Lectures

ON

ORTHOPÆDIC SURGERY.

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LECTURE II.

ON CURVATURES OF THE SPINE. (Continued.)

Pathological Spinal Curves.

THE antero-posterior pathological curves are, for the most part, merely exaggerated conditions of the physiological curves; thus we find lordosis to exist especially in the lumbar region, and cyphosis in the dorsal region. It will be shown further on, however, that these conditions are not absolutely limited to a given region; but that the vertebræ above and below may be involved in the curve, so as to reverse the normal curve of any region. These curves are rarely congenital; but they are induced through ignorance or neglect on the part of the nurse, or otherwise through deficient nutrition.

Lordosis.

Lordosis, or anterior curvature of the spine, affects for the most part the lumbar region, it being an abnormal increase of the physiological curve of that region.

In the cervical region, a similar abnormality is occasionally found to exist as a primary condition; here it is transitory, however, occurring in infants, and being due to want of muscular power.

In the lumbar region, this distortion varies from a slight increase of the normal curve of that region to a development which is a source of great weakness. The normal condition has already been shown. Through increase of this curve, the obliquity of the pelvis is augmented; the anterior wall being carried backwards, and the sacrum and coccyx being raised, so that their concavities present more directly downwards; the superior portion of the pelvis inclining forwards or moving on the heads of the thigh-bones. The sacro-lumbar articulation, consequently, is no longer found immediately above the inter femoral line, but in advance of that line. Equilibrium is disturbed; and that it may be restored, it is necessary that the weight of the upper part of the trunk be thrown behind the vertical line of the body; and thus a compensatory antero-posterior dorsal curve is induced.

The external appearances presented by this distortion, then, are such as are indicated by the changes in the skeleton above mentioned. The nates are raised; the lumbar region is rendered remarkably hollow; while the dorsal is rounded, and the head is thrown back. The abdomen is unusually prominent. The stature is necessarily stunted; when the distortion occurs in childhood, the growth

is impeded; and when it takes place in the adult, much loss of height is incurred.

Fig. 4.

The drawing from which the woodcut was made, was taken from a young person in whom rickets was the cause of distortion.

The causes of lordosis are numerous. As a congenital affection, it is combined with monstrosity and with spina bifida. It is seen in childhood as a result of rickets. And whatever tends to increase the obliquity of the pelvis, will give rise to this form of distortion. Thus, it is a necessary consequence of congenital dislocation of the heads of the thigh-bones (upwards and outwards). In some instances arising from this cause, the distortion is very remarkable. A child is at the present time under my care for congenital dislocation of the thigh-bones, in whom lordosis was very marked; so much so, indeed, was it, that the congenital dislocation was entirely overlooked and never suspected, while the child was treated during three years for lordosis—a consequence merely of congenital dislocation. It is unnecessary to speak of results when treatment so abortive is followed. Unfortunately, it is too common in orthopædic surgery.

Lordosis may be induced equally by unreduced non-congenital dislocation of the thigh-bones. Thus, it exists in a very marked degree in a young man, 20 years of age, who has suffered successively in each hip-joint from rheumatic inflammation and subsequent dislocation on to the dorsum ilii; and in whom it was impossible, notwithstanding every care, to arrest the disease. In these cases, as in those last mentioned, a great effort is made to sustain equilibrium; the extensor muscles of the trunk are tense and prominent, and standing out firmly, they

leave, especially towards the lower part of the spine, a sulcus in the median line.

I lately saw, together with Mr. Brookes, a similar form of distortion arising from a totally different cause, at Shaldon in Devonshire; and I allude to the case, not because it is one commonly to be met with, but because it is exceedingly rare. Fatty degeneration of the muscles of the abdomen having occurred, the abdominal viscera hung suspended in a huge, tumid paunch; the weight of which had, in part, occasioned the distortion in question. This distortion was one of the most remarkable that I ever witnessed. The effect was increased, also, by fatty degeneration of many other muscles, such as the trapezii, rhomboidei, serrati, latissimus dorsi, the pectoral muscles, and those of the lower extremities. Many of these muscles were so far destroyed that they could not even be traced. In this instance, the unsupported pendulous belly, together with the loss of muscular power, seemed to give rise to lordosis, in a somewhat similar manner to that in which the gravid uterus is sometimes known to act.

Bearing heavy weights round the neck and shoulders will also occasion lordosis. That a considerable burden may thus be slung, borne upon the neck and shoulders and suspended in front, it is necessary that the shoulders shall be thrown back, and that, consequently, the loins shall be projected forwards. And this practice being continued, the increased lumbar curve becomes more or less permanent. I have known gymnastic exercises produce a somewhat similar result.

