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

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LECTURE XVI.

Although as a general law, it is desirable to reduce the bone as soon as possible, yet, where the parts about the joint are tense, very painful, or much swollen, you ought not to attempt the reduction until you have got rid of the inflammation.

Mr. Allan describes two kinds of swelling succeeding these accidents; one, which immediately supervenes, depending upon blood effused into the cellular tissue, in consequence of ruptured vessels; the other, which obtains at a later period, the consequence of increased vascular action, or, in other words, inflammation.

In the former there is neither heat nor redness, and not more pain than is to be expected from such an injury, consequently, nothing to prevent you at once attempting reduction; but in the latter there is great tension, the skin is glossy, the patient complains of heat and violent pain, and will not bear you to touch the part, as the slightest motion or pressure increases his sufferings. His general health becomes deranged, his skin hot and dry, his pulse full and frequent, tongue furred; in fact, he is labouring under acute inflammation, which must be subdued by bleeding, calomel and opium, with antimony, cold lotions, and other antiphlogistic remedies.

When the parts have become quiet, and the inflammation subdued, the sooner you reduce the dislocation the better. I need scarcely point out to you that your treatment should be decided and energetic.

The less thickening that remains, the smaller the quantity of lymph effused, the slighter the adhesions, the easier will be the reduction, and the more favourable the results of the case. Moreover, when the inflammation runs very high, unless you treat it properly, especially at the shoulder, about which there is so much cellular tissue, you are liable to have suppuration; the matter burrowing in various directions forms sinuses, which will give you a great deal of trouble. I have, in more

instances than one, had cases of this description under my care, which might easily be traced to inefficient treatment.

As a general rule, I would say to you, in all cases of acute inflammation of joints, whether the result of dislocation or otherwise, your treatment should be decided. Recollect that the structures attacked are, for the most part, of low organization, unable to resist morbid action, and predisposed to alterations of structure, which impair the functions of the limb, and more or less cripple the patient for the rest of his days.

I cannot give you any rule as to the quantity of blood you are to abstract; that must depend upon circumstances, and upon the age of your patient. But I would say, bleed until you produce a marked and decided effect upon the symptoms, until the pain and sensation of heat are diminished, until the pulse is soft and slower. If you bleed from the arm, do so by a large orifice, as fourteen ounces taken freely are of more service than twenty from a small opening. If you employ leeches, do so in large quantities, for you must bear in mind that with all the messing and sopping, we can scarcely calculate upon more than from four to six drachms to a leech. After the bleeding, you will find a full dose of calomel and opium, and James's powder, succeeded by smaller ones at intervals, the best treatment you can pursue.

As to local applications, you will be guided by the age and feelings of your patient. With old people I have found warm fomentations succeed best. They are more comfortable to them, and appear to agree best with their diminished energies.

Reduction is the success of a combination of certain endeavours to return a displaced bone into its proper situation. To effect this, various methods have been employed, some of which consist in what Boyer terms coaptation or the mere adjustment of the parts to each other; whilst others are effected by extension and counter-extension,—the former consisting in elongating or separating the displaced bone from its abnormal situation, to enable it to slip into its proper cavity, whilst the latter embraces the measures adopted for producing a resistance relative and proportioned to the former, by fixing that part of the limb which presents the articulating cavity, as firmly as possible. We will,

if you please, consider some of the general laws which are to guide us in the application of these methods.

I have already adverted to the precept of Hippocrates, that we should know the direction the bone took. Endeavour to ascertain this as precisely as you can, by inquiring the position of the patient's limb at the time of the accident, and examining the part carefully until you have made yourselves acquainted with the exact situation of the head of the bone.^s Having so done, consider in what will be the best position to place the limb to obtain relaxation of the muscles to the greatest extent.

M. Mayor, in the *Gazette Medicale* for 1840, insists with much energy, on the necessity of complete relaxation of muscles by flexing and double flexing the limb. He says, the general laws are, first, flex the articulations and relax the most important muscles; next, firmly fix the bone containing the articular cavity; then draw on the extremity of the dislocated bone, and afterwards make the motions of the limb which favour reduction. With respect to extension and counter-extension, a difference of opinion exists, more particularly between the English and continental surgeons, as to the part upon which we are to apply the extending power, and the manner in which extension and counter-extension are to be exerted.

