attention to these practical, clinical illustrations of the theories inculcated. What I lay down to you in theory, if you should chance to lose it, you may, if God spares your lives, some time find an opportunity to study out for yourselves, or hear from another, probably very much better expressed than by myself; but, if you neglect the practical cases which come up before us, the loss can never be repaired. Therefore, you must give your close attention to these cases, and, no matter how much you may neglect the lectures, *watch* carefully the *cases*, lest you never find another opportunity to see them. They are the great, unfailing tests, which you have placed before you; the practical tests by which you may know whether I am correct in the principles which I endeavor to teach.

I wish, therefore, to urge upon you again to neglect no opportunity of improving the time by strict attention to the clinical instruction which I may be enabled to give you.

As I have said before, if you lose a lecture, you may make it up, but if you lose a clinical case, you can never make *that* up; for, when the time comes when you would repair the damage, the living illustrations of disease have departed, and the peculiar manifestations of the symptoms they have developed have been lost to you forever.

If, therefore, I shall at any time lay down any doctrine the truth of which I cannot practically demonstrate and establish by bringing before you genuine cases to illustrate it, you are at perfect liberty to discard such teaching.

Never be governed by the *ipse dixit* of any man unless the demonstration accompanying it, or your own careful investigation, shall convince you that the principles enunciated are true. If, by means of clinical cases, I shall succeed in clearly substantiating the doctrines I shall teach, please endeavor to learn the precise method of management adopted in each case, so that whatever success I may secure by treatment you may also obtain.

Such, gentlemen, is a brief outline of the history of our subject; the general considerations which should induce you to make it a subject of special study; and the general plan which I shall follow in my course of instruction.

At my next lecture I shall take up the subject of deformities in general, their classification, causation, and general treatment.



# LECTURE II.

## DEFORMITIES.

### Definition.—Special Divisions and Definitions.—Etiology.

GENTLEMEN: To-day we begin the study of deformities, their divisions and subdivisions, causation, and general treatment.

*Deformity* has been defined to be a morbid alteration in the form of some part of the body (Dunglison).

Deformities affecting various parts of the body have received special names: for example, deformities of the feet are chiefly embraced under the general term *talipes*. Of talipes, however, we have the distinct varieties known as varus, valgus, equinus, calcaneus, and plantaris.

Deformities of the spine are mainly *curvatures*, and of these we have two—the angular and lateral, or rotary lateral.

Certain deformities are embraced in the general term *hip-disease*, and, when this general term is used, the mind at once pictures to itself the characteristic deformity attending that disease.

In the same manner have deformities of all parts of the body received technical names, which will be especially considered hereafter.

Deformities are again divided into congenital and acquired.

A *congenital deformity* is that which is present at birth.

An *acquired deformity* is one which has been developed subsequent to birth.

Congenital deformities are again divided into congenital malformations and congenital distortions.

A *congenital malformation* is one in which, at birth, there is a deficiency or absence or increase in the number of parts belonging normally to the body, or in which there are abnormal parts or fissures. Monstrosities are also to be classed under this head, and some other deformities which will be described later in the course.

A *congenital distortion* is one in which, at birth, there is simply a distortion of some of the normal parts of the body, such as most cases of club-foot, etc.

Acquired deformities are divided into three groups:

1. Those arising from causes which *directly* affect the articulation of the body, such as complete and incomplete anchylosis, either of traumatic origin or due to constitutional causes, as scrofula, rheumatism, etc.

2. Those arising from causes *indirectly* affecting the articulation of the body. Examples of this class are those deformities dependent upon paralysis, burns, diseases of the palmar and plantar fasciæ, spastic contraction of muscles, etc.

3. Those arising from causes *both directly* and *indirectly* affecting the articulation of the body, such as deformities due to curvature of bones and interstitial softening of inter-articular cartilages, etc.

Deformities are again divided into paralytic and spastic.

A *paralytic deformity* is one that has been developed in consequence of a deficiency of muscular power to retain any portion of the body in its normal position. For instance, I believe that nearly *all* cases of congenital talipes are of a paralytic nature. A paralyzed condition of one set of muscles permits the opposing set, contracting perhaps with *only* their normal force, to produce the deformity. This, however, will be more fully considered under the head of talipes.

A *spastic deformity* is one that has been developed as the result of undue muscular contraction; e. g., a muscle that contracts spasmodically under the reflex influence of some irritating cause, such as the reflex contractions accompanying disease of the joints, may produce a spastic deformity.

In certain cases spastic deformities are developed upon paralytic ones already existing. Such cases are not of infrequent occurrence, and it is this fact, without doubt, that has given rise to, and sustained the belief in, the spastic nature of a great majority of them.

The importance of being able to recognize these different conditions at once becomes apparent, for upon such recognition depends a rational treatment.

