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CLINICAL LECTURES ON DISLOCATIONS, DELIVERED AT THE CHARING - CROSS HOSPITAL.

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LECTURE V.

In this lecture, gentlemen, I propose to enter upon the symptoms of dislocations, and to commence with the consideration of that form most commonly met with, in which the head of the humerus is thrown downwards and inwards into the axilla, resting against the edge and inner side of the inferior costa of the scapula.

A man applies to you, stating that he has fallen, or was thrown down, and alighted either upon one of his hands or elbows, and finding that he cannot use his arm, and suffering such intense pain, he has come to you for your opinion. Before he removes his clothes you may observe that his head and body incline towards the injured side, that his elbow is separated from his side, and that he supports the hand of that side in his opposite hand, carrying it forwards and relieving it from its own weight. You direct him to hold his head up, and he will tell you he cannot, that when he attempts to do so he experiences such a dragging sensation and pain in the shoulder as to baffle his endeavours. You then tell him to let go his hand, and he will do so, but he immediately resumes it, complaining of the weight of the affected arm, and the uneasy numbness and pricking sensation referred to his fingers. You next tell him to carry his elbow to his side; he will endeavour to do so, but without success; and if you take the elbow in your own hands and try to bring it to the ribs, you will, in most instances, be unable to do so, without great pain to your patient; the arm also appears longer than natural. Tell him to raise his hand to his head and he cannot do so.

These, then, are the symptoms which any one can notice in most cases of this accident, even before the patient has removed his clothes—viz., the inclination of the head and body towards the affected side, the supporting the hand in the hand of the opposite side, the numbness and pricking of the hand, the inability to bring the elbow to the side, and also to raise the hand to the head, and the lengthening of the limb. You now take off his clothes, and will be enabled to distinguish the following additional symptoms. The shoulder no longer presents its usual roundness. I have already told you that in the normal condition of the joint, if we carry our finger downwards and outwards along the obtuse border, afforded by the

external margin of the trapezius muscle, we discover, first, the end of the clavicle, then the edge of the acromial process, and lastly, the rounded prominence afforded by the head of the humerus and deltoid muscle, projecting considerably beyond the acromion process. In the dislocation of the humerus downwards we lose this prominence; the acromion process, instead of being concealed by the latter, projects abruptly outwards, whilst instead of the aforesaid rounded eminence, the shoulder is fallen, there is the flattened surface of the stretched deltoid muscle; and if you exercise pressure beneath the acromion process you will discover a depression corresponding to the glenoid cavity, instead of the resistance naturally presented by the head of the bone. I have already observed, that the power of abduction or raising the arm, is for the time lost to the patient, as well as the ability to bring the elbow to the side, but he is still able to move the arm backwards and forwards as it hangs by the side. If you take hold of the arm and move it, a slight crepitus may be felt, arising from effusion, and the escape of synovia into the cellular tissue. This may mislead you if you are ignorant of the cause: it is much more marked when a dislocation has occurred some time before you are called to the case, for the obvious reason that the more recent the accident, the less time is there for morbid changes. But wherever this crepitus is present, it is of importance that you should be able to recognize it from the grating of broken bones, for if the accident be complicated with broken bones, it is much more difficult of cure, more serious to your patient, and likely to be succeeded by much more inconvenience and more untoward results, if the nature of the mischief be overlooked; whilst, on the other hand, if you mistake this crepitus for that arising from fracture, you will subject your patient to a vast deal of unnecessary confinement, and should he consult a surgeon better informed than yourselves, he will at once discover your mistake, and the affair will be anything but creditable to you. The sensation and sound of crepitus arising from rubbing the two ends of the broken bone together, are dull, grating, and such as may be expected from the friction of two rough uneven surfaces of such a consistency and structure, but the crepitus resulting from effusion into, and thickening of, the cellular tissue, causes a sharper and more crackling noise, more like the crackling produced by crumpling a piece of parchment; wherever, therefore, you have this kind of crepitus accompanying the movement of a joint, you may at once decide that it results from effusion, and not from fractured bone. If you raise the arm gently away from the side with your

