ON
BONY ANKYLOSIS
BETWEEN
THE HUMERUS AND SCAPULA,
AFTER DISEASE.

BY
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I SHOULD not have ventured to occupy the attention of the society by the description of a single anatomical specimen, were it not for its extreme rarity: I have searched for a precisely similar preparation in vain through the Museum of the Royal College of Surgeons of England, and the collections attached to most of the metropolitan schools of medicine; and I have been equally unsuccessful in my enquiries among personal friends. But, remembering that not many years ago, the occurrence of osseous ankylosis after disease between the bones composing the ankle-joint, was almost denied by a high surgical authority, and that subsequent investigation has disproved that statement, I take the liberty of directing attention to the specimen now before you, in the hope that it may procure for me further information, and perhaps show that this termination of inflammatory morbid changes, so important as regards the great question of resection of the head of the humerus, is less rare than would

at first appear, and may, moreover, be favoured by appropriate means of treatment.

In the Museum of St. Bartholomew's Hospital, the only preparation at all analogous is described as "*a scapula and humerus united by bone: the upper part of the shaft is fixed by an irregular growth of bone to the remains of the glenoid cavity, and the base of the coracoid process. The spine and the inferior costa of the scapula are thickened,*" (Series II, Sub. B. 50) but the head of the humerus has disappeared by ulceration.

However, by referring to the descriptions of the museums in other countries, I find notice of two apparently parallel preparations, the one in the Musée Dupuytren, No. 656, the other in the Richmond Hospital Museum, in Dublin. The former is described "complete bony fusion of the humerus with the scapula, the form of the joint being normal." Upon the section, it is seen that the spongy substance of the humerus is continuous with that of the scapula.

The latter is mentioned in the 'Dublin Journal of Medical Science,' vol. xxi, 1842, p. 295, by Mr. R. W. Smith, to whom too high praise cannot be given for his investigations in the pathology of joints. The preparation is described, "ankylosis by fusion, taken from the body of a man, ninety years of age, and for many years before his death bedridden. The arm was rotated inwards; the glenoid cavity and the head of the humerus formed one continuous bone. The greater tuberosity was ankylosed by bone to the acromion, and the lesser tuberosity to the coracoid process. All the surrounding muscles had undergone fatty degeneration."

The specimen now before the Society came from the dissecting room of St. Bartholomew's Hospital, having been taken from the body of a man, aged 30, who used to obtain his living by performing as a juggler and tumbler in the public streets. He was dexterous in throwing up and catching a succession of balls, knives, or coins: in short, he performed the tricks usually exhibited by that class of persons.

When my attention was first directed to the body, I thought, from the healthy aspect of the skin, and the flattening of the shoulder from atrophy of the deltoid, that it might prove a case of non-reduced dislocation ; but closer examination showed, first, that there was no projection of the acromion, and, secondly, that the scapula followed the movements of the humerus, as if the two bones constituted a single piece.

The muscles surrounding the joint were pale and atrophied, the supra and infra-spinatus, the teres minor, and the subscapularis muscles had contracted a closer adhesion than natural to the fibrous capsule of the joint, which was entire, but thickened, and small. The long tendon of the biceps was in great part destroyed, in shreds, and adherent ; but there were none of the osteophytes, so commonly seen in such cases. The humerus and scapula, both somewhat smaller than natural, are completely fused by bony ankylosis. The sawn surface shows that, but for a line indicating the junction of the epiphysis with the shaft, the general cancellous texture of the former would be continuous with that of the latter. As it is, no line of demarcation exists between the glenoid cavity and the altered head of the bone. A small cavity, capable of holding a pea, seen in the detached fragment of the specimen, was filled by a substance, thicker, more yellow, and opaque, than the oily fluid permeating the rest of the bone ; I believe this to have been the seat of a small abscess, which, having formed, ceased to extend, and the contents gradually acquired a consistence, which has not uncommonly led to the mistake of their being considered tuberculous. It appears to me that, first, the head of the bone has been changed in form by ulceration ; and that, secondly, the disease having come to an end, osseous union has taken place by both fusion of the opposed granulating surfaces of humerus and scapula, and by a limited deposit of new bony matter.

There was scarce a trace of synovial membrane even in the interior of the capsule. The articular cartilages were entirely removed ; and it is difficult to imagine how this

could have occurred by that process commonly known as ulceration of cartilage, by which large flakes are separated from inflamed and roughened bone. It must rather have been that slower process, commencing from the free surface and characterised by the splitting of the cartilage into fibres, and by its progressive absorption. The extremity of the acromion process, detached from the rest of the scapula, was reduced in size, and blended with the coraco-acromial ligament, which was stretched tightly over the head of the humerus. If we examine the relation of the humerus to the scapula, it will be seen to be dislocated upwards, a change of position by no means uncommon during the course of rheumatic disease, and at one time incorrectly regarded as the result of accident.

We may, I think, conclude, without much fear of contradiction, that the disease preceding the changes here exhibited, was that known and described under the head of rheumatic inflammation. It is not easy to say in what tissue it commenced; for we find that the synovial membrane is affected sometimes primarily, sometimes secondarily, the inflammation being propagated from the neighbouring periosteum. The morbid changes in the soft parts may proceed, *pari passu*, with others going on in the cancellous structure in the bone, or those in the bone may take precedence of all. One fact, however, is obvious; namely, that there are two varieties of this disease; one illustrated by the preparation, which I have had the honour now to present, in which the morbid changes seem limited to the surface of the bone; the other, illustrated by the specimen to which I have referred, in the pathological museum of St. Bartholomew's Hospital, where an exudation takes place generally through the cancellous texture of the whole head, and sometimes also of the shaft of the humerus, producing expansion of its walls, suppurations within its tissue, or in the synovial cavity, with ulceration of both cartilage and osseous tissue. The latter is far more serious than the former, but both are susceptible of cure.

I do not think that when, in the consideration of a grave

case of diseased shoulder-joint, the question of resection of the head of the humerus is raised, sufficient attention is paid to the possibility of a spontaneous termination of the disease, and the repair of the injured parts by osseous ankylosis. I have rather been accustomed to hear such a result doubted, or altogether ignored; and the patient has been informed that an operation was the only means of restoring him to health, and the possession of even a moderately useful limb. "Can such disease," observes M. Crocq, "indicate a serious operation? Yes. When the humerus is denuded to a great extent. When proper means have effected no amelioration, and especially when suppuration threatens to exhaust the patient. The operation should always be that of resection, which is known to be often crowned with success, and to give to the patient a useful limb. New bone is often formed if the member be kept sufficiently long at rest; and even if this does not take place the parts may be steadied by a proper apparatus." (*Traité des Tumeurs Blanches*, p. 655.)

It is far from my intention to underrate the operation of resection; I value it as a part of conservative surgery. I have seen the diseased head of the humerus extirpated sometimes with brilliant success, at other times with a less gratifying result; but the operation is always grave, and attended by both suffering and risk; and I think, therefore, that it is not quite out of place to bring forward proofs that under favorable circumstances (and we may in time better learn what they are), the disease may pass through its stages, and, even the joint, undergo a process of permanent repair, leaving the limb so free of movement and so useful in all its functions, that the patient may resume with success some of the most active and laborious employments of life.