arthritis or other causes, which persistently and obstinately relapse. I am not aware that it has been performed in any similar instance, but recently I have tried it in the case of a child suffering from chronic disease of the knee, in which the joint always has begun to bend again as soon as the splint was left off, but it is too early as yet to enable me to say that the success is permanent. A photograph of the patient taken eighteen months after the operation is appended. (See Fig. 1, p. 1582.)

CASE OF SARCOMA OF THE FEMUR, WITH DESCRIPTION OF A RECENT METHOD OF AMPUTATION AT THE HIP-JOINT.

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ON February 24th, 1903, there was admitted under my care at the Cardiff Infirmary a young girl, aged 16, suffering from an immense swelling of the right thigh.

History.—The patient, who had lived at home with her parents, stated that the trouble in the thigh dated back about six months, and the first thing noticed was pain resulting from no apparent cause (such as injury) on both sides of the right knee-joint. This was supposed to be due to rheumatism at first, and was treated as such. Soon, however, a swelling appeared in the lower end of the thigh, immediately above the knee-joint. The enlargement continued to increase steadily and rapidly. Sarcoma of the thigh was diagnosed, and the patient was sent to Cardiff.

State on Examination.—When admitted the patient was in a wretchedly emaciated condition. The right thigh in its lower two-thirds was occupied by an enormous swelling (Fig. 1). The skin was tense and shining, with many large veins apparent; there was no tenderness. The surface was uniformly smooth, and here and there were some rather soft patches where fluctuation could be obtained. There was no "egg-shell" crackling, and the limb, in spite of its great weight, could be held up from the bed by muscular action and moved freely, the continuity of the femur being still intact. The knee-joint was free, and contained no fluid in excess. A few slightly-enlarged glands could be felt along Poupart's ligament. Circumference of the thigh at its greatest part was 27 in., the opposite thigh being 9 in., and that of the waist was 20 in.

Diagnosis.—The diagnosis was that of a periosteal sarcoma of the femur, and the only treatment—amputation at the hip-joint—at first flatly refused; then, after a fortnight's delay, consented to, the intervening time being utilized in feeding up the patient and preparing her for one of the most severe operations in surgical practice.

Operation.—On March 6th the patient was anaesthetised, and a subcutaneous injection of strychnine (mv liq. strych.) administered before the operation was commenced. The vertical limb of a racquet-shaped incision was commenced about 2 in. above the great trochanter, and into this incision at its upper end was inserted the smooth blade of a pair of tourniquet forceps. This was pushed inwards parallel with Poupart's ligament for its whole length immediately in front of the hip-joint, and beneath the femoral vessels. The forceps were then closed. Thus clamping all the vessels in what would become the anterior flap, another pair of forceps was used, the deep blade this time passing behind the neck of the femur, thus controlling the circulation in the posterior flap; the oval part of the incision was now marked out, and the skin retracted a little way all around. The muscles attached to the great trochanter, and in front of the hip-joint, were next divided. The joint was opened from the front, and the limb quickly and easily disarticulated, and removed by a few strokes of the knife, the only spouting vessel seen at this stage being a tiny artery in the capsule

of the hip-joint; all the vessels which could be seen were now picked up and tied, and then the value of the forceps-tourniquet was demonstrated in the search for the smaller vessels, which were found by loosening the forceps and immediately closing them when a bleeding point showed the position of a vessel, thus reducing the loss of blood to a minimum. The operation was completed by closing the wound entirely by means of a series of buried sutures for the deep parts and the usual superficial skin sutures. Rectal injections of brandy and saline solution were given when the patient was put to bed, and subcutaneous injections of strychnine and digitalin.

Fig. 2.—Section of entire growth.

Progress.—The operation was borne well, but shock became more apparent on return to consciousness a few hours later, and in the evening was so great that Dr. Brownlee (house-surgeon) gave an intravenous injection of four pints of saline solution. This was followed by natural sleep, after which the patient rapidly improved, and left the infirmary on May 20th, having put on flesh at the rate of 1 lb. a week after operation.

Pathological Examination.—Fig. 2 shows a section of the entire growth; it will be seen to grow from the periosteum, the intact femur running down the centre; spicules of bone can be seen radiating between femur and surface, and cavities which contained blood and a glairy fluid. The separation of the epiphysis—well shown—occurred after removal. Microscopically the growth was found to be a small round and spindle-celled sarcoma.