right hand, and introduce the fingers of your left into the axilla, you will be able to feel the round head of the humerus lying in this latter situation. Sir Astley Cooper pointed out the necessity of elevating the arm before making this investigation, as if the fingers are introduced into the axilla whilst the arm is hanging by the side, the head of the bone cannot be felt, and the surgeon is liable to fall into error from the absence of the most conclusive symptoms of this accident, for, by raising the elbow, the head of the humerus is lowered in the same proportion, and thus rendered prominent and capable of being distinguished. The head and neck incline towards the injured side in consequence of the attachment of the trapezius to the scapula, acromion process, and clavicle, opposite the origin of the deltoid muscle; this being depressed by the altered situation of the head of the humerus, draws down the whole shoulder, and with it the scapulo-clavicular attachment of the trapezius. The prominence of the acromion process arises from the escape of the head of the humerus from the glenoid cavity to its new situation, elongating the fibres of the deltoid, which, being no longer supported, and projected by the prominence of the head of that bone, are not only put upon the stretch, but sunk in towards the glenoid cavity, producing the unnatural depression beneath the acromion process, whilst at the same time, as a consequence of the altered relation of parts, and the undue tension of the deltoid muscle, this latter draws the arm away from the side, and hence the difficulty of approximating the patient's elbow to his thorax. Again, we have seen that the patient complains of weight, pain, numbness, and pricking in his fingers. Your anatomy will elucidate this point; the head of the humerus being thrown downwards and inwards into the axilla, below its natural situation, rests upon the brachial plexus of nerves, and by pressing upon the median, ulnar, and radial nerves, causes the numbness and pricking sensation of the fingers, and the sensation of the weight in the arm, whilst the violence inflicted upon the circumflex and cutaneous nerves will account for the numbness and tingling frequently experienced in the limb itself. The biceps, coracobrachialis, and triceps, are stretched, and the forearm placed in a state of semiflexion.

The symptoms I have here described are those commonly met with in recent cases of dislocations into the axilla. The falling of the shoulder, the presence of the head of the humerus in the axilla, the loss of the natural motions of the joint, the projection of the acromion process, the separation of the elbow from the side, with the difficulty of approximating it, the elongation of the limb, the numbness and pricking in the fingers, and weight of the arm, with the inclination of the head to the affected side, are all principle features of this accident in a recent state; when, however, it has been neglected for any length of time, other ill effects will be produced. The head of the bone when thrown into the axilla not only presses upon the axillary plexus of nerves, but also upon the axillary vein and blood vessels and absorbents. Free circulation of the blood through the limb is thus impeded, absorption is interrupted, and œdema of the hand and arm ensues, whilst, in consequence of the laceration and violence done to the soft parts about the joint, the shoulder becomes so swollen as to render the precise nature of the mischief obscure, by concealing some of the most diagnostic signs.

Should you ever be placed in such a situation as this, should you, from the swelling, be unable to detect the nature of the accident, I advise you not to give too hasty an opinion upon the case; but if you can, avail yourselves of another opinion, or at all events subdue the inflammation, get rid of the swelling by proper means, such as abstraction of blood, &c., and in the course of a very few days the œdema will be sufficiently reduced to enable you to judge more correctly; but on no account rest satisfied until you have assured yourselves that the parts are restored to their natural position and situation, if this be possible. I may moreover observe, that there is also a great difference in the facility with which these accidents are discovered in emaciated, weak, aged individuals, and in those who are loaded with fat; as in the latter the appearances are less decisive. The difficulty of approximating the elbow to the side, although almost a constant, is not an invariable sign of dislocation into the axilla. In paralysis, or where the patient has frequently suffered from this accident, the elbow may be pushed against the side with perfect ease.

Some years ago, when I was a pupil at the Westminster Hospital, a man came to me and asked me to reduce his shoulder, which was dislocated into the armpit. I had heard at lecture, and also read, the difficulty experienced in bringing the elbow to the side in these cases, and accordingly, before he undressed, I took hold of his elbow, which, to my great surprise, I could strike against his thorax with the greatest ease, and I at first thought the man was mistaken, but having undressed him, I found from the other signs that he was right, and that it was a dislocation into the axilla which I had to treat, and I reduced it without any difficulty. When I had done, the man laughed, and said, "Sir, you thought I was wrong, but I have had my shoulder out too often for that." It was first dislocated about two years ago, and since then scarcely a month passes without its being put out." He was very thin, and his deltoid muscle was but slightly developed. Since then, I have met with other cases of a similar nature.

Now, as to the causes, gentlemen: these may be considered as predisposing and proximate, and those which arise from disease and natural deformity. Petit classifies them into "internal and external." Whatever tends to debilitate the muscular system is a predisposing cause of dislocation. In paralysis the muscles no longer have the power of supporting the weight of the arm, and the head of the bone becomes dislocated. Long-continued illness, old age, debility, and relaxation of the ligaments and muscles of the part, are all predisposing causes. Where also the muscles are kept forcibly extended for any length of time, they lose their tone, and the patient is subject to dislocation upon the slightest exertion.

Sir A. Cooper relates the case of a young midshipman, who for some trifling offence was strung up by his arm to one of the yard-arms of the vessel, in such a manner that his foot could just rest upon a projection on the deck, and he was kept in this position for an hour. The result was a wasting of the muscles, and a liability to dislocation upon the slightest cause.

Here, then, you have a very good illustration of the effect of excessive and long-continued exertion upon muscular fibre. We know that for the full develop-

ment of what is termed tone of muscular fibre, and also for the full and proper development of the fibre itself, a certain quantity of exercise is necessary. If a patient loll upon a couch from morning to night, his muscles become flabby and soft, and he is predisposed to luxation. Let him take moderate and regular exercise, his muscles recover their tone, become increased in size and power, and this predisposition no longer exists; but continue this exercise to excess, and again this tone and development disappear. The effect is similar to paralysis, the muscles no longer retain the power of resistance, they waste away, and your patient remains more or less a cripple for the remainder of his life. Among the most frequent of the proximate causes, we may range the irregular contraction of muscles, the head of the bone being in a favourable position for such an accident.