The *pathological changes* which are induced are chiefly as follow. The lumbar spines are approximated; the articulating processes of the vertebrae are pressed forcibly into contact one with another; the posterior ligaments become somewhat shortened, and the ligamenta subflava lose something of their elasticity; the bodies of the vertebrae undergo absorption, and the intervertebral substances are compressed posteriorly; while expansion of these substances takes place on the anterior surface in the convexity of the curve. The extensor muscles of the trunk are strongly developed. Ankylosis of the articular processes of the vertebrae, with or without fusion of the bodies, may at last take place, through which the spine is rendered immovable and the distortion permanent.

Anterior curvature is, for the most part, limited to the lumbar region of the spine; the dorsal and sacral regions being implicated only so far that their normal curves become exaggerated. Occasionally, however, some few of the lower dorsal vertebrae may become involved, together with the lumbar curve; or, indeed, the entire dorsal curve may be reversed, and the anterior curvature will then consist of the lumbar vertebrae, together with the dorsal. This is, necessarily, a very rare form of distortion; and it indicates great weakness of the anterior ligaments of the spine. In an instance which I lately saw, the sacrum was almost horizontal, and the head was thrown forcibly back.

Treatment. From what has gone before, it is evident that lordosis is seldom a primary affection; but that it is consequent on disease or position of parts entirely independent of the lumbar region itself. It is usually developed in childhood; and at this early period, it disappears in the horizontal position, let the cause of the affection be what it may other

than rachitis. This rule is sufficient for practical purposes; there should be added to rickets, however, the other very rare forms of this affection which are due to monstrosity, and to deficiency or excess in formation of the bodies of the vertebrae. It is not necessary to say, however, that the cause remaining, the effect will return, and that, therefore, it is of the utmost importance to discover and remove the cause. This may be said of every disease; but it is especially true of every form of spinal curvature. It was to illustrate this that I alluded to the case of lordosis which had been treated for three years without the cause having been discovered. In this case, while the child remained in the horizontal posture, the spinal curves were effaced; but so soon as she stood, lordosis returned in as marked a manner as before. And notwithstanding, the cause could not be discovered; but for three years, this child was held in a painful position uselessly. It is only necessary to see congenital dislocation once to recognise it for ever after; and, therefore, it is the more surprising that I should be able to adduce such an example as the one before us, of insufficient attention to the cause of curvature. Happily, it was of less importance that an oversight should have been made in this instance than it might have been in some others. When I come to treat of lateral curvature of the spine, I shall have to draw attention to the great importance of attending to the cause of distortion, and to insist on the removal of the cause.

The treatment of lordosis is the treatment, in the horizontal position, of the several affections which give rise to it. With a properly inclined couch (having a hinge to correspond to the pelvis), the prone position may be observed. The supine position is more effectual, however, for the removal of lordosis; by gradually raising the shoulders and flexing the thighs upon the pelvis, cyphosis even may be substituted for lordosis.

Gymnastic exercises may be employed with advantage when the curve is slight; and the form of exercise which is most beneficial is that which is indicated by Andry, who said: "Si la taille fait un creux, en sorte que l'épine soit courbée en dedans, ce qui est le contraire de la bosse du dos, faites souvent courber l'enfant. Jetez-lui pour cela des cartes ou des épingles sur le plancher, il se fera un plaisir de les ramasser. La situation qu'il sera obligé de prendre pour en venir à bout, contraindra, à la longue, l'endroit creux de son épine à revenir en devant." (*L'Orthopédie.*)

The same exercise is better accomplished by means of elastic bands, the handles of which are fixed near to the floor; so that in using them the same movements must be accomplished (only with more regularity and more continuously) as in the mode indicated by Andry. Exercises, however, should be used sparingly and with great care. They are only admissible when distortion is slight: when it is severe, they should be entirely prohibited.

The recumbent position is the most powerful means we possess for the removal of lordosis; the muscles of the back are then relaxed; the normal spinal curves are then in part effaced, and cyphosis even may be induced if this position be long continued. Cases, however, occur in which it is not practicable to observe constantly the recumbent position, and then it is necessary to substitute a portable instru-

ment, which, receiving the weight of the head and shoulders, transmits it to the pelvis. The spinal column is thus relieved, and the extensor muscles are less violently thrown into action.

Original Communications.

THE LARYNGOSCOPE AND ITS CLINICAL APPLICATION.

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V.—CASES ILLUSTRATING THE PRACTICAL VALUE OF THE LARYNGOSCOPE.

DOUBTLESS there will recur to the recollection of every experienced practitioner, who has now made himself acquainted with the facility with which a view of the larynx can be obtained, cases which have occurred in his own practice, in which he would gladly have availed himself of the means of diagnosis and treatment which the laryngoscope affords, had he at the time that the cases were under hand been acquainted with the instrument: and it is, therefore, not my intention to do more now than to allude very shortly to a few cases illustrating the practical value of an instrument which, in its simplest form, should be in the hands of every practitioner.

