forceps are introduced into the throat until the upper border of the epiglottis is seen to pass between the point of the needle and the distal blade, the blades are then firmly closed and then opened and the instrument withdrawn; it will be found that the suture has passed through the epiglottis. The ends are then brought over the centre of the tongue and gripped by a large pair of Spencer Wells or any similar forceps, and allowed to hang some distance below the jaw. The tongue is held for examination in the usual way, and it will now be seen that the epiglottis is held up against the root of the tongue by the weight of the forceps only and the intralaryngeal view greatly improved. On the occasions in which I have used this method the patients have neither strained nor coughed, and were not conscious of the presence of the suture so long as the effect of the cocaine lasted, though in some cases there were feelings of nausea, which, however, soon passed off. The use of the instrument entails no risk to the patient. The needle is held sufficiently firmly in the proximal blade to prevent it falling out before it is passed, and should it do so, it falls into the glosso-epiglottic fossa only, and is easily withdrawn by the thread, which is held in the hand. When the blades are closed it is firmly caught in the distal blade, and cannot be released until the instrument is withdrawn and the needle turned on its long axis to be liberated; there is, therefore, no risk of its falling into the cavity of the larynx. The epiglottis does not suffer by the passage of the needle, and I have never observed any inflammatory or other complication following it. The suture occupies no space in the mouth, and, unlike other epiglottis lifters, does not require the assistance of a third hand. It further helps to steady the larynx and increases the laryngeal illumination. Though the shaft of some laryngeal forceps may be used to pull the epiglottis forward during their use, it is a decided advantage to be independent of that action, so that the operator may be free to place the forceps in any position he desires, so as to prevent the shaft from hiding the point and obscuring the light.

I consider that the preliminary use of the epiglottic suture for facilitating intralaryngeal operations should not be limited to cases of obscured field of operation caused by a markedly overhanging epiglottis, but should be used in all cases where the epiglottis in any way hinders a delicate intralaryngeal manipulation, whether it be cutting or cauterizing, especially where a perfect vocal result is desired. This method may also be used simply for diagnosis, when other methods of lifting the epiglottis have failed. It may in a few cases be used without the aid of a laryngeal mirror, when it is found, on depressing the tongue, that the upper border of the epiglottis can be seen.

It is scarcely necessary to illustrate my remarks by relating cases in which I have adopted this method, the majority of them having been for innocent growths within the larynx, and these include ten vocalists, who are now singing successfully before the public. I would like, however to refer to one case, for it is the best illustration I have had of the value of the method.

The patient, a tenor vocalist, had been unable to use his voice effectively for four years because of a small fibroma situated on the upper surface of the right vocal cord, overhanging its edge and near the anterior commissure. The larynx was situated rather low in the neck, so that the vocal cords were not easily reached by the ordinary sized laryngeal forceps. This probably explains the fact that during three years numerous attempts by two expert laryngologists failed to remove the growth. These attempts included the use of many varieties of instruments, the direct method once under cocaine and once under chloroform. I succeeded at the first visit with a pair of Whistler's forceps, and my success was entirely due to the use of the epiglottic suture.

The best proof of the accuracy of this method of manipulation was the fact that two months after the patient sent me a press cutting of his successful appearance at a concert.

Since I brought the subject before the Laryngological Section of the Royal Society of Medicine of London I have had many encouraging reports from those of my colleagues who have used the method, and I should like to quote the experience of Sir StClair Thomson, who writes to me as follows:

I have used your epiglottic suture forceps (No. 1) on several occasions and always with complete satisfaction. I have found it most useful in cases of overhanging epiglottis where the

growth was situated near the anterior commissure, a site where the use of the direct method is not so satisfactory as might be expected.

I know of several patients who have welcomed it as an agreeable alternative to the uncomfortable attitude created by the requirements of the direct method.

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CHEILOLOGY: A FUNCTION-RESTORING OPERATION IN CRIPPLING TRAUMATIC ARTHRITIS OF THE HIP-JOINT.

[WITH SPECIAL PLATE.]

