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CLINICAL LECTURES ON DISLOCATIONS,
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LECTURE III.

Having in the preceding lectures described to you the various structures which enter into the formation of the joints, having pointed out to you their characters, regularities, and functions, I will now pass on to the consideration of those accidents occurring to joints, where, from the articular surfaces of the bones being forced out of their proper situation, they constitute that form or species of mischief called a dislocation. Dislocations have been variously denominated according to the degree of displacement, the violence done to the soft parts, and the condition of the bones. Hence they are called complete, incomplete, simple, compound, and complicated.

A complete dislocation is where the articulating process of one bone is entirely thrown out of its natural situation, so as no longer to be in contact with the articular surface with which it is naturally connected. The head of the humerus is thrown into the axilla; it is now no longer in contact with the glenoid cavity of the scapula, it is "completely dislocated." An incomplete dislocation is when the articular surfaces, although to a certain extent displaced, remain partially in contact. Thus the upper extremity of the tibia is sometimes thrown inwards, so that the internal condyle of the femur, rests upon the outer articulating facet on the head of the former bone. Here there is a mere partial displacement, an "incomplete dislocation," by some called a subluxation.

A simple dislocation is when there is merely a displacement of articular surfaces without any wound; but where there is, in addition to the displacement, a wound extending directly from the surface into the cavity of the joint, or, in other words, where, by means of the wound, there is a direct communication between the air and the joint; this constitutes "a compound dislocation."

A complicated dislocation is where the displacement of the articulating surfaces or processes is accompanied by a fracture of one or both of the bones. Thus, a man falls down and twists his ankle. He fractures his fibula and dislocates the tibia from the astragalus, he has received a "complicated dislocation." When this occurs, without any wound in the skin, it is a "simple complicated dislocation," but when, as frequently takes place, the internal malleolus is forced through the integument, the accident is very much more seri-

ous and dangerous to the patient, and is then a "compound complicated dislocation." There are, also, other distinctions depending on circumstances, as to the displacement being the consequence of disease, or whether it has occurred from a natural deformity of the parts, in which latter instance it is called "congenital dislocation." In some cases, again, it is termed a "consecutive dislocation," where the displaced bone is drawn into another situation than that into which it was thrown at the time of the accident. This sometimes occurs in the shoulder joint; the head of the humerus is thrown into the axilla, but, by the action of the muscles, or the ill-directed attempts at reduction, the position will be changed, and the head of the bone placed under the pectoralis muscle, this latter position being consecutive, and not dependent upon the original accident.

The dislocations to which I shall first allude, are those of the shoulder joint. These accidents frequently occur, and when the patient is very stout, or where some time has elapsed since the receipt of the mischief, before you are consulted, you will occasionally have considerable difficulty in determining its extent and nature, unless you have previously studied the subject with great attention.

The shoulder, considered as an articulation, is one of the weakest joints in the whole body. The principal object in its construction evidently being to confer the greatest possible latitude for motion, an object attained at the expense of strength and solidity. The skeleton of the joint is exceedingly well adapted to its functions, consisting of a spherical ball or head, which revolves upon nearly a flat surface, but the strength and solidity of the articulation depend entirely upon the muscles which immediately surround it, influencing its movements, and under ordinary circumstances rendering it sufficiently secure. As these, however, are voluntary muscles, subject to the caprices of the will, it is evident that in moments of forgetfulness, or under sudden violence, or where an individual is under the influence of intoxication, this security amounts to little or nothing, and hence we find the liability to dislocation is pretty well in ratio to the freedom of motion with which the joint is endowed.

Anatomy of the Joint.—The skeleton of the shoulder joint is formed by the head of the humerus and the glenoid cavity of the scapula. The scapular extremity of the humerus is the largest part of that bone, and directed a little upwards and backwards; we here observe three eminences, the largest of which articulates with the scapula. It is covered with cartilage of incrustation, thickest at the greatest convexity, becom-

ing gradually thinner towards the circumference. The head of the humerus represents a hemisphere, and is proportionably larger in infants than in adults. Its axis directed obliquely forwards, outwards, and downwards, forms a curve in uniting with the humerus, and appears longer internally and posteriorly. At the point of this union there is a circular depression or fissure, increasing in depth towards this last situation, and constituting the true "anatomical neck." In some individuals the head of the humerus remains for a long period in a state of epiphysis, and is therefore liable to be broken off; but this is an extremely rare accident.