Although most writers on surgery declare in favour of extension and counter-extension, to reduce dislocations of the extremities, yet in this country, in the present day, there are few who truly put it in practice, for what is now generally meant by counter-extension, is more the passive resistance exerted by the apparatus, than actual and active extension.

Allan, of Edinburgh, who observes that the extending and resisting powers should be equal, insists that counter-extension should always be applied to that bone whence the luxated bone has been forced; and this is the object of all surgeons who are necessitated to have recourse to extension.

In the reduction of the dislocations under consideration, it must be borne in mind that the scapula, unlike the os innominatum, is not a fixed bone; but that, on the contrary, being loosely attached by muscles to the body, it follows the head of the humerus in its various movements, and when the latter is displaced, the former is drawn after it by their connecting muscles. The mere fixing the body, consequently, is of little service, the resisting power being required upon the scapula itself, for, be the extension ever so great, and the body ever so properly secured from yielding, yet the scapula will constantly follow the head of the bone, preventing its reduction, since the muscles which connect the scapula to the trunk are too thin to resist the extension to which they are subjected. One of our principal aims is to separate the two bones sufficiently, that the head of the humerus,

being freed from all obstacle, may slip readily into the glenoid cavity; but this cannot be effected so long as we permit the scapula to accommodate itself to its movements.

Many surgeons are content merely to fix the scapula, and depend for the required separation upon the extension made on the humerus; but there are others, who exert more active power upon the former bone, and endeavour to force that backwards, whilst the humerus is drawn in the opposite direction.

In dislocations of the humerus downwards and inwards into the axilla, where the head of that bone lies under the neck of the scapula, it is evident that by depressing the glenoid cavity, or by forcing the scapula back towards the spine, whilst extension is made on the humerus, we must materially assist reduction.

Bromfield lays great stress upon this in his essay on dislocations of the humerus. He strongly insists upon the necessity of pushing the scapula backwards. He says, "A very strong assistant is to be placed behind the operator on a chair or form, so as he may be able to exert his whole strength in making counter-extension by pressing the scapula backwards, but should the bone not readily slip into the acetabulum scapulæ, when the extension is at the full, the surgeon directs the person who is charged with the counter-extension at the scapula, suddenly to exert his utmost force with a jerk, and push the scapula directly backwards, and by that means the head of the bone will suddenly rise into its socket."

Other surgeons recommend that an assistant should stand on the patient's sound side, placing his arms round the patient's neck, clasp his hands over the patient's injured shoulder, to press down the acromion process, and with it the glenoid cavity, by which means the lower edge of the latter is thrown backwards, rendering it more easy for the head of the bone to slip over it.

Mr. Toogood, of Bridgewater, has published the following plan of fixing the scapula:—"Having seated the patient on a low chair or stool, firmly secured the body, and fixed the pulley, he stands over him, and places the heel of his right hand on the acromion process, bearing his whole weight on his hand." By this method the scapula is fixed and rendered immovable, extension is made, and, according to Mr. Toogood, reduction quickly follows.

He relates a case of a very muscular man, whose arm had been dislocated upon a previous occasion, when it required the united strength of one physician, four surgeons, and sixteen assistants to reduce it. He applied to Mr. Toogood for the same accident. Mr. Toogood succeeded in two minutes.

This is certainly a very good method of fixing the scapula, and one which I would advise you to have recourse to whenever you employ extension

and counter-extension for dislocations of the shoulder. I have adopted it upon several occasions with considerable advantage; but without wishing to disparage the skill displayed in Mr. Toogood's case, or the value of his suggestion, we must not forget that a joint which has been once dislocated is more liable to that accident than before, and that the facility of reduction is usually increased with the frequency of the accident, and it may reasonably be inferred in Mr. Toogood's case, that the pulling of the "one physician, four surgeons, and sixteen assistants," would render any subsequent reduction more easy from the violence to which the muscles must have been subjected. The method proposed by Bromfield fulfils the same end as Mr. Toogood's, namely, placing the glenoid cavity in a position more favourable to receive the head of the humerus, but it cannot be so conveniently practised; and, moreover, we can always exert a much stronger power in pressing directly downwards upon that which is below us, than when we push in an horizontal direction.

