ORIGINAL COMMUNICATIONS.

CASE OF SUCCESSFUL EXCISION OF THE KNEE-JOINT.

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[Part of a Communication read before the Birmingham and Midland Counties Branch of the Provincial Medical and Surgical Association, on 3rd of May, 1855.]

EDWIN FOWL, aged 12, a pale, strumous looking boy, of much intelligence, was admitted under my care in the General Hospital, Birmingham, December 20th, 1853, suffering from disease of the left knee, of fourteen months' duration. The following was the state of the joint. The leg of the affected limb formed a right angle with the thigh, from which position it could only be slightly altered by the exercise of great force, occasioning acute pain. The circumference of the joint was larger by three inches and a half than that of the opposite one. The integuments were shiny and painful. The apertures of four sinuses were apparent; and three of these communicated with carious bone. These openings were situated as follows: one over the external condyle; one over the internal condyle; one over the anterior surface of the femur; and a superficial one over the head of the fibula. His sufferings were very great, especially at night, from the constant gnawing pain which he experienced. Under the influence of rest and good diet, the knee somewhat improved; in a month's time, however, hectic and diarrhoea manifested themselves, so as to necessitate an operation.

In consultation, my colleagues having agreed with me in the propriety of amputation, I was left to select the alternative of excision of the joint, if I thought fit. Accordingly, upon the 8th of February, 1854, the patient being under chloroform, I proceeded to extirpate the joint.

An incision was carried from a little above the outer to a little above the inner condyle, across the front of the joint, below the patella, dividing its ligament of insertion down to the spine of the tibia. The flap thus formed was turned back; and the cavity of the joint was fairly exposed. The disorganised soft parts having been cleared away from over the femur, it was sawn through above the condyles, without the aid of a spatula, or the introduction of a knife: the same process was next applied to the head of the tibia; and the articular extremities were then removed in their connected state, by a cautious dissection of the soft parts beneath, commencing from above downwards. The hæmorrhage was inconsiderable; no ligature was required. The amount of bone removed measured rather more than three inches and a half. About two inches and a half belonged to the femur; and about an inch to the tibia. The patella was left, its under surface being scraped. The head of the fibula was not interfered with. The operation being finished, the leg was readily brought into a line with the thigh. The flap containing the patella was simply laid, in as accurate a state of apposition as possible, over the parts beneath, without the aid of sutures, and was covered with water dressing. The entire limb was then adjusted on a straight splint, reaching from the buttock to the ankle, furnished with a foot support, and with side pieces to the thigh and leg; the knee being left perfectly free on the sides and above, for the application and renewal of dressings.

Examination of the Diseased Parts. The synovial membrane was everywhere affected by disease. It presented a pulpy, thickened condition, and was of a brownish tint, and covered in places by bloody discolorations. The cartilage covering the tibial surface of the outer condyle was destroyed, as was also the corresponding surface of the semilunar cartilage of the tibia. The entire thickness of cartilage on the inner condyle and tibia was not altogether destroyed, but was in process of ulceration. The extremity

of the femur above the condyles was blackened, and denuded of periosteum. The bone was soft and carious. Fresh osseous material had been thrown out behind the condyle and on the head of the tibia. The medullary canal of the bone did not present an unhealthy appearance.

No shock followed the operation; and but a single restless night marked the presence of any constitutional disturbance. The warmth of the limb, below the seat of operation, never varied. The patient had scarcely any pain, and could in the course of a fortnight exercise complete command over the muscles of the foot and leg.

Three months afterwards, the following note was made.

The healing of the wound had been retarded by the thickened character of the integuments. The parts in the situation of the joint were becoming firmer and more consolidated. The boy possessed perfect control over the movements of the foot, and turned it, with the entire limb, either inwards or outwards. The splint was discontinued, and the wound was firmly strapped and rolled.

Four months after the operation, the wound remained open slightly at the sides. A gutta percha splint was applied behind the joint; and the boy was directed to be out of doors on crutches. An accurate measurement was made of the two limbs, when it was found that the difference between them exactly corresponded to the amount of bone removed—namely, three inches and a half.

The patient remained in the hospital until October; more for the purpose of observation, than from any necessity. When discharged, eight months subsequently to the operation, the wound had entirely healed. One of the sinuses, existing previously to the operation, over the patella, still discharged. He could walk with the aid of a stick and a high-heeled shoe; the knee being supported by a leather case.

I saw the boy so recently as the 23rd of last month (April). The limb was quite straight. The wound was sound. The union appeared to be ligamentous. He could walk about anywhere with his leather case and stick.

REMARKS. The foregoing case I had the honour to bring under the notice of the Birmingham and Midland Counties

Branch of the Provincial Medical and Surgical Association, at the meeting held on the 3rd of May. It was accompanied by a series of observations, in reference specially to the operation of excision of the knee; but as those observations were arranged mainly with the view of placing before my audience the present state of our experience on the question, in order to elicit discussion, and as I am preparing a memoir upon the subject of the operation in all its bearings, I have contented myself, on the present occasion, with simply placing on record the case, together with a few comments on its more prominent features.

