A CASE
OF
DISLOCATION OF THE HUMERUS,
UPWARDS AND INWARDS,
WITH FRACTURE OF THE CORACOID PROCESS OF THE
SCAPULA;
ACCOMPANIED BY A DISSECTION OF THE PARTS INVOLVED IN THE INJURY.

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DISLOCATIONS of the shoulder are described in all English works on surgery with which I am acquainted as occurring in three directions only, viz., downwards into the axilla, inwards beneath the clavicle, and backwards on to the dorsum scapulæ. Besides these complete dislocations, another partial dislocation upwards is admitted, on the authority of two cases communicated to this Society by Mr. Soden, in the year 1841, in which, the long tendon of the biceps being thrown out of its groove, the head of the bone rests on the edge of the glenoid cavity, touching the lower border of the clavicle and acromion process.

The dislocation which I am now about to describe differs in some respects from any of these forms of injury ; and as it has, I believe, never been dissected, and the numerous preparations in our London Museums do not show anything like it, it may be interesting to the members of the Society to examine the preparation and compare it with the account which I shall give of it.

The case was as follows :

John B—, æt. 50, was admitted into St. George's Hospital, on April 7th, 1858, under the care of Mr. Tatum. He had fallen from a great height (said to be above thirty feet) upon a heap of stones, striking the head, the left side of the chest, and the left elbow. He was brought in, suffering from symptoms of concussion of the brain. On examining the left arm, the elbow joint was seen to be extensively laid open, the end of the ulna being broken into numerous pieces, several of which were afterwards removed. There was a large prominence of bone in front of the outer part of the clavicle, which had a rounded form, and involved the tuberosities of the humerus, and seemed to consist of the whole head of the bone. There was, however, crepitus on moving the arm, which made some persons suspect a fracture about the upper part of the humerus. The arm appeared to be shortened, and the elbow was directed away from the side. Endeavours were made to replace the humerus, but it was evident that chloroform would be necessary for that purpose. The arm was, therefore, put upon a bent splint for the present.

Considering the form of the displaced bone, the obstacle which existed to reduction, and the crepitus (which seemed external to the humerus), Mr. Tatum came to the conclusion that the head of the bone was dislocated, and that the crepitus arose from fracture of the coracoid process, a diagnosis which was confirmed by the dissection. The effort at reduction was necessarily postponed until he should be in a fit condition for the administration of chloroform. He remained, however, in a state of insensibility for the

next three days, and no operation could have been safely attempted until some time after this. On the 15th, he seemed so far recovered that the next day was fixed upon for attempting the reduction; but on that day he was seized with shiverings and dyspnœa; and the symptoms of secondary deposit soon showed themselves. He fell into a typhoid state, and died on April 21st, a fortnight after the injury.

Post-mortem examination showed recent pleurisy on both sides, and a single secondary abscess in the right lung. There were no morbid appearances in the brain. The eighth rib on the left side was fractured, but the periosteum had not been torn through. The wound leading into the cavity of the elbow had sloughed, and there were several loose pieces of bone (fragments of the olecranon process) lying in the wound. The head of the radius had been thrown outwards, and was resting on the external condyle; it was partly deprived of cartilage, and felt rough and carious.

The head of the humerus was found immediately under the skin, having passed through the fibres of the deltoid muscle, and having the cephalic vein on its inner side. It had fractured the coracoid process in its passage upwards, and was resting behind on the stump of this process, and on the clavicle, with a small portion of the coraco-acromial ligament, which remained untorn. *Internal* to it (besides the fibres of the deltoid and the cephalic vein) was found the fractured extremity of the coracoid process, with the muscles attached to it, viz., the pectoralis minor, short head of the biceps and coraco-brachialis. *External* and somewhat posterior to it was the acromion process, separated from it by some of the fibres of the deltoid. *Below* and a little external to it was the glenoid cavity, the tip of which lay on a horizontal plane quite below the level of the dislocated head of the bone. The long tendon of the biceps remained still attached to the scapula, and was therefore situated below, and external to, the head of the humerus. The bone, in passing out of the glenoid cavity, had injured this tendon slightly, so that some of its internal fibres had

been broken away from the muscle, and remained floating freely with a tuft of muscular fibres attached to them. The coracoid process had been fractured near its base. The coraco-acromial ligament remained attached to both fragments, so as to prevent their being separated to any great extent. The tip was drawn a little downwards and inwards by the muscles attached to it. The head of the humerus had rested directly upon the stump of the coracoid process, which had caused slight abrasion of the articular cartilage corresponding to it. The humerus had been slightly turned upon its axis, so that the great tuberosity was relatively more forward than natural. The sub-scapularis muscle was intact. The muscles attached to the greater tuberosity of the humerus were torn through, except that a portion of the teres minor remained. The capsular ligament had been lacerated at its upper and inner part, forming a large hole for the passage of the head of the humerus.¹

The possibility of an injury such as I have above described has not escaped M. Malgaigne, the most recent and most approved author on this subject; but, though he met with a case in some respects resembling the above, he had not the opportunity of confirming his diagnosis by post-mortem examination. His case is as follows:²

Supra-coracoid dislocation.—Of this dislocation, unknown to all the authors whom I have consulted, I have seen one example, the result of accident, and another which appeared to be from disease. The former alone is related here.

