CASE
OF
FRACTURE
OF THE
CORACOID PROCESS OF THE SCAPULA,
WITH
PARTIAL DISLOCATION OF THE HUMERUS FORWARDS,
AND
FRACTURE OF THE ACROMION PROCESS OF
THE CLAVICLE.
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READ FEBRUARY 12TH, 1839.

I TAKE the opportunity of laying before the society the account of an accident, the occurrence of which has been doubted, and a dissection of which has not, so far at least as I am aware, been hitherto made.

Richard White, aged 58, by trade a painter, was admitted into St. Thomas's Hospital on the 12th of April 1838, at 7 o'clock in the evening.

He was a thin spare man, of loose fibre, and of moderately temperate habits, though he had formerly lived freely ; and whilst at work on a scaffold

about thirty feet high, in stepping back fell from it to the ground, about an hour since.

I saw him very soon after his admission, after having been brought four miles in a cart ; his extremities were then cold, and the pulse slow and labouring. Some wine was given, and hot bottles having been applied to his feet, after a little time he revived sufficiently to bear an examination.

It was stated that he had fallen directly on his head ; and just opposite the middle of the coronal suture was a slight skin wound, with some surrounding contusion, but I could discover neither fracture nor depression :—his left eyelids were much swollen and ecchymosed, and from the left ear blood streamed freely ; but he had no symptom of cerebral damage, was perfectly sensible, and answered readily and reasonably.

Upon the back of the left elbow was an oblique wound of the skin, about an inch in length, opening the joint, and exposing the inner side of the ulnar pulley of the humerus between the broken extremities of the olecranon, the upper portion of which had been drawn up about an inch.

The arm hung closely to the side, and at first I did not observe any injury of the shoulder ; but being informed that the surgeon who had sent him to the hospital thought there was dislocation at that joint, I examined it more carefully, and on rotating the arm, felt crepitus, which I considered to arise from the motions of the broken ulnar being transferred to the humerus. However, not being satisfied on this

point, I fixed the olecranon, and then looking more closely at the shoulder, observed a depression below and behind the acromion, which led me to suppose some displacement of the head of the humerus or fracture of the neck of the scapula, but still the roundness of the shoulder was not lost. I then put my hand on the shoulder, and endeavoured to grasp the neck of the scapula with my thumb and finger (the former being in the axilla), and commenced gentle rotation of the arm, when immediately and unexpectedly I felt the head of the humerus move backwards, and the appearance of pit ceased. I then began to arrange the elbow, and whilst doing this the humerus again slipped out, the same appearance of depression behind it and below and behind the acromion was reproduced ; and I also observed there was preternatural prominence and roundness of the front of the shoulder. I therefore supposed it to be dislocation under the clavicle, of the same kind, though not to the same extent, as the so-called dislocation under the pectoral muscle, but which is really rather under the inner edge of the deltoid than under the pectoral muscle.

For the fracture at the elbow joint a long well-padded splint was placed on the front of the limb, to which the fore-arm was connected nearly as high as the elbow by another, and the upper arm in a similar manner, but less tightly, from a little above the joint nearly to the axilla. The edges of the wound were brought together with two adhesive straps, and the plaister varnished with sealing-wax, after Mr. Aber-

nethy's plan, so as to allow the application of an evaporating lotion without the straps being loosened.

The dislocated head of the humerus was now again replaced, merely by lifting the neck outwards with the thumb and rotating the arm: its return was this time indicated by a grating noise, which was heard by the bystanders. A large pad of tow was put in the armpit, and confined there by a bandage tied upon the opposite side of the neck, and a second bandage passed round the belly, and including the fore-arm, brought the band near to the trunk, whilst the head of the humerus was kept up by the pad in the axilla.

April 13th, morning.—Reaction did not come on till late last evening; he then became warm, and has had a tolerable night. The upper arm slightly swollen, and the shoulder rather tender when touched.

April 14th, afternoon.—He has had a comfortable night—tongue clean, pulse 100, and small. The upper arm having now become more swollen, and the bandage around it very tight, the splint at the same time having slipped from the front to the inside of the arm, both it and the splint were removed, and another splint slightly bent opposite the elbow placed along the front of the fore-arm and extending about four inches above the elbow, keeping the fore-arm between pronation and supination with the thumb upwards; a bandage was then passed around the fore-arm nearly as high as the elbow, but not continued above it.

April 16th, morning.—Has had a very bad night, in consequence of cough and vomiting, and is much exhausted; complains of pain at the pit of the stomach: pulse 102, small and weak—bowels not moved since the day before yesterday. I desired he should have an injection of senna and sulphate of magnesia, and a mustard poultice to the pit of the stomach immediately.

Early in the afternoon vomiting recurred, for which he was ordered acid. hydrocyan. *ñij* ex aquâ sextis horis.

11 P.M.—The vomiting has continued; pulse small, quick, and almost imperceptible; general coldness of surface and pallid countenance: he is fast sinking. Brandy and arrow-root were ordered every two hours, but he continued getting worse, and on April 17th, at 4 A.M., he died.

The friends being unwilling to admit a general inspection of the body, nothing further could be done beyond an

Examination of the shoulder.—On turning off the integuments, a small quantity of effused blood was found on the front of the shoulder, and to my surprise, a fracture of the clavicle, about a third of its length from the acromial extremity, with, however, but little displacement. The clavicle was then disarticulated from the sternum, and, together with the scapula and part of the humerus with their muscles, removed from the body and carefully examined. The acromion was broken at the usual place, about an inch from its extremity, but not

at all displaced, as the periosteum had not been lacerated.