Assuredly, one of the most remarkable circumstances connected with the operation, is the entire absence of shock. There were never present any symptoms of such a condition. I believe most fully that the constitutional disturbance was diminished by the extirpation of the diseased parts; as the hectic and diarrhoea, markedly present before the operation, ceased on its performance. With regard to hæmorrhage, the articular vessels, on being divided, spurted out for a moment, but did not require ligature. No venous oozing occurred. I was particularly struck by the continuance of the warmth in the limb, the temperature of which never varied. A slight amount of pain was experienced; much less, indeed, than what we should expect to find present in so large a wound, involving, as it did, the extremities of bones, rendered free to move on raw and tender surfaces. Yet, there was no starting of these extremities; there was no painful throbbing and quivering in their vicinity. The movements of the toes, and the command generally of the foot and leg, appeared to be scarcely interfered with. Within a few weeks, the patient could move the foot inwards or outwards with ease, or maintain it in the upright position. The suppuration was never profuse; never so great as that which would arise from a flap amputation of a thigh of the same dimensions as the patient's. The granulations of the wound wanted tone, it is true; but that would be an inevitable condition of a large wound, involving thickened integument, and existing in a strumous habit.

The mode of operation which I adopted appears to me to be deserving of attention.

Having divided the soft parts by the semilunar incision, as first adopted by the late Mr. R. Mackenzie,* and having turned back the flap containing the patella, so as fairly to expose the interior of the joint, I applied the saw to the femur and tibia, and divided the required amount from their ends by a careful use of the instrument; the soft parts being undisturbed by the needless introduction of a spatula. The separated extremity of the femur was then raised, and, together with the tibia, was removed by a dissection from above downwards; such ligamentous attachments as were left undestroyed by the ravages of the disease still being permitted to connect the two bones. By adopting this method, the time occupied in the operation was considerably shortened; but what was still more important, by thus keeping the connexion of the articular extremities unbroken, their dissection from the popliteal vessels was rendered safer and easier. By this process, the patient can have the upper soft parts depressed by an instrument where the contiguity of the vessels is of comparative importance, whilst he is enabled himself to raise the back part of the joint from the more perilous vicinity of the vessels inferiorly, so as to complete the undertaking in safety.

Müller, in the Hospital of Gröningen, first insisted upon this; though I am not aware that his valuable suggestion has been carried out by any one save myself.

Wachter, in his *Dissertatio Chirurgica de Articulis Extirpandis*, observes:—"The illustrious Müller did not deem it necessary to remove the ends of the bones separately, as Park did. Hence no inconvenience arose; and the ends of the bones were able to be extirpated admirably. These being taken away, nowhere, not in the deepest part of the wound, was the popliteal artery uncovered; conse-

quently, there was little fear during the operation lest it should be wounded."

In the preceding description of the plan I adopted, I say that the soft parts were undisturbed by the needless introduction of a spatula. Now, so far as I am aware, this is the first instance in which the articular extremities have been so divided. Hitherto, a broad spatula has been introduced; and upon its protecting surface the bones have been sawn through. The advantage derived from the operation I recommend—namely, that of avoiding disturbance of the soft tissues—is so obvious, that I am surprised it has escaped observation.

Mr. Butcher, in his recent essay† on excision of the knee, minutely describes a particular saw, with which he removes separately the protruded bones, cutting them from behind forwards, away from the vessels. Not, however, admitting the danger of sawing down to the soft parts, I cannot, in my own judgment, admit the advantage of this instrument in the operation in question, as described by this able surgeon.

Birmingham, May 1855.

ON ONE OF THE CURABLE FORMS OF DEAFNESS.

By THOMAS WESTROPP, Esq.

ROBERT LAMBERT, a porter waiting on steamers, came to the King Street Ear and Eye Dispensary for the first time on the 5th of December. He complained of deafness, which he said was a great inconvenience to him in the discharge of his business. (I could not help reflecting that there was no small amount of noise at the sailing and arrival of steam packets.) He could only hear a watch on touching. He was in good general health. On examining his ears with a speculum, I found the membrana tympani slightly thickened on both sides, and presenting an appearance I had never before seen so well marked, and one which is not accurately described by authors; namely, a number of whitish striæ running in various directions across the membrane, sometimes intercrossing each other irregularly. In the intervals between the fibrous cords, the drum presented almost its natural colour. Having gently syringed the ear, I ordered him to take a pill of colocynth and blue pill on two successive nights, that the bowels might be gently acted on, and to have a leech applied with proper precautions to the margin of each meatus.

In applying leeches to the ears, the following rules should be observed. The meatus should be filled with cotton wool, to prevent either the leech from biting too far in, which might cause severe pain, or the blood from trickling inwards, where it would clot and harden on the membrana tympani. A leech-glass is generally necessary; but I find that if a drop of blood is present on the part to which we want to apply the leech, there is not much trouble in getting it to adhere. This may be obtained by scratching the part with a pin. We should always previously wash away any cerumen or discharge, if present. The leech should not be allowed to bite far out on the surface of the auricle, because erysipelas is known to be produced at times by it. In young children, the bleeding should be stopped before the little patient is sent away, because hæmorrhage is sometimes very profuse from leech bites, more especially on or near the ear.

Dec. 7th. There was no improvement in hearing with the watch. He had neglected to apply the leeches. He was ordered to take a tablespoonful twice a day of the following mixture.

℞ Hydrargyri bichloridi gr. iss,
Spiritus vini ꝑss,
Infusi cinchonæ ꝑviiss. M.

* "Ossium fines separatim auferre, necessarium non duxit cl. Præceptor, ut fecerit ex. Park. Nullum inde oriebatur incommodum, et optime fines ossium extirpari poterant. Hisce sublati nusquam in parte vulneris profundior detegebatur arteria poplitea: parum igitur durante hæc operatio metus aderat, ne illa laderetur." (p. 117.)

† Dublin Quarterly Journal of Medical Science, Feb. 1855.

* This method was first recommended by Mr. Skey. (Op. Surg., p. 305.)