We cannot view this process without being struck with the great irregularity in size between it and its receptacle on the scapula. In the preparations before you, taken from the same subject, the articulation on the head of the humerus measures two inches and a quarter in diameter, and two inches and three quarters from above downwards, whereas the glenoid cavity only measures about an inch across, and an inch and a half from above downwards, so that but comparatively a small surface of the former is in contact with the latter at any one time. This arrangement certainly endows the part with great latitude of motion, but it is evident that in most directions the bones themselves present no obstacles to dislocation. The other two eminences are called the "greater and lesser tuberosities;" they are situated anteriorly and externally to the head, the greater tuberosity placed more posteriorly, is rounded and marked by three surfaces, the upper and anterior of which gives insertion to the supra-spinatus, the middle to the infra-spinatus, and the inferior and posterior to the teres minor, muscles. The lesser tuberosity is much narrower, but rather more prominent; it gives insertion to the subscapularis muscle. Between these two tuberosities, and extending downwards and inwards, is the bicipital groove. Externally, or rather inferiorly to these three eminences, the bone becomes smaller, and receives the insertion of the capsular ligament of the joint. This part of the bone is called "its surgical neck."

The glenoid cavity of the scapula is situated on the apex of the triangle, or at the junction between the upper and inferior costa, it is pear-shaped, being narrower at its upper than at its lower portion, having its greater diameter from above downwards. It is somewhat concave, but so slightly so, that were it not for additional structures it would present an almost plane surface. It is united to the rest of the bone by a contracted part or neck, which gives attachment to the capsular ligament of the joint. The glenoid cavity is covered with articular cartilage, thinnest in the centre; its lip or surrounding ridge is also invested by a bundle of dense fibro-cartilage, which has received the name of glenoid ligament; the cavity, which is materially deepened by this ligament, is rendered still more so at its upper part, by the tendon of the long head of the biceps, which not only takes an insertion at the apex of the cavity, but reaching there, splits into two portions, one of which passes down on either side, becoming attached to the glenoid ligament at about its upper two thirds. Some have imagined that the glenoid ligament is derived from the tendon of the biceps, but you will easily be able to distinguish the shining, smooth, glistening, straw-coloured tendon, from the whiter fibro-cartilage.

At the upper and anterior part of the glenoid cavity is the coracoid process. This arises from the superior costa of the scapula, as far back as the supra-scapular notch; from this point it arches forwards and outwards, terminating in a point, and it gives attachment to the pectoralis minor, the coraco-brachialis, and the short head of the biceps muscles; also to the deltoid trapezoid, conoid, accessory coraco-costal, and posterior coracoid ligaments; as also to a ligament which proceeds to the edge of the glenoid cavity. As it arches forwards, it presents a smooth pulley-like surface towards its root, for the passage of the congregated fibres of the subscapularis muscle to the lesser tubercle of the humerus. The coracoid process covers and protects the inner side of the joint; it supports the acromial end of the clavicle, and with the deltoid ligament and acromial process, forms the protecting vault or roof to the joint, situated about an inch above the glenoid cavity. Posteriorly and superiorly, arising from the spine of the scapula, is the acromion. This process, which is flattened in a contrary direction to that of the spine, is of great importance in our diagnosis of dislocations: its outer surface, directed upwards and backwards, is convex and uneven, and lies immediately below the skin, so that its whole extent may be traced by the finger; its inner or inferior surface looks downwards and forwards on the shoulder joint. Anteriorly on its upper margin it articulates with the clavicle, giving attachment posteriorly to the trapezius muscle; from its lower and outer edge arises a portion of the deltoid muscle, whilst its summit gives insertion to the coraco-acromial or deltoid ligament.

The bones of this joint are articulated by a capsular ligament invested on its inner surface by synovial membrane.

The synovial membrane invests superiorly the glenoid cavity, and inferiorly the head of the humerus; reflected from these points it invests the tendon of the subscapularis muscle, and lines the capsular ligament, separated however from it opposite the bicipital groove, by the long tendon of the biceps which runs between the two, being more or less covered by the synovial membrane, where it is reflected over it, after lining the bicipital groove. This arrangement enables the tendon of the biceps to move with great freedom, but you must recollect that it lies external not internal to the synovial membrane, which is here as elsewhere, a shut sac.

As I have shown in a preceding lecture, the scapular ligament of the shoulder joint is very loose and shaped like a barrel, being larger in the middle than at its extremities. Its superior margin arises from the neck of the scapula surrounding the glenoid cavity, excepting at its upper and anterior portion, where it is attached to the ligament which I have already pointed out as passing from the coracoid process to the glenoid cavity, and which ligament was first described by Sir A. Cooper. Its inferior margin is intimately blended with the periosteum surrounding the surgical neck of the humerus, excepting where the long head of the biceps enters the bicipital groove. The capsular ligament therefore contains within it the glenoid cavity of the scapula, the head and greater and lesser tubercles of the humerus, but it is perforated by the tendons of the muscles which pass to be inserted into the two latter eminences. It is not of uniform thickness throughout; it is considerably strengthened

by the tendons of the different muscles becoming as it were incorporated with it, whilst its thickness is also increased. The coraco-humeral or accessory ligament, which, arising from the outer edge of the coracoid process mixes with the fibres of the capsular ligament, and becomes attached with the tendon of the infra-spinatus muscle to the greater tubercle of the humerus. The capsular ligament is also very strong between the subscapularis and teres minor muscles.

The shoulder joint, as has been before observed, depends for its strength upon the muscles which surround it. These are powerful, some being inserted into the joint itself or rather the head of the humerus, whilst others, though acting upon the articulation and influencing its motions, are inserted at a considerable distance from it. Sir A. Cooper, in his work on dislocations, has arranged these muscles into two classes, viz., those of protection to the joint and those influencing the motions of the joint. In the former he places the supra-spinatus, infra-spinatus, teres minor, and subscapularis muscles; in the latter the deltoid, coraco-brachialis and teres major.

The supra-spinatus muscle, arising from the scapula above the spinous process, fills up the fossa of that name. Firmly bound down by dense fascia, its fibres pass forward and outwards beneath the acromioclavicular arch, and covering the head of the humerus, perforates the capsular ligament, and is inserted with the upper surface of the greater tubercle. If you examine the dried bones you will observe that to arrive at its destination the muscle has to rise over a decided eminence formed by the roof of the acromial process. This affords an additional reason why fibres of the supra-spinatus muscle are lacerated in dislocation downwards, or into the axilla. The infra-spinatus muscle is attached to the fossa, which it fills, covered by the deltoid and also bound down by dense fascia. The fibres converge and terminate in a tendon, which, passing upwards and outwards beneath the acromion, approaches the supra-spinatus, and mingling with the fibres of the capsular ligament, is finally inserted into the middle space on the greater tubercle of the humerus. The teres minor ascends parallel to the infra-spinatus beneath the deltoid: it arises from the depression on the anterior costa of the scapula, and adhering firmly to the capsular ligament, is inserted into the inferior depression on the tubercle of the humerus. The subscapularis occupies the venter of the scapula, from which it arises in distinct bundles of fasciculi, separated and bound down by the intermuscular septa and aponeurosis. They converge towards the neck of the scapula, separated however from it by a large bursa beneath the coracoid process and its muscles, and terminate in a strong tendon which penetrates the capsular ligament and is inserted into the lesser tubercle of the humerus.

