B having been excluded, in the present state of knowledge regarding this group of cases, it does not appear to me prudent to adopt any other course except the following:—The urine should be re-examined on two or three consecutive days, the examined urine being on each occasion a sample of the total urine of the twenty-four hours, mixed together; if no albumen be found on any of these subsequent examinations, the proposal might, I think, be accepted at ordinary rates; if, on the other hand, albumen is discovered on any of the subsequent examinations, the proposal should be deferred for six months, when an examination on the above plan should again be made.

Edinburgh.

THE SKEWER METHOD OF PREVENTING HÆMORRHAGE DURING OPERATIONS.

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IN June, 1867, when in medical charge of the district of Jessore, I undertook the formidable operation of removing the right upper extremity, including the scapula and outer third of the clavicle, of a boy aged about two years, on account of an enormous malignant growth implicating the arm from the shoulder to the elbow, and exceeding in circumference the girth of the body. This was before the days of elastic cords and pressure forceps, when the tourniquet, and in rare instances preliminary ligation of the main artery, were the only known means of saving blood in operating. The early steps of the amputation, as recorded at the time, were as follows: "The patient having been put under chloroform, I took a semilunar flap from the front of the armpit and

shoulder, and cut down at once through the pectoralis major and minor on the axillary vessels. The artery was immediately secured with a ligature; but, the vein discharging copiously and a large branch (the acromial) which had been divided close to the trunk bleeding actively, I passed a long needle through the skin under the vessels and thrust the point outwards and upwards so as to rest on the clavicle. This expedient completely and at once stopped all bleeding." The operation was then completed as quickly as possible without much hæmorrhage, and the vessels secured without delay. The loss of blood must, however, have been very considerable, and was probably the principal cause of the death of the little patient by shock shortly after the completion of the operation. The expedient adopted in this case was simply acupressure.

In September, 1880, a Hindoo, aged forty-five, presented himself at the Medical College Hospital with a huge cyst in his left axilla containing venous blood. It had developed in the course of two months, and measured twelve inches in transverse and eight inches in vertical diameter. The operation for its removal was described in these terms in a paper read at the Calcutta Medical Society¹: "The operation was performed by Dr. McLeod under chloroform and strict antiseptic precautions on Sept. 19th, 1880. The axillary vessels were controlled by a new method. Wood's hernia needle was pushed in from the inner border of the left coracoid process beneath the axillary vessels and brachial plexus, and made to emerge below the clavicle about an inch and a half from its sternal extremity. Six catgut threads forming a loop at one end were drawn through the track of the needle by its withdrawal. Their ends were then passed through the loop and tightened over a pad of carbolic gauze. The radial pulse disappeared, and reappeared on loosening the loop. An elastic cord was tied round the upper third of the arm to prevent venous bleeding. The circulation having been thus commanded, the tumour was exposed by a T-shaped incision, the horizontal limb being parallel to the lower border of the pectoralis major and the vertical at right angles to it from its middle to the inferior angle of the scapula. The tumour was easily exposed. It was found to present a bluish tint, and to be easily separable from the surrounding tissues. It was rapidly enucleated, but its posterior wall being weaker gave way during this process, and a great gush of venous blood took place. Its deep attachments were now sought, tied by catgut threads, and divided. The principal of these attachments was found at the apex of the axilla, and on its division (after preliminary ligation) it was found that the axillary vein had been cut across. The distal orifice of this vessel, which emitted a little blood, was tied with catgut, as also that of the subscapular vein. The tumour was now removed. It was found to extend as far back as the vertebral border of the scapula between the subscapularis and serratus magnus muscles. Its removal had necessitated a complete dissection of the axilla. The loop was gradually relaxed, and a few arterial points secured. It was felt from the inside of the wound, and left *in situ* for a few days in case of secondary hæmorrhage. The radial pulse returned. The wound was stitched, drainage-tubes inserted, and an antiseptic dressing applied." The patient made an excellent recovery, and Professor McConnell, who examined the tumour, found that its cavity was lined with epithelium, and communicated with the axillary vein by an opening "capable of admitting the little finger." He pronounced the cyst to be "an aneurysmal-like expansion from the axillary vein, and not an adventitiously formed cyst." The plan so successfully resorted to in this remarkable case may be described as a "temporary percutaneous ligation" of the axillary vessels. A similar plan is recommended by Professor Spence² for employment in the removal of large scrotal tumours; but, as I shall show in a future paper, more easy and effective methods have been devised for this purpose.

