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DIVISION OF THE STERNO-MASTOID MUSCLE FOR WRY NECK.

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I was requested by my friend, Dr. Davenport, to see a boy 16 years old, affected with wry neck, and received the following history of his case.

When four years of age he had a fall from the top of a stair-case to the bottom. He was alone at the time, and on being taken up no wound was to be discovered on any part of the body; he complained, however, of a pain in the left side of the neck. Shortly after the accident, it was found that the head inclined to the left, and that the muscles of that side were in an unnatural state of tension. This distortion gradually increased, until it attained the appearance which it presented at the time I saw him, twelve years after the accident. At this period he was suffering from frequent attacks of headache, and from an almost constant and severe pain in the diseased side of the neck. He was rather short of his age, and the distortion aided much to diminish his natural height.

On viewing him in front, the following were the appearances observed. 1st. The head was drawn down to the left side, the ear usually resting on the left shoulder, although he had the power of raising it a little from that position. 2d. This inclination was accompanied by a rotation of the head, so that the face regarded the right shoulder.

Observed from behind, there was a deep sulcus on the left side of the neck, with a corresponding projection on the right side, made by the transverse processes of the cervical vertebræ. A curve had taken place both in the cervical and in the lumbar portions of the spinal column. The left shoulder was higher than the right. The left side of the chest was projected, and there was a considerable excavation of the ribs on the opposite side. On examination of the vertebræ, proceeding upward, the spinous processes of the cervical portion could be distinguished until the third vertebra was arrived at; here the line of the column was lost, being concealed under a large mass of muscle; with great care the spinous process of the second cervical vertebra was discovered, having performed a rotation of nearly the quarter of a circle on its axis. The sterno-mastoid muscle of the left side, on being examined, was found to be very strongly retracted, as well as the deep-seated muscles of the neck; the scaleni particularly could be made out in an unnatural state of rigidity. The former, however, appeared to be the chief obstacle to the endeavors for bringing the head to an upright position.

In addition to these changes, the face had undergone a remarkable alteration worthy of notice. The whole left side of the face was more or less atrophied, and each of its component parts was much smaller than those of the other side; the left eye was much smaller than the right, which was raised up, and on a level higher than its fellow, and this appearance was not owing to the inclined position of the head alone, as was more distinctly verified when the face was brought into its natural position after the operation.

The health of the patient was not strong; and in addition the mortification of being afflicted with so severe a deformity, the pain at the spot where the curvature was most extreme was at times excessively severe. He lies commonly on his right side, sometimes on his back, but never by any chance on the side diseased.

It having been ascertained, so far as was practicable, that the chief obstacle to the restoration of the head existed in the unnatural state of the sterno-mastoid muscle, it was determined to divide it at its sternal insertion, the retraction, according to Guérin, who is considered the best authority on this point of surgery, commonly existing in this portion of the muscle.

The operation was performed on the 4th of December, in presence of Dr. Brown, Dr. Fisher, Dr. Davenport, Dr. Davies of Portsmouth, and Dr. Warren, Sen. The head being well supported, and carried a little forward, so as to project the muscle outward from the subjacent parts, the patient was directed to make strong efforts to exaggerate the existing rotation, so as to produce as great a tension of the muscle as possible. A puncture was now made with a lancet through the skin, about six lines above the clavicle, between the sternal and clavicular portions of the muscle. The narrow, blunt-headed knife of Bouvier was next introduced, its flat side towards the muscular fibre, carried behind the sternal head, its edge turned towards the muscle, and the section completed by a slight sawing motion. The effects of this operation were at once manifested by a distinct crackling sound, by a separation of the divided parts, and by the partial restoration of the head to its natural position, also by the possibility of rotation in every direction. The wound on the neck was covered with a bit of court plaster, a cap placed on the head, to the back of which, opposite the right mastoid process, a strap was attached, and being drawn tight was secured over the breast of the same side.

On the following day he was quite comfortable; he had slept well, lying on his left side, which he had been unable to do previous to the operation; the pain in his neck had entirely left him. The plaster covering the wound was removed at the end of forty-eight hours, entire cicatrization having taken place. The patient was now directed to wear a stock on the neck, and to make strong and constant efforts to rotate the head; he was also placed on an inclined plane for three or four hours daily, the head secured by a bandage carried under the chin and attached to the upper part of the board.

In the course of a fortnight a very great improvement was perceptible; the head, however, had not yet regained its proper position, but was still inclined to the left; the divided muscle had united, a firm and almost cartilaginous substance being apparent at the point of union. The clavi-

cular portion of the muscle had become much more prominent since the division of its sternal attachment, and now felt round and corded—presenting an obvious obstacle to the adjustment of the head. It was therefore thought advisable that the division of this part of the muscle should be effected, and in order to derive the full advantage from it, the operation was performed in the following manner.