The acute affections of the larynx are accompanied by such characteristic symptoms, that their diagnosis is usually comparatively easy without the aid of the laryngoscope; and in some of these maladies in which it might be desirable, the examination would not be practicable. Thus, doubtless, in cases of croup, it would be satisfactory were we able to define exactly the limits to which the false membrane extends; but the incidental circumstances of the disease, more especially the tender age of the patients in whom it usually occurs, almost necessarily preclude the possibility of our making use of the instrument: and again, in diphtheria, where it would frequently be a matter of much importance to ascertain the extent to which the air-passages are affected, the state of the fauces gives no chance of our seeing into the larynx. In ordinary acute laryngitis, I have never at present made any use of the laryngoscope; but I believe that it would be quite applicable in any such case where we were anxious to obtain a view of the parts—as, for instance, to assist us in determining upon the propriety of resorting to the operation of tracheotomy. I do not believe that the inflammation of the pharynx, which frequently accompanies laryngitis, would cause any insurmountable intolerance of the laryngoscope, as I have used the instrument in very acute cases of pharyngitis, where the symptoms threw a suspicion on the larynx, and rendered a view of this part desirable, not only for my own satisfaction, but for that of my patients, who, in two cases, were medical men, and were only relieved from a nervous fear as to the state of the larynx, by having it thus made palpable to the sight.

Of the utility of the instrument in *œdema glottidis*, there can be no doubt; unless, indeed, those practitioners who are in the habit of examining the larynx with the finger believe that a digital is equally satisfactory with an ocular examination. The parts most seriously affected in this malady, are those situated high in the larynx, and therefore most easily seen in the laryngoscope. In the following case of a closely allied if not identical affection, the effusion affected so much the floor of the mouth, the root of the tongue, and the fauces, as to render the patient unable to open his mouth to any considerable extent; but even with this

disadvantage, the eye saw certainly as far as the finger could reach, and the aid afforded by the laryngoscope in diagnosing the state of the larynx, was most satisfactory.

CASE I. W. G., aged 34, a groom, of fairly temperate habits, and usually enjoying very good health, applied to me on February 1st, 1863. He had been quite well up to the previous day, when he began to feel pain and stiffness about the lower jaw and the fauces. When I saw him, the pain had increased; there was considerable difficulty in swallowing; the voice was changed, sounding thick, not husky; respiration was quiet. The fauces were reddened; there was fullness of the salivary glands below the jaw, and some difficulty in opening the mouth and protruding the tongue. An astringent gargle and wash for the mouth, with the application of a turpentine epithem externally, were ordered. On the evening of the same day, the pain and swelling having increased, and a feeling of suffocation having supervened, the acetum lyttæ was applied externally, and an emetic administered.

February 2nd. The feeling of choking was somewhat relieved by the remedies employed on the previous night; but this morning, the œdema about the floor of the mouth was so considerable, as to give the appearance under the tongue of a double ranula. The tongue could not be protruded; the pulse was feeble and rapid; the skin relaxed. The laryngoscope, which was used with difficulty owing to the inability of the patient to open his mouth, showed the epiglottis reddened and somewhat swollen, and the back of the aryteno-epiglottidean folds scarcely affected. An incision was made on each side of the frenum lingue into the cellular tissue of the floor of the mouth; the use of the astringent lotion continued; and fifteen minims of tincture of sesquichloride of iron administered in a mixture every four hours. Beef-tea and milk were ordered to be given in as large quantities as possible.

Evening. The œdema of the floor of the mouth was relieved by the scarification; there was still considerable pain in swallowing, and an occasional sense of choking and suffocation.

February 3rd. The symptoms depending on œdema were improving; but at the site of the incisions on each side of the frenum lingue was a small superficial slough. The epiglottis was still comparatively slightly affected. The use of the chalybeate mixture was continued; and a lotion made with Condyl's disinfecting fluid was ordered for the mouth.

February 4th. The progress of the case from this date was, with slight fluctuations, gradually towards recovery. The small sloughs separated; and the œdema subsided. The laryngoscope was daily employed; and at no time was the œdema of the epiglottis found at all considerable. By the time that the swelling about the mouth had sufficiently subsided to enable me to get a full view of the larynx, no trace of diseased action remained there; indeed, although I give the notes of this case, in connection with what I have said as to the utility of the laryngoscope in œdema glottidis, it can hardly be called an example of that malady, although closely allied to it.

Of the use of the speculum in other acute affections of the larynx, in injuries or in the passage of foreign bodies through the larynx into the trachea, I can give no examples from my own practice. The value of the laryngoscope is, however, greatest in the diagnosis and treatment of chronic affections of the larynx; and the instances are now numerous, where a patient having been treated during many years for various supposed affections of the larynx or of the general constitution, a laryngoscopic examination has disclosed a totally unsuspected cause of the aphonia and other symptoms.

In all forms of *chronic laryngitis*, whether severe or slight, leading merely to congestion or to ulceration, the