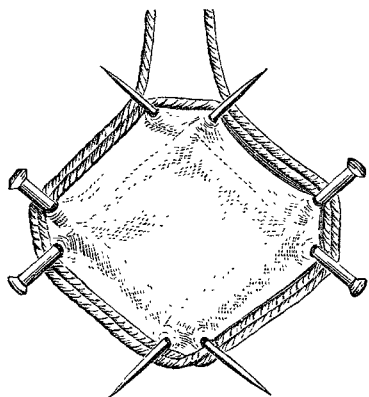
The same device which had proved so efficient in the case of hæmatoma was resorted to in July, 1883, in an amputation of the right upper extremity (including the scapula and part of the clavicle) for a large sarcoma of the arm and shoulder in a lad of twenty. It was found, however, that the vessels were displaced backwards by an extension of the tumour into the axilla, and that the loop passed in front of them instead of

¹ Vide Indian Medical Gazette, Nov., 1880, p. 305.

² Lectures on Surgery, vol. ii., p. 1369.

behind them. Fortunately, an elastic cord had been, for additional security, wound round the shoulder, and the large vessels were secured by Spencer Wells' forceps before much loss had taken place. The failure of the loop in this instance suggested the idea of passing a skewer behind the vessels from the neck and compressing them against it by an elastic cord, but I had no opportunity of trying the plan. In 1885, while on furlough, I had the satisfaction of seeing the thing done by Mr. Joseph Bell in a case of amputation of the left upper extremity (including the scapula and part of the clavicle) for a large sarcoma of the shoulder. The suggestion came from Professor John Chiene, who invented an instrument for the purpose. It was a long, flat, slightly curved rod, pointed at one end, and it was entered at the base of the posterior triangle of the neck, passed behind the clavicle, vessels, and nerves, along the inner wall of the axilla, and brought out near the anterior fold of that cavity. A strong rubber cord was looped round the ends of the skewer, after the manner of a twisted suture. The amputation was almost bloodless, and the boy made an excellent and speedy recovery. This brilliant case impressed me greatly, and I determined to adopt the skewer plan whenever a suitable opportunity occurred.

On Dec. 27th, 1889, a middle-aged man was admitted into the Medical College Hospital with an immense malignant tumour of the left mamma. The circumference of its base measured $23\frac{1}{2}$ in. It moved freely on the chest wall, and the axillary glands were not enlarged. The skin was stretched tightly over it, and was extensively implicated, and numerous large vessels approached it from every side, and formed a reticulation on its surface. Anticipating very free hæmorrhage, I determined to endeavour to control it by means of a skewer and an elastic cord. I procured four packing needles eight inches long, made eight punctures in pairs at the four poles of the tumour, passed the needles through these in the loose cellular tissue between the base of the tumour and chest wall, so that their ends crossed, and wound an elastic cord lightly round these eight ends. The arrangement is shown in the accompanying sketch of a



model made with paper, pins, and silk. The effect of the adjustment was in the first instance to render the tumour prominent, stretch the skin tightly over it, and contract its base. When the incisions were made the flaps slid down, and a few touches of the knife sufficed to reflect them. As the tumour was removed the elastic circle grew smaller, and the wound measured only about 3 in. in diameter on detachment of the growth. There was no bleeding during or after the operation except what came from the tumour, and from a vessel which entered its base from between two ribs, and was speedily secured by forceps. The elastic cord was gradually loosened, and the vessels seized and tied as they became apparent. Not fewer than 100 points had to be ligatured, and the wound finally gaped to the extent of about two inches. The edges of the flaps came together, but the stitches dragged after a few days, and the central portion healed by granulation. The flaps retained their vitality except at one point, where a deep stitch caused excessive tension. The punctures healed readily, and the progress of the case has been quite satisfactory. A curious incident occurred during convalescence. On the 15th of January an enlarged elastic gland was observed in the axilla. It was removed on the 16th and found to be converted into a mass of cavities containing clear serous fluid. When one cavity was pricked the serum escaped, and the mass collapsed. The tumour weighed 88 ounces, and was found by Dr. J. B. Gibbons to be an alveolar sarcoma. This combination of transfixion with elastic compression is likely to be of service in