BY

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This brief paper is to be regarded as a preliminary communication on an operative method which may prove to be of wide application in the treatment of chronic hypertrophic arthritis, especially if it be uniarticular and of traumatic origin. It is a record of the two first cases in which the method has been applied. Both were of traumatic origin, and in both the hip was the joint affected. In both, while flexion remained relatively free, the movements of abduction and rotation were lost, so that riding was impossible and walking was slow and difficult. In the first case continuous severe sciatic pain, dating from the accident, made the patient's life a misery to him.

Stereoscopic radiograms showed clearly that the principal obstacle to the movements of the joint in both cases was an osteo-arthritic lip or cornice around the head of the femur. It occurred to one of us (C. P. B.) that it might be possible to chisel away this lip sufficiently to relieve pain if not to restore a useful range of movement to the joint. An operation for this purpose was devised and successfully carried out, with functional results in both cases which up to the present have surpassed our expectations. The operation consists in opening the hip-joint and removing the cornice on the head of the femur, so far as it is accessible, by suitable bone-cutting instruments devised to work in a cramped space. On account of its technical difficulty the operation is somewhat prolonged, but in both instances shock has been absent and convalescence uneventful.

It will probably be found that this operation is applicable in other joints than the hip. It may, for instance, be of service in the knee-joint, using the same transarticular incision which has been employed by one of us for difficult fractures of the lower end of the femur.¹ A procedure so definite, and possibly of such wide application, appears to need a distinctive name. We suggest the name *cheilotomy* (χείλος, lip) as convenient.

So far as we have been able to ascertain, the operation of cheilotomy—at any rate, in the hip-joint—had not been performed prior to our first case in January, 1913.

CASE I.

Mr. J., aged 56, four years ago had a fall in the hunting field. His horse came down on the left side without dismounting him, so that his left hip was crushed between the ground and the horse's side. He managed to ride home, did not consult a doctor, and only lay up for three or four days. But from this time forward he began to suffer from severe left sciatic pain, which has gradually reduced him to a crippled condition. For the last two years he has been unable to ride.

He first consulted Dr. Preston Ball in July, 1911. He was then suffering from general rheumatism especially affecting the joints, but more especially the left hip-joint.

At times he was seized with most acute pain, not only in the left hip but in the lumbar region, and also in the shoulders and arms. Varied medical treatment had proved of no avail up to this time, and Dr. Ball gave him a course of inoculations with streptococcus vaccines at intervals of seven days, beginning with small doses of one million, and gradually increasing the injection up to fifty million, the last six being of a mixed vaccine containing along with the strains of streptococci the *Micrococcus rheumaticus* of Poynton and Paine. At the same time the patient was given suitable tonics, and ionic medication was adopted for the left hip. His condition greatly improved in a comparatively short time, his general health was better, and he could walk and play golf without pain, and in November, 1911, he appeared almost cured, the only trouble then being a little stiffness in the left hip.

For several months he continued to be free from pain, and was well in every way, but in September, 1912, the pain returned in the left hip and rapidly became worse, and it was only with great difficulty he could walk at all. Golf had to be abandoned. He consulted Dr. Ball again, and ionic medication was continued, but the hip-joint continued to give him great trouble, and a skiagram of the joint showed distinct osteo-arthritis, with considerable "lipping" around the acetabulum. An abnormal bony outgrowth, shaped like a canine tooth, could be seen projecting from the lower margin of the articular surface of the head of the femur, immediately in front of the sciatic nerve. The patient now consulted Mr. Handley with a view to the removal of the bony lip of the femur. A stereoscopic radiogram showed that the tooth-like projection was directed downwards and forwards, not downwards and backwards as had been assumed, so that it could not press on the sciatic nerve. But it also showed other outgrowths (see Fig. 1) surrounding the margin of the head, some of which might be pressing on the nerve, and it seemed right to attempt the systematic removal of the lip so far as it could be reached. An element in this decision was the patient's helpless condition, for he had given up walking altogether, except for the shortest distances, and with a painful effort. Moreover, a resort to sedatives had become inevitable, and even morphine had been necessary on many occasions.

