HISTORY
OF A
DISEASED METACARPAL BONE;
REMOVED BY AN OPERATION,
WITH
THE DESCRIPTION OF AN INSTRUMENT FOR SAWING OFF
THE EXTREMITIES OR PORTIONS OF THE
LONG BONES.

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THE number of limbs which have been saved by the removal of portions of diseased bones and articulations is extremely small; and, if we except the list of cases so carefully collected and detailed by Dr. Jeffray*, I believe there are but few to be met with in the annals of modern surgery. The severity and difficulty of such operations, the uncertainty of their success, and above all the little advantage which the patient can receive from the limb which is saved, will probably prevent operations of

* Cases of the excision of carious joints, by James Jeffray, M.D. Professor of Anatomy and Surgery in the College of Glasgow.

this kind from being ever generally adopted. These remarks apply more particularly to the lower extremities and the larger joints; for the removal of the head of the humerus, and of portions of bones in other parts of the body, has been attended with such great advantages as have brought the practice into general use. It is not the object, on the present occasion, to enter into a detail of these and similar cases, my intention now being merely to state the effects of removing a considerable portion of one of the metacarpal bones, to point out an easy mode of performing such an operation, and to mention the probable advantages which may reasonably be expected to arise from similar operations.

The patient, on whom I performed the operation, was a young woman, about twenty-four years of age. The disease was in the left hand, and the caries affected the metacarpal bone which supports the middle finger. There was a fistulous opening in the integuments, corresponding with the middle of the bone, which allowed a common probe to pass readily through it, and which led directly to a bare and rough bone; but the rough portion was not extensive. The integuments at this part were slightly swelled, and destroyed the natural angular appearances on the back of the hand. They were also red and inflamed, tender to the touch, and had a peculiar puckered appearance round the fistulous opening. The motion of this finger was attended with a good deal of pain,

and that of all the fingers was so impaired, that she could not use the hand. The disease had originated two years before, in consequence of having received a severe blow on the part affected. The blow gave her acute pain; and soon after a tumour formed on the part, which was considered as a common ganglion. Some months afterwards a charlatan told her that she must either lose her hand, or have the tumour destroyed with caustics: she consented to the latter. He applied a white powder over the tumour, which gave her most excruciating pain for twenty-four hours; and, in eight days, considerable portions of the soft parts separated, and left the bone underneath bare. Caustics of the same kind were three times successively applied, each time producing great agony. After returning home, the wound formed by the caustic healed to a small point, and she was for some time after enabled to use her finger, and to sew a little. The pain, however, and inability to move her finger again returned, and continued until the time of the operation.

As it was thought probable that there might be a considerable risk of the disease extending to the contiguous parts, and that if even an exfoliation of the diseased portion of bone took place, such a process would be extremely tedious, it occurred to me that not only the finger, but even the hand, might be saved by removing the metacarpal bone alone. An operation of this kind presented

considerable difficulties. It would have been almost impracticable to have attempted taking out this bone at its articulation with the carpal bones; and it appeared, on first consideration, equally difficult to saw through the bone immediately below its head; as from the close connection of the metacarpal bone on each side, there would be no room for any of the common saws to work. Besides, there would be a considerable danger of wounding the soft parts of the palm of the hand underneath the bone, as the deep palmar arch of arteries lies close to, and runs across, this part of the hand; and the difficulty of tying those arteries from a narrow unyielding wound, situated between two bones, can easily be foreseen by those who have witnessed wounds of any of these vessels. From these considerations I was led to perform the operation in the following manner.

An incision was made through the integuments from the extremity of the affected metacarpal bone which is articulated with the carpus, extending to its articulation with the finger. The extensor tendon was dissected to one side, and the surface of the bone cleared of the subjacent soft parts, which were considerably thickened. In order to saw through the bone, which I intended to do close to its upper extremity, I employed the following instrument. See *Plate I. fig. 3*. The head of a common trephine was chosen, of a diameter a little greater than the

breadth of the bone, and less than the space formed between the two contiguous bones ; two-thirds of its head were completely cut away, so that the remaining third formed a saw, which, when the center-pin was fixed in the middle of the bone, could cut it through in almost a straight line. With this instrument I divided the bone readily, a little difficulty being at first met with, in determining the precise point for the center-pin, as the parts contiguous to the bone were thickened ; and also, it was necessary to guess accurately when the division of the bone was completed ; for, if the saw had been carried deeper, much mischief might have arisen from the division of some of the subjacent arteries. When the bone appeared to be sawn nearly through, it was readily removed by dissecting out the articulating extremity from its connection with the finger, and by a levator raising it out, and separating it from the soft parts. No vessel was divided during this operation which required to be tied with a ligature, so that nothing further was necessary than bringing the lips of the wound together with adhesive plaster*.

The wound filled up rapidly with granulations, and in fifteen days it was completely healed, ex-

* Fig. 4. Plate I. represents the portion of bone which was removed, (a) is the hole made by the center-pin, (b) is the carious portion of the bone, and (c) is the extremity with which the finger was articulated.

cept a small spot which was always observed to be covered with a yellow-coloured crust. At this part a fistulous opening was formed, through which some small spiculæ of bone were afterwards discharged. In a few months after the operation, the finger had regained such strength as to enable her to sew, and such a degree of motion as to be bent to nearly a right angle with the hand. There was, however, a very considerable diminution in its length, for, as the cavity from which the bone had been removed was filled up with a soft yielding substance, it afforded neither any resistance nor firm support to the action of the flexor and extensor muscles.

Upwards of two years after the operation was performed, I saw the patient. This finger was so much shortened, that instead of being longer than those contiguous, as is the case in the natural hand, it was at least one-fourth of an inch shorter. The fistulous opening had always continued to discharge from time to time a serous fluid, and the cavity, from which the diseased portion of bone was taken, continued to be filled up merely with a soft elastic mass.

It may therefore be supposed that the motion and firmness of support of the finger must be extremely limited, and that though this operation succeeded in preserving the finger, yet the member was of little use for any of the common purposes

of life. It ought however to be mentioned, that this young woman, some months after the operation, suffered severely from pectoral complaints, and her constitution was afterwards so much weakened, that it is extremely probable the healing and consolidation of the wound were greatly interrupted. It therefore appears to me, that though the effect of the operation in this case was not so advantageous to the patient as might at one period have been expected, yet the result was such as to warrant a similar mode of operating where the disease is limited to one of the metacarpal or metatarsal bones.

Cases of this kind no doubt rarely occur, but occasionally instances of caries and exostosis are met with in these bones, by the removal of which not only one finger, but the whole hand might be preserved.

When such an operation becomes necessary, the saw which has been described will be found completely to fulfil every purpose for which it was intended ; and I think it very probable that an instrument constructed on a similar principle, might be well adapted to saw off the heads of the larger bones, or to remove a cylindrical portion of a long bone.