many cases where the elastic cord cannot be conveniently or effectively applied externally, and requires some additional contrivance to retain it *in situ*. I observe that it has been recommended by Mr. Thomas Myles, of the Jervis-street Hospital, and employed successfully in amputating at the hip-joint by Dr. R. J. Garden of Aberdeen.³ Mr. Joseph Bell of Edinburgh taught me to transfix the corpora cavernosa with a needle and apply an elastic ligature above it in amputating the penis, and I have repeatedly practised this plan with advantage. I may here remark that I have found stitching the edges of the fibrous capsule of the corpora cavernosa with a few points of catgut to be a useful measure in such cases, and Mr. Bell is in the habit of doing the same in cases of partial removal of the tongue. My colleague, Dr. D. O'C. Raye, had recently occasion to remove a large fatty tumour from the tip of the tongue of a child. He transfixed the organ crucially with two needles and wound a bit of drainage-tubing above the needles. This prevented retraction, and enabled him to stop bleeding and stitch the edges together in a most satisfactory manner. The same principle is also applicable to erectile tumours which it is desired to strangulate temporarily during the process of injection. I have seen this repeatedly practised by Sir Joseph Lister with needles and silk. Drainage-tubing would probably be preferable to silk. The skewer method now recommended and illustrated is a combination of acupressure and elastic pressure—Simpson *plus* Esmarch,—and the method of application specially demonstrated in this article renders possible the bloodless removal of large vascular growths with a broad base.

Calcutta.

A CASE OF SEVERE CHOREA, TERMINATING FATALLY FROM ACUTE PARALYTIC DISTENSION OF THE STOMACH.

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E. G—, a girl aged sixteen, was admitted to the hospital on Oct. 26th, 1889, under the care of Dr. Malet. In August the patient had suffered from acute rheumatism, for which she had been treated in the hospital. She went to the convalescent home towards the end of September, and after a fortnight began to show symptoms of chorea, which rapidly became severe; at the same time she became melancholic and emotional. She had had no previous attack of chorea, and the present one was attributed to anxiety about domestic matters. On admission the patient was suffering from severe chorea, affecting the whole body. She was emotional, crying without apparent cause, but had no delusions. There was a loud musical systolic bruit at the apex. Temperature was 100° on admission, and 102° on the following evening. She was treated with ten minims of liquor arsenicalis three times daily. By the seventh day after admission all the symptoms had become aggravated, the chorea was much more severe, the limbs, face, eyes, and tongue being in continual movement, and the body continually tossed from side to side in bed. The mental condition also was worse, and she had had no sleep except on the second night in spite of several large doses of bromide of potassium and chloral. The temperature had been febrile throughout, ranging between 101° and 103° , and the pulse had become weak and rapid (140 per minute); the cheeks were flushed, and the general appearance was suggestive of typhoid fever. For the last day or two there had been redness and oedema on the dorsum of the right hand and the left index finger. Twenty grains of salicylate of soda were given every four hours, with half an ounce of brandy, the arsenic having been discontinued. Next day the patient's condition was still worse; she had not slept, in spite of a large dose of bromide and chloral, the pulse was worse (160 per minute), and there were great excitement and delirium; the temperature remained much the same, and the choreic movements were aggravated. Towards evening a draught containing forty minims of tincture of hyoscyamus, with thirty minims of tincture of cannabis indica

³ Vide Brit. Med. Journ. of Nov. 9th, 1889, and Jan. 4th, 1890.