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

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LECTURE XIII.

In the preceding lectures, I have described to you those accidents in which a fracture has taken place in or near to the articulation, the head of the bone occupying its proper cavity; but in the present, I shall have to refer you to a class of injuries, where there is not only fracture, but a displacement of the articulating surfaces, or in other words complicated dislocation. These are always very serious accidents. The violence done to the soft parts, the manner in which the mischief occurs, and the difficulty—in some instances, impossibility, of restoring the parts to their natural and proper positions, whilst they cause great anxiety to the surgeon, render the results most serious to the patient. Boyer asserts, "they are very rare:" fortunately they are so. They usually occur in the following manner:—A man falls out of a window, or from a height, or is thrown from his horse, and pitches violently and directly upon his shoulder; or whilst walking in the streets he is knocked down by the pole of a carriage striking that part; or he may be run over. In any of these cases, as remarked by Sir Astley Cooper, "the first impression of the accident dislocates the os humeri, whilst the second breaks the neck of the bone, the head being detached and lodged in the axilla, or elsewhere, according to the direction in which the violence acts, and the position of the head of the bone at the moment of injury."

You will find from the cases I shall enumerate, that the head of the bone may be thrown either forwards, under the pectoralis major muscle and internal to the coracoid process; downwards and inwards into the axilla, beneath the latter process; and backwards on the dorsum scapulæ. The symptoms therefore vary with the situation of the fracture and the direction in which the head of the bone is displaced. When the fracture occurs high up, either at the anatomical or surgical neck, and the head of the humerus is thrown into the axilla, the symptoms and appearances very much resemble a dislocation downwards and inwards.

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When, on the contrary, the head of the bone is placed under the pectoral muscle, or on the dorsum of the scapula, the accident may be mistaken for a dislocation in each of those directions; but you will generally be able to distinguish the injury by observing that there is usually less projection of the acromion, and consequently less depression below that process, and behind the deltoid muscle; for when the head of the bone is broken and displaced from the shaft, the latter is drawn upwards and somewhat forwards. You will be able to move the arm in various directions, especially if you are called to the case early, ere much swelling or inflammation has set in, but any motion causes great pain, not only in the part, but also in the arm and hand. Ascertain the situation of the head of the bone, place your left hand upon it, and rotate the patient's elbow with your right; you will then perceive that the upper extremity of the shaft moves under the acromion process. The arm from the acromion process to the elbow is somewhat shorter than the other, and Sir Astley Cooper has pointed out that there is not always distinct crepitus, but more frequently a gritty feeling from the friction of the broken neck of bone against the glenoid cavity, and its investing cartilage. The end of the bone may be drawn down to the glenoid cavity, but directly you cease your extension it will be again displaced by the muscles; and with respect to the latter sign, Dupuytren has recommended, if there be any doubt as to the nature of the accident, if the swelling be so great, or the patient so fat, as to render the symptoms obscure, you should restore the arm to its proper shape and length, and leave your patient. If, upon your return in eight hours, you find the shoulder deformed, you may be sure the case is one of fracture, and not simply dislocation. The following cases will illustrate the accidents in question:—

PARTIAL DISLOCATION COMPLICATED WITH FRACTURE.

Dupuytren, in his "Leçons Orales," relates the two following cases:—

CASE 1st.—A man aged 62, fell upon his left shoulder, and was immediately deprived of the use of the limb. He was taken to the Hôtel Dieu, and next day the shoulder was so much swollen as

to prevent any accurate opinion being formed. The deltoid muscle was shorter, but thicker and broader than natural, and slightly flattened. The acromion projected more than usual, and a round tumour, resembling the head of the bone, could be felt in the cavity of the axilla, forming a kind of prominence under the pectoral muscle. In consequence of the swelling it could not be decided whether the accident was a fracture or a dislocation; but in the course of a few days, the swelling had so far disappeared as to admit of crepitus being heard, and Dupuytren decided that there was fracture, with displacement of the head of the bone. The patient is said to have recovered.