Prior to operation he was seen by Dr. W. H. Willcox, who allows us to quote the following extract from his notes made at this time:

The patient was seen by me on January 9th, 1913. He had had during the past few years spa treatment at Droitwich and Buxton and all the usual forms of medicinal treatment. On examination it was found that the only joint affected was the left hip. There was deficient movement of flexion and extension, but there was some range of free movement in this direction. The lateral movement was very deficient, and any attempt at circumduction gave considerable pain. As there was no evidence of any acute inflammatory condition of the hip-joint, and as no other joints were affected, and as the x-ray examination showed bony changes which no medicinal treatment could possibly affect, I advised operative treatment.

It may be added that all the muscles of the left lower limb were flabby and atonic from disuse. There was no definite tenderness along the course of the sciatic nerve, and pain was felt in the front of the thigh as well as at the back. Actual sciatic neuritis could therefore be excluded.

Operation.

On January 13th, 1913, the operation was carried out, and abduction and external rotation at the close of the operation were found to be restored to a large extent. By the tenth day the wound was soundly healed. During the first two or three nights morphine was necessary, more on account of restlessness and the tedium of a fixed position than for actual severe pain. By the fourth day the patient was entirely free from the pain which had made his life a misery for years. Slight rotation of the joint caused no uneasiness. Passive abduction was begun gently on the fourth day, it was free without the use of any force whatever. By the twentieth day the patient was allowed to get up and sit in a chair. A day or two later he was permitted to stand, and to walk about wearing a temporary apparatus supplied by Mr. G. Ernst to limit the movements of the hip and prevent undue strain on the sutured capsule. He left the home on the twenty-fifth day absolutely free from pain, and with a large range of abduction and external and internal rotation in the joint.

To illustrate the patient's relief after the operation it is permissible to quote from a letter to one of us just before he left the nursing home: "I feel a different man, and am only too thankful I came and saw you."

Before returning to Ireland he was seen by Dr. A. P. Luff, who in reply to a recent letter respecting the case writes:

I saw him with you on February 6th, and the notes that I have with regard to his examination are that there was extremely good mobility of the joint as regards internal and external rotation and abduction. I think the result of your operation is an extremely satisfactory one.

He has been seen by Dr. Ball on two occasions since his return home. His general condition has greatly improved, and he can walk quite well. Both external and internal rotation appear to be normal. He is greatly pleased with the results of the operation, and the improvement is well maintained up to the date of writing (April 9th, 1913).

CASE II.

Major A., aged 62, was sent to Mr. Handley by Dr. Preston Ball on March 26th, 1913, for traumatic arthritis of the left hip with increasing fixation of the joint and difficulty in walking. The patient is a healthy man, looking much less than his age, and has lived an active outdoor life, first in the cavalry and since his retirement in sports and country pursuits. For some years the condition of the hip has prevented him from riding, though until recently he has been using a bicycle. Walking has become a slow and laborious process, though it is not painful. The patient felt his increasing disabilities keenly since they cut him off from his principal active interests, and he was quite willing to undergo an operation if there was any prospect of improvement.

Twenty-two years ago, as the result of a fall in a steeple-chase, he damaged his left hip. After treatment of several weeks by his local doctor in Carlow, who "fired" the joint, he came over to Dr. Wharton Hood. The treatment was so successful that fourteen days later he was able to begin riding. For many years after this the joint does not appear to have troubled him very much, but in 1904, after a critical attack of double pneumonia, the hip began to stiffen.

In 1910 the situation was becoming serious, and he underwent a course of manipulations and fomentations. Last summer he went to Aix and had baths and exercises. He noticed that passive movements of the joint did not produce any improvement, and left it rather painful. He consulted Dr. Preston Ball in October, 1912. Dr. Ball noted that the history was similar to that of Case I, and that the pain and loss of power were confined to the hip-joint, his general health being quite good. It was agreed from the first that he should consult Mr. Handley with a view to operation; but in the interval between October and March he had ionic medication and electrical massage, which possibly gave him slight relief, though there was no marked change or improvement. An ordinary skiagram showed distinct overgrowth of bone around the hip-joint.