The head being well supported and the muscle sufficiently relaxed, the body of the sterno-mastoid, just above its division into sternal and clavicular heads, could be readily seized between the thumb and forefinger and completely isolated from the deep-seated parts. A sharp-pointed knife was now carried behind the muscle, until it could be felt by the finger under the skin on the opposite side, and the patient being directed to place the muscle in strong contraction, the section was completed without difficulty.

This second operation was not followed by any inflammation, the wound being quite healed at the end of forty-eight hours; and by persisting in the treatment before directed, the head was very shortly restored to its normal position. At the present moment, nine months after the operation, I have made the following observations of his appearance.

To a person regarding him in front, a slight cant of the head is observable to the *right* side, evidently owing to the constant and determined efforts of the patient to overcome his deformity by carrying the head in an opposite direction. The face still presents the alteration already pointed out, viz., an atrophy of the whole of the affected side; the eye of the left side is much less prominent, the lid more closed, and the level of it lower than its fellow; the whole osseous, cellular and muscular system partake in this alteration or want of development.

From behind, the following changes are visible. The dorsal and lumbar curvatures of the spinal column have disappeared, and the shoulders have regained their natural elevation. The excavation of the ribs on one side, and the projection on the other, are fast disappearing. The right half of the muscles of the neck still remain greatly developed above that of the other side, and a slight curve still exists in the cervical vertebræ. The health of the patient has greatly improved, and his appearance is so completely altered since the operation, that his former friends scarcely recognize him.

CASE II.—The following case was operated upon by Dr. John C. Warren, in the first part of June.

The patient was a little girl, 9 years of age. When about four weeks old, the parents observed that the muscles on the left side of the neck were in an extraordinary state of tension; it was not, however, until the age of four years that the head began to be distorted, and from that period the distortion has gradually increased, so that at present the contraction is so great as to bring the mastoid process nearly in contact with the left shoulder, accompanied by a strong rotation of the head to the right. This distortion has evidently had a great effect on the health of the child, who is pale, emaciated, and of a feeble constitution. A double lateral curvature of the spine exists, though not so marked as in the preceding case.

Under these circumstances Dr. Warren determined to divide the sterno-

cleido-mastoid muscle of the left side, which was found to be strongly retracted, and was evidently the chief obstacle to the return of the head to the upright position.

The operation was performed in the following manner. The head being supported so as to give sufficient projection and tension to the diseased muscle, a narrow, sharp-pointed bistoury was passed between the skin and its sternal attachment, from without inward; the edge of the knife was now directed upon the muscle, and the division accomplished. The knife was again entered at the same orifice, carried in front of the cleido-mastoid, and this head of the muscle divided in a similar manner.

The result of the operation was an immediate alteration in the head to a more upright position. The wound healed in three days. The subsequent treatment was the same as that detailed in the preceding case.

The following is the substance of a letter received from her father two months after the operation. He states that she now has perfect command of her head, and a power of rotation in all directions. Her head is so nearly straight that a stranger would not notice any deformity. "From the shoulders her neck slopes to the right, which is apparent when standing behind her. The short curve at the upper part of the neck can scarcely be perceived. The cavity on the one side, and the enlargement on the other, have returned to almost the perfect shape. Her school-mates are astonished when they see her with her head up, and say how tall she has grown. Her neck, you will probably remember, was apparently very short; it is now a very long neck for a child of her age. She occupies the inclined plane four hours each day."

Remarks.—In reviewing these cases, we shall find the following circumstances worthy of notice. In the first place, the anatomical changes produced by the contraction of the muscle are very interesting, as bearing on many cases of deformity besides that now under consideration. The left half of the face, as has been already stated, had become more or less atrophied during the continuance of the disease, so that the whole osseous system, as well as the soft parts, was implicated in the diseased action. The alteration has been attributed by M. Guérin to the distortion which the great vessels of the neck undergo before their entrance into the cranium. The curvature to the right which the cervical vertebræ make on the dorsal, produces a strong traction of the skin, by which an oblique position is communicated to the left part of the face. The eyeball also undergoes a rotation on its axis, so as to bring it into the horizontal direction—the eyes, as M. Guérin remarks, being placed in relation to each other, as it were, on a stair case, from whence considerable trouble in vision is produced on the first adjustment of the head. The alteration in the spinal column is also interesting. In order to obviate the inclination of the head to the left, which brings it without the axis of the body, an inclination takes place of the cervical on the dorsal region, of the dorsal on the lumbar, and of the lumbar on the sacral. The excavation of the ribs on the one side, and their projection on the other, naturally follow from the persistence of the curvature in the spinal column.

There are few operations that have been more benefited by the establishment of the principle of subcutaneous incisions, than that for the sur-

gical treatment of wry neck. The operation previously employed by the most distinguished surgeons, consisted in first making a transverse incision through the skin, so as to expose the fibre of the sterno-mastoid; the muscle was now carefully dissected, layer by layer, until the whole was divided. The results of this method were often very severe; there was great inflammation, and suppuration frequently followed by infiltration of pus into the anterior mediastinum—sometimes causing the death of the patient. The contraction also of the cicatrix from so severe a wound, often counteracted the benefit derived from the division of the muscle.