CASE 2nd.—A man falling from a ladder fractured his humerus and dislocated its head. Being in the country at the time, he was attended by the surgeon of the place, who mistook the nature of the accident. After fifty-five days, finding that he did not recover the use of his arm, he applied at the Hôtel Dieu, when the following appearances were observed. The arm was longer than the sound one, the movements backwards and forwards very much limited, and slightly painful; he could not bring his arm to his chest without great pain at the upper and anterior part of the shoulder. He had slight power of adducting the arm, but the movement was very painful. His shoulder was flattened, acromion prominent, and the extraordinary direction of the humerus could be both felt and seen. Instead of being placed under the acromion, it was thrown inwards, and united with the upper fragment, forming a projecting angle in the cavity of the axilla. The head of the humerus lay under the acromial end of the clavicle, where it projected considerably, raising the deltoid and pectoralis major. When pressed upon, the whole arm moved. As so long a period had elapsed since the occurrence of the accident, it was decided that nothing could be done to remedy the mischief.

COMPLETE DISLOCATION DOWNWARDS AND INWARDS INTO THE AXILLA, COMPLICATED WITH FRACTURE.

M. Laumonier, of Metz, in the "*Journal de Médecine Militaire*," relates the following case, which is very interesting, on account of the ingenious method adopted by that gentleman to effect reduction:—A soldier fell out of a window and fractured his humerus three inches below the tubercle, and dislocated the head of the bone into the axilla. He also received a comminuted fracture of the olecranon process of the same arm.

M. Laumonier reduced the head of the bone in the following manner:—Having placed a pad underneath the head of the bone, he applied a tourniquet, resting partly upon the acromion process, and partly upon the acromial end of the clavicle, carrying the strap of the instrument from the shoulder, round the pad in the axilla, and back to the tourniquet, so as to include the pad and head of the humerus within the strap. Having so done, he turned the screw of the instrument, and

by thus tightening the strap, he gradually returned the head of the bone to its natural situation, and the patient recovered entirely.

Great credit is due, in my opinion, to M. Laumonier for having placed this case upon record, and for the treatment he employed. He scarcely could have adopted any other method so likely to succeed, since the tourniquet supplied two opposite powers at the same time, both, as they acted upon distinct bones, assisting in leading to the results desired; for whilst, on the one hand, the strap underneath the head of the humerus gradually raised that process, the tourniquet on the other, taking its fixed point on the humeral end of the clavicle and acromion, depressed that process, and with it the glenoid cavity of the scapula, by which means the articulating surfaces were in a two-fold manner approximated, and the reduction facilitated. It is exceedingly doubtful whether the ordinary means of reduction would have succeeded in this case, and we are therefore indebted to M. Laumonier for a very valuable auxiliary in the treatment of these accidents.

When the fracture occurs very close to the head of the bone you must not expect to be able to return that process into the glenoid cavity; yet the patient will recover some degree of motion in the part, and in some instances union may take place to a certain extent between the broken portions, notwithstanding their abnormal relations. The following cases show the pathology of these accidents:—

CASE 1st.—There is a preparation at the Museum of the College of Surgeons, in which the separated head of the bone lies on the anterior surface of the neck of the scapula. The supra and infra-spinatus muscles remain attached to the greater, and the subscapularis to the lesser tubercle. The long tendon of the biceps is jammed between the upper end of the shaft and the glenoid cavity, the humerus being drawn up close under the acromial process. The capsular ligament is extensively torn.

CASE 2nd.—The head of the humerus was broken from the shaft and dislocated into the axilla. It remained on the inner side of the inferior costa of the scapula, to which it was firmly united. The tubercles were broken off with the head, and the end of the shaft lay in the glenoid cavity. The patient had recovered the under-hand motions of the joint, but could not raise his arm above a right angle with his body.

DISLOCATION FORWARDS, COMPLICATED WITH FRACTURE.

CASE 1st.—A man aged 60, fell into a dry ditch upon his shoulder. There was considerable depression beneath the acromion, simulating dislocation; and a prominence in front and below the coracoid process, beneath the pectoral muscle. The arm admitted of free motion when handled. The patient, who in a few months recovered the

under-hand motions, died at the end of fifteen months from the accident.

The part was examined and the following appearances discovered:—The humerus was fractured at its anatomical neck; its head rested on the outside of the tendon of the subscapularis muscle; the fractured end of the shaft rounded, and forming a new head; capsular ligament ruptured, but not sufficiently so to allow the head of the bone to escape; long tendon of the biceps ruptured, and adhering to the rounded end of the shaft, which remained in the glenoid cavity. The head was united to the side of the shaft by a small bony process, whereby it partook in every movement of the humerus.