A man, 68 years of age, was thrown from a vehicle with great force, on to the point of the shoulder, the arm being at the time pressed against the trunk. Attempts were

¹ This is not seen in the preparation, as the greater part of the capsular ligament has been removed, in order to show clearly the tendon of the biceps and the situation of the glenoid cavity.

² Malgaigne on Fractures and Dislocations, vol. ii, p. 530.

made at reduction immediately afterwards, by a bone-setter. Two months and a half had elapsed since the accident.

The head of the humerus was found to be dislocated forwards and upwards, above the coraco-acromial ligament, corresponding externally to the inner border of the acromion, internally covering the coracoid process, reaching upwards to the lower surface of the clavicle, and raising the deltoid to such a degree that a pin pushed in upon the most prominent part gave only eight millimetres (one third of an inch) for the thickness of the soft parts, while more forward it had separated the deltoid and pectoralis major so far as to have got within six millimetres (one quarter of an inch) of the surface of the body. The arm presented a shortening of not more than half a centimetre (less than one quarter of an inch).

M. Malgaigne attempted to reduce this dislocation by means of pulleys applied to the arm, which was raised to a right angle with the body, but without success, though the movements were thought to have been rendered more free and extensive. He had some idea of dividing subcutaneously the coraco-acromial ligament, which seemed to oppose reduction; but, on reflection, thought it more prudent to abstain, and the dislocation remained unreduced.

For another case, in many respects similar to that which I have above recorded, I am indebted to Mr. Prescott Hewett. Some five years back, a stout, middle-aged woman was admitted into St. George's Hospital with an injury of the left shoulder-joint, which had occurred two days previously.

On examining the joint, Mr. Prescott Hewett, who that week happened to have charge of the accidents, came to the conclusion that the humerus was dislocated. The head of the bone was quite out of the socket, and appeared to be lying to the upper and inner side of the glenoid cavity, and immediately below the bend of the clavicle. Rotation of the arm gave a distinct and well-marked crepitus, which led to a difference of opinion among the surgeons who examined the case. By some it was thought that there was a fracture

of the neck of the humerus, and by others that there was a fracture involving the glenoid cavity.

Mr. Prescott Hewett reduced the dislocation with the heel; the shoulder immediately resumed its rounded form, and all crepitus disappeared. The case presented no further difficulty, and the woman was made an out-patient in a few days.

Now, if we compare the case which I have related with those of which the symptoms or post-mortem appearances are described in our authors, we shall see that it differs from them in this essential particular; that the head of the bone had passed entirely above the level of the glenoid cavity. Whether in M. Malgaigne's and Mr. Prescott Hewett's cases the dislocation was complete it is not possible, in the absence of anatomical details, to assert with confidence; but in the present case, no one who looks at the preparation will, I think, feel any doubt that the head of the bone is thrown entirely out of the glenoid cavity, that all its parts are above the level of the upper border of that cavity, and that it has passed all the obstacles which could oppose its further progress; so that it lies immediately below the skin, and it is only by the accidental cessation of the force that it has been prevented from passing still higher. The position of the humerus is such that, in the natural situation of parts, the vertical line through the centre of the glenoid cavity, produced upwards, would cut the head of the humerus a little external to its centre. The dislocation may, therefore, be regarded as in the upward direction.

One necessary condition of this injury is the displacement or rupture of the long tendon of the biceps; and in this respect the case before us resembles those reported by Mr. Soden; another is the fracture of either the coracoid or acromion process, since, if these two processes remain entire, the head of the bone has not room enough to pass entirely out of the glenoid cavity, but remains in the position indicated in the representation (a very faithful one) of Mr.

Soden's preparation, which will be found in the volume of the 'Transactions' before referred to.

With respect to diagnosis, the difficulties will arise mainly from two causes, viz., the amount of swelling which must always accompany an injury so violent as is necessary to give rise to this displacement, and the crepitus which will probably be caused by the fracture.¹ The former is, of course, common to all severe injuries, and the influence which it exerts in confounding diagnosis may be shown by innumerable histories; the latter cause of error has this special circumstance attending it, that the head of the bone, resting as it does on the stump of the coracoid process, gets eroded by its contact with the sharp edge of this piece of bone, so that, in a few days, two rough surfaces of bone are found lying against each other, and the least movement of the humerus communicates a sensation of crepitus to the hand which is exactly like (in fact, is essentially the same as) the crepitus of a fracture. The portion of the head of the humerus, which is deprived of its cartilage and roughened by contact with the stump of the coracoid process, is very clearly seen in the preparation.

¹ The crepitus in Mr. Prescott Hewett's case may have been caused by fracture of the coracoid process, but there are other instances on record of crepitus being felt in what were thought to be cases of simple dislocation.