

Partial dislocation of the radius and ulna backwards : with the formation of a new joint / by T.M. Girdlestone.

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PARTIAL
DISLOCATION OF THE RADIUS AND ULNA
BACKWARDS,

WITH THE FORMATION OF A NEW JOINT.

BY T. M. GIRDLESTONE, F.R.C.S.

Read on Thursday, March 14, 1850.

THE preparation here described was taken from a subject in the dissecting-rooms, and is consequently without a history; but, from the appearance of the joint, we may conclude that the displacement occurred some years before death.

The forearm could be flexed to a right angle, but was here stopped abruptly by an unyielding barrier in the joint: extension was but little impaired; rotation somewhat limited: none of the muscles were torn, but those in front of the arm and forearm were wasted.

The following is the condition of the joint:—The anterior ligament had been ruptured, but a part of it remains, and has formed fresh attachments; the lateral ligaments have suffered but little injury; the orbicular ligament has been torn across, and the posterior portion of it passes obliquely upwards over the head of the radius, and terminates in the external lateral ligament, which is thus lengthened; while the anterior portion has become adherent to the neck of the radius, and limits its rotation outwards. The posterior ligament has acquired an attachment to the old articular surface of the olecranon, and is considerably strengthened by some strong transverse fibres which are attached to the condyles, and ap-

pear to prevent the coronoid process of the ulna from slipping into the olecranon cavity of the humerus.

The coronoid process of the ulna, rounded at its extremity, and flattened on its articular surface, rests on the margin of the olecranon fossa, at the back of the articulation of the humerus, and is here supported in a new joint, which is formed by some irregular-shaped pieces of bone developed in the posterior ligament, as well as by a considerable prominence of bone growing from the back of the inner condyle. The head of the radius rests on a similar process behind the outer condyle.

The ends of the bones entering into this new joint are smooth and hard, and covered by a substance resembling a thin layer of fibro-cartilage, excepting the head of the radius, which is but little altered, its cartilage remaining on it, and giving rise to some fibrous tissue which is attached to the cup-shaped cavity on its summit. A thin layer of cartilage, with some tough fibrous tissue adherent to its surface, covers the old articulation of the humerus. The radius and ulna are not separated from each other.

When the bones of the forearm are driven backward from their articulation with the humerus, they do not always

occupy the same spot; for the coronoid process of the ulna may be drawn upwards and slip into the cavity, at the end of the humerus, destined for the reception of the olecranon, or it may remain between this cavity and the centre of the trochlea over which it has passed: thus the dislocation may be complete or partial. On examining the bones of the elbow-joint we might be led to suppose that a partial dislocation backwards was impossible; and, indeed, it is not recognised by several eminent writers, among whom are Sir Astley Cooper and Boyer. The latter says—"Dislocations of the forearm backwards can never be incomplete." And several modern authors, in describing the numerous luxations to which the elbow is subject, invariably state that, in dislocation backwards, the coronoid process of the ulna occupies the cavity formed for the olecranon. Now this is by no means so constant; and I believe, if we examine carefully the seat of the bones in these dislocations, we shall hardly find two cases precisely alike, although there are many in which the coronoid process does not occupy this fossa.

In the Dublin Quarterly Journal for May 1848, Dr. M. H. Stapleton relates three cases of partial dislocation; one of the ulna alone, and two of both bones backwards, which came under his notice, and were easily reduced.

In determining that these were cases of incomplete luxation, Dr. Stapleton was guided by the projection of the olecranon backwards, which was less than it would have been had the displacement been complete: but what he chiefly relied on was the relation this process held to the inner condyle,—a feature by which we may determine whether the luxation is complete or incomplete. And he here follows the rules laid down by Malgaigne, who states that, in partial dislocation, "the coronoid process of the ulna lies upon the inferior part, and a little posteriorly to the pulley or trochlea of the humerus; the fore-arm is scarcely at a third of its flexure, the olecranon process is an inch and a half behind the inner condyle, but upon an horizontal plane perceptibly inferior to it; whilst in the complete dislocation, the coronoid process of the ulna being lodged in the cavity usually occupied by the olecra-

non, the olecranon is found almost equally distant from the inner condyle, but evidently superior to it."

We may easily satisfy ourselves of the truth of this assertion by placing the coronoid process of the ulna (of the dry bones) first on the back of the trochlea, then in the fossa just above it, at the same time keeping the arm partly flexed. This appears to me to be a diagnostic sign, which, in many cases, may be practically applied. In partial dislocation, when the arm is semi-flexed, the olecranon is in the same *horizontal plane* as it would be if the ulna were in its natural position,—that is, "level with the external condyle of the humerus, and inferior to the internal" (Boyer); but the olecranon, though in the same plane in both cases, is much nearer to the inner condyle in the natural position than in dislocation.

There is a preparation in the museum of the hospital (3. 33.), of an unreduced luxation which very much resembles the one here described. In both instances the coronoid process of the ulna is not in the olecranon cavity, but on its margin, and supported by a growth of bone springing from the back of the humerus; and in both the olecranon is *inferior* to the inner condyle: thus agreeing with Dr. Stapleton's cases, and the rules laid down by Malgaigne. I may add, that the latter author gives it as his opinion "that the incomplete dislocation is by far a more frequent occurrence than the complete."

We ought not to be surprised to see the coronoid process remaining on the back of the trochlea of the humerus, when we find some of the lateral ligaments and the brachialis anticus muscle remaining entire; for the former would be put on the strain, and tend to hold the bones in this position, while the latter must be ruptured if the ulna pass further upwards and backwards.

The fore-arm in these injuries may be either supine or prone. In those cases which came under the notice of Sir A. Cooper it was supine, while other observers have found it in a state of pronation.

The heaping up of new bone in the neighbourhood of an unreduced dislocation is stated by Cruveilhier to be common in the hip, but rare in the elbow joint. It has taken place, however, in this case, as in the one in the museum: and

there is one preparation in the Museum of the College of Surgeons (Patholog. Cat. vol. ii. p. 208), where "the radius and ulna are dislocated outwards, and *partially* backwards: the ulna is fixed to the humerus by bone." Cruveilhier, also, in his Plates of Anatomy and Pathology (Livr. ix. Ch. iv. p. 8), gives the representation of an unreduced complete dislocation of the radius and ulna backwards, with a shell of new bone adhering to the radius and ulna near the joint, and projecting for some distance up the arm in *front* of the

humerus, where it must have assisted in fixing the dislocated bones in their abnormal position.

Since writing the above I have seen a little girl in whom the same accident, attended by precisely the same symptoms, has been observed. The patient is now in St. Bartholomew's Hospital, under Mr. Stanley. The accident happened four months previous to her coming to the hospital, and, not being reduced, the bones became fixed in their new position.

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