CASE 2nd.—Sir Astley Cooper relates a case of a gentleman who was thrown from his horse, and injured his shoulder. Mr. Lucas saw him, and after considerable extension, reduced the bone; but as the deformity again returned, Sir A. Cooper was consulted, after five weeks from the accident. He recommended further extension, but the patient would not submit. He subsequently recovered the use of his arm in all directions but upwards, and suffered but little pain or inconvenience. He died in the year 1824, and Sir A. Cooper examined the arm. The deltoid, teres major, and coracobrachialis muscles, remained unaltered; the supraspinatus was lessened, as was also the teres minor, which had lost much of its natural colour. The infra-spinatus was stretched, the sub-scapularis diminished and rounded, by the projection of the head of the humerus adhering to its cartilaginous surface. The capsular ligament was torn under the sub-scapularis muscle, but was everywhere else entire; the head of the bone thrown forwards on the inner side of the coracoid process, but united by bone to the scapula, but its cartilage remained where it was covered by the tendon of the sub-scapularis muscle. The neck of the bone, broken through, was covered by granular ligamentous substance, but the parts were kept together merely by the ligament of the joint, and a new and very useful joint had been formed. The outer edge of the glenoid cavity remained, but the surface of that cavity was granulated and ligamentous; the greater tubercle had increased considerably; the tubercle remained attached to the shaft, and not to the head. The injury was, dislocation of the head of the humerus forwards, with fracture of the anatomical neck.

CASE 3rd.—Mr. Hingstone publishes the following cases in the eleventh number of "Guy's Hospital Reports":—

Mr. P., aged 63, a thin and feeble man, in October, 1839, fell forwards down his cellar stairs, having some heavy books in his hands at the time. He fell with his left arm stretched out, and at the same time received a violent blow on the back of the humerus, which was broken at its anatomical neck. The case presented the following ap-

pearances:—The left shoulder was fallen; the glenoid cavity empty; arm close to the side; patient supported the injured elbow in the opposite hand; the palm of the injured hand lay flat on his stomach, half supinated. There was visible protuberance under the clavicle, elevating the pectoralis muscle; the head of the bone was perceptible to the fingers, both in the axilla and under the clavicle. By pressing the shaft up, crepitus could be felt, and the patient being very thin, the finger could be placed between the two pieces of bone.

He died, worn out by irritation, at the end of three months. The humerus, close to its neck, was fractured in six pieces, but in other respects the appearances resembled those of the cases I have already related.

DISLOCATION BACKWARDS, COMPLICATED WITH FRACTURE OF THE ANATOMICAL NECK.

M. Delpech, of Montpellier, in his "Chirurgie Clinique," relates the following remarkable case, which, as far as I am enabled to judge from my researches, is perfectly unique:—

A female, aged 60, very large and fat, fell out of bed upon her shoulder, whilst in a fit of apoplexy. The part became considerably swollen and inflamed, but no fracture could be discovered. She never rallied out of her fit, but died on the twelfth day from the accident.

The body was examined after death, and the following appearances were observed:—Great effusion about the shoulders; the tendon of the biceps appeared much elongated; and on the capsule being opened, a fracture was discovered, extending through the anatomical neck of the humerus; the capsule filled with synovia and coagulated blood; the glenoid cavity ecchymozed, but not fractured; the capsule considerably lacerated posteriorly, through which the head of the bone had been pushed backwards, beneath the outer extremity of the infra-spinatus muscle. The head of the bone lay entirely out of the capsule; the shaft corresponded to the glenoid cavity, and still had the capsular muscles attached to it.

Diagnosis.—The principal signs by which you will be able to distinguish these accidents from simple dislocation are the following:—The fall and sinking of the shoulder are less marked, as the end of the shaft of the humerus occupies the glenoid cavity. The head of the humerus can be felt either in the axilla, under the clavicle, beneath the pectoral muscle, or in the infra-spinatus fossa, according as the displacement occurs downwards, forwards, or backwards; but it does not obey the motions of the arm when the latter is rotated. When the head of the bone is displaced either into the axilla, or forwards under the clavicle, a grating and crepitus may be perceived on raising the arm; but when the displacement occurs backwards, you are deprived of this diagnostic sign. The upper end of the shaft of the humerus is drawn upwards and forwards against the coracoid process. It may be

returned to its proper situation, but quickly slips forwards again when left to itself. As greater violence is required to produce these accidents than in simple dislocations; and, moreover, as this violence must act directly upon the joint, you will have more contusion, more swelling, and considerably more pain than in the latter injuries. The result of these cases depends very much upon the situation of the fracture. When it occurs at the anatomical neck, or immediately below the tubercles, you will not be able to return the head of the bone to the glenoid cavity, as you will have no purchase whereby you can effect such reduction; but when the fracture obtains three inches below the tubercles, as in the case related by M. Laumonier, or lower down, a cure may be effected, as we have already seen in that instance.