Ambrose Paré, in book 15, chapter 23, for the purpose of counter-extension, directs that an assistant stand behind the patient and press down the scapula with his heel. In the 28th chapter, where he treats of luxations forwards, he recommends the scapula to be kept back.

As regards counter-extension, Mr. White, of Manchester, observes, "Hands alone are insufficient. Cloths, or straps and bandages, girth-web screwed to a door case, retain the body indeed, but have very little effect upon the scapula." He employed a wooden cylinder four feet long and four inches in diameter, covered with a napkin, and placed under the patient's arm to "support the body against extension, and to withhold the inferior part of the scapula." This was held by four assistants, two at each end. Mr. White says, his father employed this cylinder for fifty years, and found it more convenient than the other methods.

In the present day, surgeons usually fix the scapula by a towel, sheet, or jack-towel, or by an apparatus sold by instrument makers, with the pulleys. The three former are applied in the following manner:—The patient being seated on a chair, a cushion is placed in the axilla to defend the parts from pressure; the sheet, or whatever you use, is then rolled up to a convenient width, and passed over the cushion in the axilla; its ends carried upwards, are then crossed over the shoulder, and either secured to some fixed body, or held by assistants. You will find this manner of application delineated in the 15th plate of Chapman's Atlas.

The apparatus sold by instrument makers answers the purpose of fixing the scapula remarkably well, and when combined with Mr. Toogood's method of depressing the acromion process, more completely fulfils the desired objects than any other method with which I am acquainted. It consists of two

pieces of girth-web, connected at their ends by a broad piece of leather, armed with a strong iron ring. The patient's arm is passed through the space between the two pieces of web, the upper piece of which, passing over the patient's shoulder, has a buckle by which it may be adjusted to the size of the limb; a rope is then attached to each ring and fastened to an iron hook in the wall or floor, or in fact to anything of sufficient strength in the room.

Sometimes, however, this is not so easily obtained, and Mr. Lizars, in his paper on surgery, written for Dr. Brewster's Encyclopædia, then advises that the rope be attached to a beam of wood, or a kitchen poker, laid across the door or outside the window of the room, a very useful suggestion where the walls of the patient's apartment are merely laths and plaster, or where you do not wish to disfigure the room. When the elbow or knee is luxated, it is frequently necessary to fix the arm or thigh, before extending the wrist or ankle. According to Leveillé, this is the only instance where we are obliged to compress the flexor and extensor muscles which surround the bone above that which is luxated.

With respect to extension, the question at issue is as to the part to which the power is to be applied. All the older writers, and most surgeons in this country, have preferred its application to the bone luxated, whilst others, as well as the continental surgeons, are strongly in favour of the extension being made from a more remote situation, *f. e.*, from the wrist for the shoulder, and from the ankle for the hip. Each method is supported by valid arguments, and in like manner each is liable to objections adduced against it.

We will, if you please, consider which is likely to be attended with the best results. Among those who favour the former method, (application of force to the bone luxated,) we may enumerate, Sir Astley Cooper, Pott, Hey, Lawrence, Guthrie, Liston, Paré, Petit, Duverney, Callisen, Bromfield, Sedillot, Allan, Latta, and almost all the English surgeons.

Mr. Pott observes, "that when the extension is applied as far as possible from the luxated bone, that part of the extending power is lost on the joint, intervening between the dislocation and the part at which extension is made, and that the force necessary to be exerted in some instances would have a bad effect on the intervening joint."

Sir Astley Cooper states, "that as far as he has had an opportunity of observing, it is generally best to apply the extension to the bone which is dislocated; but that dislocations of the shoulder are exceptions, in which he mostly prefers to reduce the head of the bone by placing the heel in the axilla, and drawing the arm at the wrist in a line with the side of the body." Nevertheless, in the figures delineated in that gentlemen's quarto work, the extension is applied above the elbow, even

where the surgeon's heel is represented in the axilla; and moreover, where he describes this method, he says, "I have in many instances extended from the wrist by binding a handkerchief just above the hand, but more force is required in this, although it has the advantage of the bandage being less liable to slip."

Allan remarks, "that by adopting the practice of Desault and the French surgeons, we are in great danger of injuring the elbow, or wrist joint, or both; besides, by extending the forearm, we put the long head of the biceps on the stretch, which will not only produce great pain, but impede reduction."

Mr. Syme, of Edinburgh, says, "that the force may be applied, so as to act either directly on the bone itself, or on a part of the limb separated from it by one or more articulations." It has been objected to the former mode, that it causes compression of the muscles opposed to reduction; and to the latter, that by keeping the limb straight, it is still more adverse to their yielding. It does not appear, however, that any practical inconvenience is experienced in either of these ways. The former method is on the whole more convenient in most cases.

Petit, Duverney, and others, with Pott, affirm, "that in dislocations in general, the extension and counter-extension must be made upon those very bones that are disjoined, and not upon those next to them; as all the force which is applied to the bone below must necessarily be lost in the articulation which is not luxated, and of little or no service to that which is. This is owing to the yielding nature of the joint."

M. Sedillot also, after describing his apparatus for reducing dislocations, adds, "the projection of the condyles renders extension much more easy at the elbow than at the wrist, where we always press on the styloid process of the radius and ulna, and moreover cause great pain. These motives, joined to that of the traction, being more direct, led me to adopt it, in spite of the imaginary inconvenience of compressing some of the fibres of the biceps and triceps muscles."

On the other hand, some of the best surgeons in France, among whom we number Fabré, D'Apony, Desault, Boyer, Richerand, Leveillé, Malgaigne, and Velpéau; White, of Manchester, and Crampton, of Dublin; advise the extending force not to be applied on the luxated bone, but on that with which it is articulated, and as far as possible from it. They affirm that this plan has the advantage of not compressing the muscles that surround the dislocated bone, nor exciting them to spasmodic contractions, which would resist reduction, and moreover that the extending force is much more considerable than in the other mode, since, by using a long lever, we obtain a greater degree of power.

This method was not so generally adopted, until

M. M. Fabré and D'Apony pointed out its apparent advantages, and rendered its employment more systematic. Ambrose Paré, who was opposed to it, writes that it was familiar to the chimney-sweeps of his day; but this by no means depreciates the value of the method, since our most valuable and successful measures are those derived from the ignorant.

The muscles which they by this means avoid pressing or exciting, are those which proceed from the shoulder to the forearm, or from the pelvis to the leg.

Boyer asserts that surgeons failed, from applying extension and counter-extension directly on the bones displaced, and hence the numerous inventions which all fell into disuse after Fabré and D'Apony demonstrated the utility of applying these forces as far as possible from the seat of luxation.

Mr. Crampton says, in Dublin, as in Paris, and in Paris as in Germany, generally we apply our extending power to the forearm, in preference to the arm. The application is far less painful, and the surgeon has more power in directing the motions of the limb.

The arguments hitherto advanced against the application of the extending force on the bone luxated, therefore, are these:—The non-compression of the muscles which surround the bone, rendering the extension more considerable, diminishing pain, and increasing the length of the lever.

In its favour: that it is more convenient, prevents the extending force being lost in the intermediate joint by the yielding of the ligaments, admits of the biceps being relaxed, and causes less pain.

CASE OF TRAUMATIC TETANUS—EXHIBITION OF THE EXTRACT OF INDIAN HEMP (CANNABIS INDICA)—DEATH—AUTOPSY.

By JAMES INGLIS, M.D., Halifax.

TO THE EDITOR OF THE PROVINCIAL MEDICAL AND SURGICAL JOURNAL.

SIR,

I believe that no one can leave the bedside of a tetanic patient without a regret that, after having done much to alleviate, so little ultimate good can often be effected, and that although pain itself may be subdued, yet that the disease too surely progresses, and is finally to conquer. Under such a feeling I am induced to transmit for insertion in your Journal the following case, being persuaded that it is no less our duty to report our cases of failure than those of success; for the case which terminates fatally, may be made, in reference to others of a similar nature, as a beacon to warn and as a light to guide.

Such prefatory remarks I am led to make, from having lately observed in the *Lancet*, of the 14th of December, 1844, an excellent report of a case of tetanus, terminating fatally, at Guy's Hospital, after the exhibition of the Indian hemp, in hitherto unequalled