He was first seen by Mr. Handley on March 27th, 1913. The great trochanter on the left side was about $\frac{1}{2}$ in. higher than on the right side, the left thigh was 1 in. less in circumference than the right, and the left calf $\frac{1}{2}$ in. less than the right. The movements of the spine were good though perhaps slightly limited. There was no grating in any of the joints, except in the right shoulder-joint, where slight crepitus was present, probably the result of an accident which fractured the right clavicle. Flexion of the right hip was free, but flexion of the left hip was very limited. Rotation of the left hip was practically absent, while that of the right hip was free. Abduction of the left hip was entirely absent, while on the right side it was nearly normal.

The patient stated that his doctor at Aix considered bony ankylosis to be present in the left hip. While this statement is difficult to explain in view of the amount of flexion, it emphasizes the fixity of the joint as regards rotation and abduction. In contrast to Case I, the patient had suffered hardly any pain, and it was entirely on account of disability that he desired relief.

A stereoscopic radiogram, taken by Mr. Coldwell (Fig. 2), showed exuberant lipping surrounding the whole of the head of the femur. Judging by this alone, the case seemed extremely favourable for cheilotomy. There were, however, other changes in the joint, namely, some bony deposit round the acetabulum, apparently in the capsule, and a disappearance of the cartilage interval over the convexity of the head of the femur, showing that in this situation cartilage had disappeared. These changes, however, were not sufficiently marked to contraindicate operation. A stereoscopic radiogram of the right hip showed some similar changes, but in a very early stage. Dr. W. H. Willcox confirmed Dr. Ball's opinion that the patient was medically sound, and allows us to quote as follows from his notes:

The patient was seen by me on March 28th, 1913. I found him a thin, spare, muscular man who was perfectly sound and fit except for lameness arising from the left hip. He walked very

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FIG. 1.—Case I. Mr. J., left hip.

FIG. 2.—Case II. Major A., left hip.

Figs. 1 and 2 should be viewed through a stereoscope.

FIG. 3.—Case I. The fragments of the portion of the femoral lip removed by operation. Natural size.

FIG. 4.—Case II. The fragments of the portion of the femoral lip removed by operation. Natural size.

lae, and experienced pain in walking. All the joints were practically normal except the left hip. The left hip showed great impairment of movement. There was only slight flexion, about 10 degrees, and very little lateral movement was possible. The x-ray examination showed very marked lipping, and bony changes round the left hip-joint. The patient had had all forms of medicinal treatment and had visited various spas without any benefit. As it was obvious that medicinal treatment could not improve or affect the marked bony changes round the left hip-joint, and since there was no inflammation round the joint, and no other joint was affected, I advised surgical treatment.

Operation.

On March 30th the operation of cheilotomy on the left hip was performed through a posterior incision in the capsule, securing free rotation and a considerable amount of abduction. The operation proved to be more difficult than in Case I, mainly on account of the bony deposit in the capsule at the margin of the acetabulum. The bony lip round the margin of the head of the femur was removed for a considerable portion of its circumference, and the capsule was sewn up.

On the evening of the day of operation the patient was quite free from pain, and he is making an uneventful convalescence. There seems every prospect that the result in this case will be just as satisfactory as in Case I, for abduction and rotation already, only ten days after the operation, are free and painless, though there is more tendency to muscular spasm than in Case I.

[Dr. W. H. O'Meara of Carlow writes on April 26th: I saw Major A. yesterday, and must congratulate you on the great success of your operative treatment. He can walk about with comfort, and can rotate, extend, and abduct the leg freely.]

It is probable that the restoration of movement produced by cheilotomy, while depending mainly upon the removal of actual bony obstacles to rotation and abduction, is also due to another cause. The head of the femur is unduly large and the capsule is consequently stretched, and does not possess that reserve of "slack" which is necessary to allow a good range of movement. The restoration of this "slack" by the operation is an important factor which must not be lost sight of.

May we, in conclusion, utter a word of warning against the indiscriminate application of the operation in unselected cases. For cases where the constitutional or toxic element of osteo-arthritis predominates, the method is obviously unsuited, and other methods of treatment, including the vaccine treatment, of which one of us has made a special study,² should always be tried. Nor should the operation be undertaken save under the best conditions, with ample assistance, with all possible aseptic precautions, and with the essential preliminary of a good stereoscopic radiograph of the joint.