The four muscles which I have just enumerated are of the greatest importance. We have already seen that the head of the humerus is so large, the glenoid cavity so small and shallow, and the capsular ligament so loose, that some other aid was necessary to keep the bones in apposition, and this aid we find afforded by the muscles in question. In consequence of their attachment to the capsular ligament they draw that membrane out from between the bones in the various motions of the joint. Not only so, although they influence these

motions to a great degree, as I shall hereafter have occasion to point out to you, by being inserted so immediately into the head of the humerus, they keep that bone well up in the glenoid cavity, in this way antagonising the other muscles of the joint, which being inserted at a greater distance, have a greater tendency to produce dislocation. You frequently observe the importance of these muscles in paralysis. Here, being deprived of their nervous stimulus, they no longer retain the power of contraction, and consequently can no longer support or antagonize the weight of the arm, which drops, and the bone becomes either partially or completely luxated. Moreover, try the experiment in the dissecting room. Cut through the muscles which surround the capsule and you will find the same thing occur, thus clearly demonstrating that the strength of the joint, the approximation of the bones as well as their movements, depend entirely on the integrity of the muscles of the part. The other muscles of the joint are the deltoid, coraco-brachialis, long head of the biceps, and teres major.

The deltoid is a triangular muscle, having its apex directed downwards towards the arm. It takes its origin from three points, posteriorly from the lower edge of the spine of the scapula; its middle fibres from the anterior edge of the acromion process; and anteriorly from the outer third of the clavicle. From these points the fibres converge and are inserted into a rough surface on the outer side of the humerus, just above its centre. This is usually considered the insertion of the deltoid, but it does not terminate here, as it is prolonged downwards as far as the external condyle of the humerus, in the form of the external intermuscular septum. This muscle covers the coracoid process and the other muscles, in fact it is the capping muscle of the joint; its under surface is tendinous and separated from the capsular ligament and muscular insertions by a very large bursa, by which arrangement it is enabled to act without any inconvenience to the subjacent parts.

The coraco-brachialis, as its name implies, extends from the coracoid process to the os humeri. It arises from the former in connection with the short head of the biceps, and is inserted into the inner side of the latter just about the middle, from whence it gives off the internal intermuscular septum, which extends to the inner condyle.

The long head of the biceps acts much more directly on the joint than the last muscle. It arises from the upper extremity of the glenoid cavity; having given off the processes to deepen that cavity to which I have before alluded, it passes outwards over the head of the humerus, lying between the synovial membrane and capsular ligament as far as the space between the tubercles, where it enters the bicipital groove, in which it runs for two or three inches to meet its lesser head, and these unite to form the fleshy body of the biceps muscle, which, terminating in a strong tendon, dips down at the elbow to reach the back part of the tubercle of the radius, into which it is inserted after giving off the anterior fascia of the forearm, and the semilunated process of fascia, which, passing upwards and inwards, is attached to the internal condyle of the humerus. Mr. John Soden, jun., of Bath, in a paper in the 24th vol. of the *Medical Chirurgical Transactions*, has made some very ingenious remarks as

to the importance of this long tendon to the joint. He considers that the long head of the biceps is not designed to act merely as a ligament, but also to act as a capsular muscle, antagonising the action of the other capsular muscles, by preventing the head of the bone being drawn upwards and forwards.

The *teres major*, arising from the inferior angle of the scapula, ascends forwards and outwards to the inner lip of the bicipital groove, into which it is inserted behind the tendon of the *latissimus dorsi*. In its course it is separated from the *teres minor* by the long head of the *triceps*.

These are the muscles usually described as the muscles of the shoulder joint. I think this arrangement by no means complete, since it does not embrace the whole of those which act either directly or indirectly upon the articulation. The *levator anguli scapulae*, *trapezius*, long head of the *triceps*, *latissimus dorsi*, *pectoralis major*, &c., must all influence it, more or less, as you will find when we come to the consideration of the motions of the joint and the mechanism by which those movements are effected.

The arteries supplying the shoulder joint and its immediate muscles, are derived from the supra-scapular, *transversalis colli*, subscapular, and circumflex.

The veins follow the direction of the arteries. The absorbents are arranged in two layers, superficial and deep. The superficial layer passes to the glands in the axilla; the deep into the deep glands of the neck.