For the immediate success of a severe operation, such as amputation at the hip-joint, it is essential that loss of blood should be reduced to a

Fig. 1.—Tumour before operation.

minimum, and that other factors in the production of shock should be excluded by every means possible. For the control of haemorrhage in this operation works on surgery still give a number of methods, from Davey's lever to preliminary ligation of the external iliac or femoral vessels, but without going into the arguments for and against these methods I venture to say that the most satisfactory of all the methods known to me is that by means of the forceps-tourniquet, which I have already mentioned. For a fuller description of this instrument, which was originally introduced by my friend and colleague Mr. Lynn Thomas, C.B., I may refer those interested to a paper by that gentleman in the BRITISH MEDICAL JOURNAL of April 20th, 1901. I have recently used the forceps in an amputation at the shoulder-joint for malignant oedema, and in other amputations, and have always been pleased with it.

Another point to which I attach importance in this operation is that of immediate disarticulation instead of dividing the femur first and then dissecting out the rest of the bone. I think the sawing of the bone must contribute to the shock, and the time—another essential factor in any operation—can be reduced by removing the limb entire.

"INDIARUBBER JAW":

A PECULIAR CARCINOMATOUS INVASION FROM THE SUB-MAXILLARY SALIVARY GLAND.

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The clinical history of this case is as follows:

J. G., a commercial traveller, 55 years of age, was admitted to Prince Alfred Hospital, Sydney, on November 25th, 1901. I am indebted to Dr. MacCormick for permission to publish, and to Dr. Barling for the following details of the clinical history of the case: The patient complained of a lump under the lower jaw. He first noticed five months ago that the teeth were loose. This caused some difficulty in chewing. He also had occasional pains shooting up on either side of the face. Three weeks before admission he noticed a lump coming just below the middle of the lower jaw and extending along the left side. On examination he appeared a well-nourished man. The jawbone seemed broken at the symphysis, and the two halves could be readily moved on each other. Behind the symphysis, and extending along the inner side of the jaw for about 1 in. on the right and 2 in. on the left side, was a hard, smooth mass firmly attached to the bone; it was not at all tender. No enlarged glands were to be felt on either side of the neck.

Fig. 1.—Naked-eye appearance of "indiarubber jaw." Shows perfect character of teeth and incisions made by knife.

November 30th.—Under chloroform, a skin incision was started just below the symphysis and was continued down the middle line for about 2 in. and then outwards over both submaxillary spaces. The skin flap

thus made were dissected up, the glandular tissues in the submaxillary spaces freed and left attached to the jaw, the lip divided and the skin flaps thus turned back, and then the jaw was removed, being divided on each side through the ascending rami a little above the angles. The wound was completely healed in 18 days. At the end of 1902 the patient was readmitted to the hospital for some medical ailment. There was then no sign of recurrence of the growth.

Description of Removed Jaw.—The horizontal ramus throughout from one angle of the jaw to the other is swollen into—on cross section—a pear-shape, whose apex is at the teeth and whose inner side is flattened. Macroscopically, no bony tissues remain in this, but the original structure is replaced by a dense whitish neoplasm, showing minute bloodstained streaks, which can be easily cut by a knife, yielding a creaking sensation (Figs. 1 and 2). The teeth are present and quite

Fig. 2.—"Indiarubber jaw." Cross section through symphysis.

perfect and embedded in this new tissue, no bony tissue being present, even in their sockets. There is an irregular line of demarcation at the angle of the jaw where the healthy bone and angle of the jaw meet. The submaxillary glands and other structures subjacent to the jaw are adherent to it, but this adherence is not very dense. The submaxillary glands are a little enlarged and firmer than usual, with black lines of pigment in their septa. The fatty tissues surrounding the glands and under-surface of the jaw are firmish, greyish, and adherent.

Microscopical Appearances. The typical appearance of the new growth, when unaltered by adverse conditions of environment, is well seen in the adipose tissue surrounding the lower jaw (Fig. 3). Here narrow epithelial-lined ducts may

Fig. 3.—Carcinomatous invasion of adipose tissue. (Low magnification.) A, fat cells; B, new-formed duct; C, group of acini; D D, newly-formed acini.

be seen branching in an arborescent fashion between the fat cells and terminating after division in rounded alveolar ends. The epithelium lining the ducts is tall and columnar. The terminal acini form small clumps of polyhedral cells