The best and most suitable cases are probably those in which medical and vaccine treatment has improved the patient in relation to his or her general health and where the smaller joints (probably those most recently affected) have improved, but the one joint shows distinct osteitic changes as described.

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A CASE OF ENTEROLITHS.

[WITH SPECIAL PLATE.]

BY

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AN x-ray photograph of enteroliths *in situ* must be comparatively rare. In fact, I can find no evidence of any such having been recorded. The main factors responsible for this appear to me to be: (a) Intestinal concretions are distinctly uncommon.¹ (b) In many cases the symptoms are so insidious in their onset and of so long duration that medical aid is summoned only when there is evidence of intestinal obstruction, and the diagnosis is made when the abdomen has been opened. (c) Only recently has x-ray examination become a routine method in abdominal diagnosis.

The case is that of J. O., a ploughman, aged 39, seen by me with Dr. Gowans of Broughty Ferry on July 23rd, 1912. Except for seven years, when he was working in

an oilcake factory, he has followed this employment since the age of 13. His habits have been regular and he has had no other illness. The history was that for the past eighteen years he had been subject to attacks of colic in the right iliac region, varying in duration from a few minutes to half an hour, and recurring generally three or four times a month. They commenced with distension of the lower abdomen, associated with gradually increasing discomfort till the pain suddenly began to diminish and the indisposition culminated in complete relief followed by the passage of a large quantity of flatus. He had also had flatulence not associated with pain. The bowels had been fairly regular, but he had had occasional attacks of diarrhoea followed by constipation. There had been no vomiting and no urinary symptoms. During the last month these attacks had increased in frequency and severity, and had been accompanied by marked anorexia and slight loss of weight.

On examination, the teeth were good and his tongue clean. An irregular tumour of stony hardness and about the size of the fist was felt in the right iliac fossa. It was fairly mobile, and gave the impression of being intimately connected with the caecum. I was unable to feel it by the rectum. He was advised to go to hospital for x-ray examination and probably exploratory operation, but delayed till his general health began to suffer and his discomfort increased.

He was admitted to Dundee Royal Infirmary on August 20th, 1912. His condition on admission was very much as above noted but with a general aggravation of all symptoms and somewhat severe intestinal stasis; the tumour was less movable.

The x-ray photograph reproduced was taken by Dr. Pirie, and gave the foundation for definite diagnosis.

On August 22nd, under chloroform, I opened the abdomen through the right rectus (Battie's incision). The lower portion of the ileum was found to be very much increased in calibre, and its walls markedly hypertrophied. The tumour consisted of two portions, the larger fixed at the ileo-caecal valve, the other free in the lumen of the ileum some 5 in. from its lower end.

The smaller concretion was removed with ease through an incision in the longitudinal axis of the gut. The portion of bowel containing the second calculus could not be brought up to the abdominal wound, so it was deemed expedient to pack off the general peritoneal cavity and attempt removal through the same intestinal opening. This enterolith was roughly hourglass-shaped, and impacted at the valve, and the caecal portion had to be broken down and the mass delivered with a large stone forceps. The bowel was closed with Lembert sutures.

Convalescence was uneventful, and the patient was discharged well on September 20th. He is now nearly 2 st. heavier than before the operation.

The specimens* look like pieces of compressed felt.

(a) The smaller, which was wedge shaped, with two large facets, measured 16×14 cm. in circumference.

(b) The larger showed no facet, and measured 19½×24 cm. (the last measurement is approximate, owing to damage in removal). The capsule and nucleus, which were well marked in the skiagram, were found chemically to consist mainly of calcium phosphate, while the intervening material appeared to be mostly faecal and vegetable matter bound together by fine hair-like substance. Since removal they have lost quite half their weight.

The case is interesting mainly from the following points of view:

(a) The large size of the concretions.

(b) The fact that these, though situated at what is normally the narrowest portion of the gut, did not give rise to more marked obstructive symptoms.

(c) The duration of the symptoms without disturbance sufficiently grave to necessitate medical attention at an earlier date.

(d) The extreme value of x-ray examination in arriving at a correct diagnosis.

Two points of interest noted in the history were that porridge had been one of his most frequent articles of diet.

* The specimens were shown at a meeting of the Forfarshire Medical Association, November, 1912.