When, therefore, the fracture occurs at the anatomical neck, or immediately below the tubercles, extension is of no use, further than to bring the upper end of the shaft into the glenoid cavity.

Some difference of opinion has been expressed as to the treatment of these cases. Sir A. Cooper advises to keep the shaft in the axilla, "a pad placed in the latter, a clavicle bandage applied, and the elbow supported." Mr. Allan, of Edinburgh, observes, "When the fracture occurs below the tubercles, and above the insertion of the axillary muscles, the inferior portion of bone is always retracted upwards and inwards. Do not, therefore, support the elbow."

I entirely agree with Mr. Allan as to the propriety of leaving the elbow unsupported. How so shrewd an observer as the late Sir A. Cooper, could have pointed out the propriety of extending the arm, to draw the shaft down to its proper place, and immediately afterwards lay down a line of conduct having a direct tendency to displace it, is certainly somewhat surprising. It is true, that do what we may, the patient will never recover the proper use of his arm; the question, therefore, for our consideration, is the degree of action which may be recovered; and our endeavours should be directed towards obtaining as great a latitude of motion as possible. I have already pointed out to you the extent to which the movements, especially the over-head movements, are impeded, we may say, entirely destroyed, when the upper end of the shaft is drawn up against the coracoid process. It is, therefore, obvious that our treatment ought to be directed towards keeping the upper end of the shaft as much as possible in the glenoid cavity, and favouring the formation of adhesions, by which it may be permanently restrained in that situation. To support the elbow is consequently injudicious. I should recommend you to treat these accidents in the same way as you would a simple fracture of the anatomical neck of the humerus. To render this treatment the more effectual, I have invented a splint, which is made by Mr. Simpson, of the Strand. You will perceive that it is an iron

angular splint, with a joint where it corresponds to the elbow. It is intended to be placed on the inner side of the arm, and front of the forearm. That portion appropriated to the arm, consists of two pieces, which slide one upon the other, and are fixed by a couple of thumb-screws, by which it may be adapted to any length of arm; whilst the upper or axillary end of the arm-piece ends in a pad, like the top of a crutch. This serves the treble purpose of counter-extension against the margins of the axilla; preserving those margins from excoriation which the sharp edge of the splint might otherwise produce; and, lastly, it presents an axillary pad and splint in one, certainly an improvement upon the detached pad, which is always liable to shift and get out of its place. When the fracture has taken place lower down, more towards the middle of the shaft of the humerus, there can be no doubt that we should endeavour to reduce the dislocation at once, if we can, either by the plan adopted so successfully by M. Laumonier, or by one of the other methods which I shall have to describe to you hereafter.

With respect to reducing the dislocation, first, Bannister, in his "Chirurgery Digested," observes, "If a luxation happen with a fracture, the luxation, if it may be, is first, the fracture next, to be restored. If that cannot be, then compass the case of the fracture first, and after his callus is grown firm, undertake the luxation." This is very good advice, provided the circumstances of the case are favourable to reduction, and that the attempt may be made with safety, and probability of benefit to your patient; but we will discuss this point more fully by-and-by.

PRACTICAL OBSERVATIONS ON SOME OF THE MORE IMPORTANT POINTS OF PHYSICAL DIAGNOSIS.

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AUSCULTATION OF THE LARYNX AND TRACHEA.

Before commenting on the phenomena referable to the voice, cough, &c., as diagnostic of disease, it will be expedient to analyse very briefly the sounds proper to the commencing portions of the respiratory apparatus, viz., the larynx and trachea. These signs have been imperfectly investigated, and, indeed, by many have, intentionally, or otherwise, been overlooked. Nevertheless, as auxiliaries in diagnosis, their importance merits consideration.

In examining the region of the neck, the auscultator, while he maintains close proximity of the instrument to the surface, must press lightly, otherwise he will produce pain, and by disturbing the free current of air, render the result of the examination nugatory.

Both the normal and abnormal laryngo-tracheal sounds differ from those occurring in the chest, chiefly by being more fully pronounced, dryer, more harsh, and of a somewhat abrupt whiffing character. Thus we have in disease, an exaggerated degree of the