The nerves are very numerous. They are the termination of the spinal; the supra-scapular and circumflex.

REPORT ON THE PRACTICE OF MIDWIFERY.

By JOHN LEE, M.D.

TO THE EDITOR OF THE PROVINCIAL MEDICAL AND SURGICAL JOURNAL.

SIR,

Having read Dr. Toogood's paper "On the practice of midwifery," with much interest, I forward you the result of eight hundred and fifty cases, that have occurred in my own practice during the last few years.

Of this number one hundred and seventy were cases of first labours.

In sixty-nine cases the funis encircled the neck of the child. In seven cases the funis was twice round the neck; and in three cases it was thrice round; in all of which it was necessary to divide the funis before the shoulders could be born, and in these ten instances the labours were very lingering and perplexing. In ten cases the funis was round the arm as well as the neck; and in three it was round the thigh as well as the neck.

In five cases hæmorrhage occurred before parturition; in three it was stopped by rupturing the membranes; and in one it did not cease till the head was pressing on the perineum; and I have no doubt that in these cases a portion of the placenta had been detached from the uterus, by over exertion on the part of the individuals; in one case the patient was delivered with the forceps, but sank exhausted by the loss of blood, about half an hour after.

In seven cases there was hæmorrhage after delivery; three of which were attended with hour-glass contraction of the uterus, and in these the hæmorrhage ceased on the removal of the placenta. I never give

the *secale cornutum* in cases of hæmorrhage occurring after the birth of the child; trusting to pressure externally, and the introduction of the hand, where the uterus is distended by coagula, (as in four of the above seven cases,) or where the placenta requires to be taken away.

Two were cases of funis presentation, in one of which the liquor amnii had been discharged some time before my arrival, and the pains had nearly ceased. The midwife told me "all was not right, for the navel-string was born." Upon proceeding to examine I discovered a portion of the funis lying without the os externum, and, pursuing my examination, could distinctly feel the umbilicus and abdominal parietes of the child. Introducing my hand I got hold of one foot, and brought it down, the other following soon after. The child was in a state of asphyxia, but by warmth and inflation revived. The woman was not at her full period, and attributed the position of the child to her having fallen down stairs about a fortnight previous, from which time, till her delivery, she had never felt well. In the other case the funis had fallen down before the head, and the woman being in a very weak state from previous illness, and having already been in the hands of a midwife for some time, the delivery of the child was effected with the forceps.

In five cases the breech presented, and three out of the five children were born alive. My practice in these cases is always to allow the uterine efforts to expel the breech, never to bring down the feet with a view to expedite delivery.

Nine were cases of twin births, with the following presentations, viz., ten of the head, eight of the feet, one of the arm, which required turning. Ten of the children were males, eight females. In five cases there was one of each sex; in two, both children were males, and in two both females. In two of the twin cases the placenta of the first child was detached and expelled before the birth of the second. In one instance the child had been born some time before my arrival, and upon making an examination, I found the placenta lying in the vagina, which was in a very few minutes expelled by the uterine efforts. There being no unusual hæmorrhage, in fact, less discharge than on former occasions, I neglected to follow my otherwise invariable rule, viz., to place my hand on the abdomen immediately after a child is born, to ascertain whether or not there is a second. In about an hour regular and strong pains came on, which, increasing, induced me to institute a closer examination, which disclosed the presence of another fetus in utero; this was soon expelled, enveloped in its proper membranes, (the liquor amnii not discharged,) and accompanied by its placenta. In the other instance, on proceeding to examine the position, and presenting part of the second child, I found the placenta lying in the vagina, and could distinctly feel the insertion of the funis. In this case there was more discharge than in the preceding, but not sufficient to induce any feeling of faintness, and the second child followed in a very few pains afterwards. All the placenta were healthy, and presented no appearances of ever having been united.

Thirteen were cases of presentation of the lower extremities—the cases of this presentation occurring amongst the twins, are not included in this number.

Five cases presented with the face to the pubis, and