It may appear somewhat paradoxical to you that a bone may be dislocated by irregular spasmodic muscular contraction, and that the same accident is commonly permitted by the muscles being taken unawares, whilst you are also taught that the strength and integrity of the joint depend upon the muscles which surround it; but nevertheless such is the fact. To preserve the joint from the accident, it is necessary that the muscles be prepared and act with regularity, preserving the due balance between the different antagonising movements, for it is no less certain that the head of the bone may be forced out of the glenoid cavity by the spasmodic and irregular contraction of certain muscles, than that the same accident is permitted to occur when sudden violence is referred to the part, the muscles being unprepared to resist that violence.

In support of this hypothesis M. Bichat relates the well-known case of a notary, who dislocated his shoulder in endeavouring to raise a heavy register above his head, which he attributes to the action of the deltoid muscle, which, contracting violently in the unusual effort, pressed upon the head of the bone, and produced displacement downwards; but we may reasonably suppose that other muscles assisted in producing the mischief, for the attempt to raise the book being sudden and violent, the adductor muscles were as suddenly thrown into spasmodic action, and hence we may fairly suppose that the deltoid was assisted by the combined action of the pectoralis major, latissimus dorsi, and teres major muscles, as has before been remarked by M. Falre. M. Boyer gives the particulars of a person who was subject to fits of epilepsy, and whose shoulder was constantly dislocated during the attacks. The following case is also mentioned in the *Revue Médicale*, for 1830, second volume. A young man suspended himself by his hands to a piece of wood placed cross-wise above him: one of his hands slipped, and the whole weight of his body suddenly fell upon his right arm. Luxation was thus produced; but the patient, notwithstanding the injury, managed to retain his hold for some time afterwards.

The most usual cause is a blow or heavy fall upon the joint, or a fall upon the elbow or arm.

A man is walking along the street and is suddenly thrown or slips down; he puts out his arm to save himself, and he comes down with his hand striking violently against the ground, and then the various species of dislocation are produced, determined by the position and direction of the arm at the time of the accident.

Should the humerus be merely raised from the side, without being carried either forwards or backwards, and the fall take place upon it, then the upper end is forced downwards and inwards, and a dislocation downwards is the result, assisted by the muscles to which I have already alluded. As to the accident being produced by direct violence to the joint itself, its probability is denied both by Boyer and Dupuytren, the former of whom observes, that it has not as yet been demonstrated that dislocation of the humerus can be produced by any external violence acting upon any other point than on the lower extremity of the humerus or arm. There are several examples of violence acting on the point of the shoulder, but in all these cases there was fracture of the scapula or humerus.

M. Boyer is correct in many instances, for blows and falls upon the shoulder as frequently cause fracture, or, perhaps, more frequently, than dislocation; but there is no doubt that dislocations do occur from falls or blows directly upon the shoulder, and that they do also occur without being complicated with fracture.

There is at present in the hospital a patient under the care of Mr. Avery, who, in crossing the Strand a few days ago, was suddenly run against by a cab-horse, and thrown down violently on her shoulder, which struck the ground with great force. I questioned her closely upon the fact, and she assured me that she did not alight upon her hand, but directly upon her shoulder, which being covered with dirt, served to confirm her account of the accident. When brought in, she was examined by the house surgeon, and found to be suffering from dislocation downwards into the axilla, unaccompanied by any fracture; and since then I have had another patient under my own care, who informed me that she fell directly upon the shoulder, and in her case, likewise, there was no fracture.

I could multiply these cases were it necessary, but I think that I have stated enough to convince you that the proximate causes of dislocation downwards, are violent and irregular muscular contraction, and blows or falls upon the arm, whether the violence be received upon the hand, elbow, or directly and immediately on the shoulder itself. Dislocations of the shoulder from disease occasionally occur, but not so frequently as in the hip. In inflammation of the joint, where the quantity of synovia is increased to any great extent, the head of the bone is sometimes pushed out of its cavity, but as the inflammation subsides, and the fluid is absorbed, it gradually returns to its natural situation. Sir Astley Cooper mentions the case of a young lady who had fever. A month afterwards the head of the bone slipped easily from its socket, but was as easily reduced. She was subsequently cured. Some individuals, from relaxation of the muscles, and constant habit, have the power of dislocating the arm, and reducing the dislocation at will. A few years since, a man went about to the different hospitals obtaining money from the students by showing himself. He could throw the head of the bone forwards whenever he liked, and reduced it with the same facility; and it is difficult to imagine how mountebanks are able to throw themselves into their various contortions, unless they possess a similar power. With respect to those which occur from natural deformity, as they come under the head of congenital luxations, I shall reserve any remarks I may have to offer, until we enter upon the consideration of that subject.