To M. Guérin, of Paris, we are chiefly indebted for the exposition of the pathology, physiology, and the surgical treatment of wry neck. M. Guérin has endeavored to establish the following propositions.

1st. That what has been called the sterno-cleido-mastoid muscle, constitutes, in fact, two distinct muscles—the sterno-mastoid, and the cleido-mastoid.

2d. The sterno-mastoid and the cleido-mastoid are possessed of different functions: the first is a flexor and rotator of the head; the other muscle is essentially a muscle of respiration.

3d. In wry neck, which has thus far been attributed to the shortening of the sterno-mastoid, the sternal muscle is primitively alone affected.

4th. That, in the treatment of chronic wry neck, owing to the shortening of the sterno-mastoid, the section of the sternal portion alone suffices to destroy the essential cause of the deformity.

The limits of this paper will not allow us to enter into all the proofs which he adduces in support of his positions. The practical inference to be drawn from them, however, appears in the fourth proposition, viz., that in the majority of cases, the sterno-mastoid is primarily affected, and this alone requires an operation. Where the affection has lasted for a length of time, as in the two cases stated above, the cleido-mastoid almost always partakes in the diseased action; and although by a long persistence in the use of mechanical means, this may be sometimes overcome, yet the cure is undoubtedly much facilitated by its division. M. Guérin has drawn a distinction, worthy of notice, between what he calls the *retraction* and the *contraction* of the muscle. The former, he has endeavored to show, only takes place after a long persistence of disease, and consists in a fibrous degeneration of the muscle, and always requires surgical interference; whereas the latter, which occurs in acute wry neck, is a simple temporary shortening of the muscular fibres, such as occurs in common muscular action, and is always amenable to the use of medicinal remedies, more particularly to the local application of the tartar emetic ointment.

The following is the most approved manner of performing the operation. The head of the patient being firmly supported, is carried a little forward and strongly rotated, so as to project the muscle outward from the subjacent organs and make it as tense as possible. A fold of skin over the muscle being raised, a puncture is made with a lancet from four to six lines above the clavicle, and between the insertions of the two heads of the muscle. The narrow, blunt-headed knife of Bouvier is now introduced and carried with its flat side between the muscle and the skin.

The hold on the skin may now be relaxed, the edge of the knife applied to the muscle, and the division effected. This is usually announced by a crackling sound, and by the partial adjustment of the head. Instead of passing the knife in front of the muscle, it may be carried behind it; but in this case it is well that the knife should have a different shape; in the former a concave, and in the latter a convex, edge is required. If it should now be determined to divide the clavicular head of the muscle, the knife may be introduced into the same orifice in the skin, carried backward, and the division made as in the preceding case—the section of the muscle from without inward being here always to be preferred, as being both more safe and more easy of execution.

When the projection of the muscle is sufficient from the parts beneath to remove them from the danger of being punctured, and it has been determined to divide the body of the muscle, the method may be adopted which was practised in the former of the two cases which have been reported. The body of the muscle just before its division being seized between the fingers, so that these are made to meet behind it and ascertain that no obstacle intervenes, a narrow-bladed knife is carried beneath until the point is detected under the skin on the opposite side, and the division is then to be made from within outward.

In dividing the internal head of the muscle, we have occasionally beneath the skin the anterior jugular vein, as it passes across the neck to enter the subclavian. This, however, is easily avoided by making the incision sufficiently near the clavicle. The carotid and internal jugular are protected by the sterno-hyoid and sterno-thyroid muscles, and could not be reached but by the point of the knife carelessly introduced. In dividing the cleido-mastoid, the external jugular, which lies between the border of the muscle and the skin, may be wounded; this is avoided by raising the skin and passing the knife with its cutting edge perpendicularly to the muscle, the vein being left between the back of the instrument and the skin. In dividing the body of the muscle, the external jugular is the principal organ to be avoided, and with sufficient care can be easily left on the outside of the puncture necessary for introducing the knife employed in the operation.

September, 1841.

THE HUMORAL PATHOLOGY.

To the Editor of the Boston Medical and Surgical Journal.

SIR,—Dr. Carpenter, in his review of the “Medical and Physiological Commentaries,” as contained in the April No. (1841) of the British and Foreign Medical Review, and a Reviewer of the same work (*by a singular coincidence*), in the April No. of the Medico-Chirurgical Review, are pleased to deny the validity of my Essay on the Humoral Pathology, but do not attempt its refutation by a single fact or argument, nor have I anywhere seen any demonstration against it, beyond the *ipse dixit* of the writer. The Reviewer, in the Medico-Chirurgical, remarks that—

“The question at issue, as Dr. Paine *fairly states it*, is this—‘Whether