When the deltoid muscle had been turned off from its clavicular origin, the coracoid process of the scapula was found broken about half an inch from its tip, into two unequal pieces, the smaller of which remained connected above with a piece of the triangular ligament still attached to the acromion, and below to the short head of the biceps muscle, which had pulled it down as far as the ligament would allow, about half an inch below and to the outer side of the stump of the coracoid process. This muscle was torn from the coracobrachialis about an inch ; and to the top of the conjoined tendon of the latter, and of the lesser pectoral muscle, was attached the larger portion of the broken coracoid process, which had been drawn rather lower than the other portion, and to the inner side, but was still connected by a thin cord of fibrous matter to the coracoid process. The remainder of the triangular ligament was torn to pieces. In the front of the capsule of the joint was a slit about an inch in length, through which the cartilaginous covering of the head of the humerus was seen glistening. The remaining origin of the deltoid was divided, and the muscle turned down and cut off, which exhibited the head of the bone in its proper position.

Being anxious, if possible, to reproduce the same state of the shoulder as when I first saw him, in order to comprehend the extent of the displacement, I moved the humerus about in various directions,

when at last, by lifting up the shaft and pressing the head of the humerus forwards, I effected my purpose ; the preternatural roundness in front of the acromion being produced by the head of the humerus being partially thrown forwards and over the front edge of the glenoid cavity, so that it became fixed, and behind it the depression below the acromion appearing, in consequence of the sinking of the tendons of the infraspinatus and teres minor muscles into the glenoid cavity, from the altered position of the head of the bone, which, however, did not protrude through the slit in the capsule, although it was there more distinctly visible. No other laceration of the tendons about the joint had occurred, except a very slight tearing of the tendon of the supraspinatus muscle. Nor was there any other fracture of bone.

Having thus detailed the history of this case, it remains only to offer a few observations upon the actual state of the injury as it appeared on examination of the parts. I am fully aware that the case is not so interesting as if the nature of the accident had been fully understood previous to death ; but his condition was such, that I was glad to get him quiet as soon as possible, not knowing how soon symptoms of injury to the brain might appear, or how serious they might be. No cerebral disturbance, however, showed itself, but his constitution made no effort to rally against the severe shock it had received, and he speedily sunk.

It may at first appear strange that so common

accidents as fracture of the clavicle and fracture of the acromion should have been overlooked ; and I am free to confess I was surprised on finding their existence ; but on reference to the preparation, it will be seen, that though the clavicle was broken, yet the displacement was so slight, that it caused no deformity ; and as to the acromion, the periosteum not having been lacerated, that portion of fractured bone had not altered its position in the slightest degree, and therefore in reality amounted to no more than a mere crack, which, but for the examination after death, must have remained unknown.

As to the partial dislocation of the humerus, it is an accident which I have often heard mentioned, but till the examination of the present case have scarcely deemed possible. Indeed, even in this, during life, I did not suppose it existed ; and I still think that it could not have occurred without great laxity of the capsular ligament, and without the fracture of the coracoid process. I believe that the existence of the latter injury was necessary to allow the partial dislocation of the head of the humerus forwards ; for had the coracoid process remained unbroken, I cannot imagine how the head of the membrane could have slipped so far before the glenoid cavity, as to allow of its being fixed in the position in which I found it when I first saw the patient, and to which I returned it after death.

The rent in the capsule, which is barely an inch in length, and scarcely more than a mere slit, did

not allow the escape of the head of the humerus, the articular surface, however, of which is seen through it. I think the rent was made by the broken coracoid process being driven upon it from without, rather than ruptured by the head of the bone from within.

The slight displacement of the head of the humerus from its socket is clearly indicated, not only by the examination of the parts, but also by the facility with which it was twice replaced when I first saw him ; and, as I have already stated, I then considered it to be the dislocation under the pectoral muscle, so called, though with the head of the humerus projected much less forwards than usual.

I would wish, however, to state, that I do not consider the present case as offering any proof of the possibility of such accident as partial dislocation of the head of the humerus, unless, as in this instance, there be fracture of the coracoid process. For the disposition of that process is not merely as a protection against injury to the front of the joint, but it precludes the head of the humerus being projected so far before the edge of the glenoid cavity as to put it in a situation from which it cannot and must not be immediately withdrawn by the slightest action of either of the muscles attached to the tubercles. Whilst, on the contrary, if the head of the bone be driven backwards, it must be either so completely thrown from the glenoid cavity, as to produce dislocation on the dorsum, or so trifling,

that it is but for a moment slightly displaced, and reverts to its natural place so soon as the impelling force is removed.

[P. S. WHEN Mr. South's Paper was read at the Society, the following case was related by Mr. Arnott, as having recently occurred in a patient received into the Middlesex Hospital under his care:—

Fractured Coracoid Process.— ——— Errickson, a boy of 15 years of age, was brought to the Middlesex Hospital, Sept. 16, 1838, having fallen from a tree. He had fracture of the skull, requiring the use of the trephine: the left clavicle was also broken, and two of the ribs of the same side. He lived for ten days. On the post-mortem examination, besides the injuries already mentioned, it was found that the coracoid process of the left scapula had been broken off at its root. The point of fracture was just where this process becomes joined as an epiphysis, above the glenoid surface, to the body of the bone; and considering the age of the patient, there can be little doubt that perfect union had not been established.

Owing to the insensibility of the boy, and his constant motion, resulting from the injury of the head, it was not possible to keep the arm at rest, or properly confined in its bandages; consequently, an abscess had formed around the fractured ends of the clavicle; and also between the fractured coracoid process and its corresponding surface.—*Editor.*]