The question now arises, How are we to determine whether a given deformity is paralytic or spastic in its nature, or whether it is a combination of the two conditions? In the first place, a paralytic deformity can be easily overcome and the parts restored to their normal position by manipulation, but as soon as the retaining force is removed the parts at once return to their deformed position. If, on the contrary, the deformity is spastic in its nature, the result of excessive muscular contraction, you will not be able to restore the deformed parts to their normal position so readily; and, before complete restoration of the parts can be secured, it becomes necessary to divide the contracted tissues which retain them in their abnormal position, unless they can be sufficiently stretched to allow the parts to be replaced.



These two conditions may be associated, and structural shortening is liable to be engrafted upon paralytic deformities from the constant and continued contraction produced by reflex irritation, resulting from long-continued pressure upon the deformed parts, such, for instance, as obtains from walking upon an abnormal part of the foot in cases of congenital paralytic talipes. This will be more fully explained when we come to treat of club-foot.

The history of the case, therefore, is an essential element in determining whether these two conditions are associated.

Etiology.—The causes of congenital deformities are as yet wrapped in such deep mystery as to preclude the possibility of an accurate description. They can, therefore, only be treated according to the condition of the patients at the time you find them.

The causes of acquired deformities, on the other hand, are in a majority of instances quite easily ascertained. It not unfrequently happens that the cause can be so readily reached as to prevent the occurrence of serious deformity by early attention to the patient; but, if neglected, they are susceptible, more or less, to the correcting influences of artificial appliances and means which science has devised.

Among the causes of acquired deformity we will first mention acute and chronic articular inflammation. This class of affections may produce reflex muscular contractions, which frequently will terminate in permanent deformities after the disease has subsided that gave rise to them. This is beautifully illustrated in the deformity that accompanies hip-joint disease. In this instance, the deformity is gradually produced by reflex muscular contraction excited by the diseased joint; and the deformity becomes permanent in consequence of secondary changes which take place in the muscles themselves. The fibres undergo certain changes which render them incapable of voluntary relaxation when the cause of their contraction is removed, and some-

times it is impossible to extend them by force. We then have a *contractured* muscle, to which Dr. Little has applied the name "structural shortening," but which we have designated by the term contractured. When, therefore, I use the word "contractured" with reference to a muscle, I mean one that has become changed in its anatomical structure, and rendered incapable of elongation, either by the will of the patient or the application of any amount of force short of rupturing its fibres. In the latter case, section of the contractured tissues becomes necessary before a permanent cure can be effected.

The effects of structural shortening are more marked in children than in adults. In both cases wasting of the muscles occurs in consequence of defective nutrition. Structural shortening of one or more of the principal muscles of a limb is accompanied by an imperfect performance of the vegetative functions; hence, a greater or less lowering of temperature of the limb is almost always to be observed. In a great majority of instances the temperature is considerably lower than normal.

A second cause of acquired deformities is perfect and long-continued rest of joints. Such rest, even of a healthy joint, will produce deformity by terminating in anchylosis. Here is another evidence of the existence of laws regulating the animal economy; namely, that action is necessary for the healthy preservation of living tissue. The synovial fluid, for example, which is secreted to lubricate a joint is poured out only when the joint is in motion. There is no waste resulting from the operation of any of Nature's laws; hence, there is no secretion of synovial fluid when the joint is not in motion. As the eye requires light to preserve its healthy function, so does the joint require motion to maintain its normal condition; and, as the delicate orb of vision becomes blind when deprived of light, so does the joint fail to secrete a healthy synovial fluid when deprived of its normal stimulus, which is motion. The consequence is, if the rest is maintained for too great a length of time, the joint becomes permanently impaired.

In the third place, acquired deformities may be developed in consequence of various forms of paralysis, but especially those forms which are the sequelæ of diseases dependent upon a blood-poison, such as scarlatina, diphtheria, etc. Talipes not infrequently depends upon such a cause.



Paralysis gives rise to deformities in the following manner: The joints lose their support and bend outward or inward, according to the inclination of the joint surfaces in cases of general paralysis of the muscles; or bend toward the contracting muscles in cases of partial paralysis. When paralysis of motion and sensation is complete, or very extensively developed, it greatly interferes with the nutrition of the part.

Again, acquired deformity may depend upon some disease or injury to the spinal cord.

Another cause of acquired deformity is the slow poisoning of the system by certain metallic poisons. Chief among these are the salts of lead, and one of the most characteristic deformities produced in consequence of poisoning by these salts is what is commonly known as "wrist-drop," caused by the use of Laird's "Bloom of Youth," and other villainous cosmetics.

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## LECTURE III.

### DEFORMITIES.

Etiology (continued).—Congenital Phimosis and Adherent Prepuce.—Prognosis.—Diagnosis.

GENTLEMEN: I shall continue the study of the causation of deformities to-day by first directing your attention to another exceedingly important cause of acquired deformity, especially in children, namely, the reflex muscular contractions, caused by *congenital phimosis and adherent prepuce.*

This is a cause which has been almost entirely overlooked by the profession in general.

The first step in the process is an almost perpetual excitation of the genital organs. This excitation is followed by partial paralysis, and this paralysis is accompanied by deformity.

It having been my fortune to see several of these cases, I can do no better than to give you the detailed history of the first which fell under my observation.

On the 9th of February, 1870, I received the following note: