

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 ankylosis. 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.

LECTURE III.

DEFORMITIES.

Etiology (continued).—Congenital Phimosi 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 phimosi 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:

"DEAR SAYRE: Please let me know at what hour you can come to my house to see the son of Mr. M—, of Milwaukee. The little fellow has a pair of legs that you would walk miles to see.

"Yours, truly,
"J. MARION SIMS.

"No. 18 East Twenty-eighth Street."

I immediately went to the doctor's office, and found a most beautiful little boy of five years of age, but exceedingly white and delicate in his appearance, unable to walk without assistance or stand erect, his knees being flexed at about an angle of 45°, and the doctor had sent for me to perform tenotomy upon his hamstring tendons.

After a very careful examination I discovered that, when I amused the child and distracted his attention from himself, I could with very little force easily extend both of his limbs to their normal length, but as soon as I released my hold of them they would instantly become flexed again, and no irritation that I could produce upon the quadriceps muscles was sufficient to extend the legs except in the very slightest degree.

I soon satisfied myself, as well as Dr. Sims, that the deformity was due to *paralysis* and not *contraction*, and it was therefore *necessary to restore vitality to the partially paralyzed extensor muscles, rather than to cut the apparently contracted flexors.*

I therefore had him sent to my office for the purpose of applying the constant current of the galvanic battery. In its application, while passing the sponge over the upper part of the little fellow's thighs, the nurse cried out, "O, doctor! be very careful—don't touch his pee-pee—it's very sore;" and upon examining his penis I found it in a state of extreme erection.

The body of the penis was well developed, but the glans was very small and pointed, tightly imprisoned in the contracted foreskin, and, in its efforts to escape, the meatus urinarius had become as puffed out and red as in a case of severe granular urethritis; upon touching the orifice of the urethra he was slightly convulsed, and had a regular orgasm. This was repeated a number of times, and always with the same result.

The nurse stated that this was his condition most of the time, and that he frequently awoke in the night crying because "his pee-pee hurt him," and the same thing had often occurred when riding in the stage or car; the friction of his clothes exciting his penis would cause erections.

As excessive venery is a fruitful source of physical prostration and nervous exhaustion, sometimes producing paralysis, I was disposed to look upon this case in the same light, and recommended circumcision as a means of relieving the irritated and imprisoned penis.

This I performed on the following day, assisted by Dr. Yale, who administered the chloroform, and Dr. Phillips, and in the presence of a number of my private students. The prepuce was pulled well forward and cut off with a pair of scissors, when the *tegumentary* portion readily glided back over the glans, leaving the mucous portion quite firmly adherent to the glans nearly to the orifice of the urethra. Seizing the thickened mucous membrane on either side of the glans with the thumb and finger nails of each hand, it was suddenly torn off from the glans penis, to which it was quite firmly adherent nearly to the corona. Behind the corona there was impacted a hardened mass of sebaceous material, almost completely surrounding the glans. This was removed; the mucous membrane which had been torn off from the glans was split in its centre nearly down to its reflection, and, being turned backward, was attached to the outer portion of the prepuce by a number of stitches with an ordinary cambric needle and very fine thread. The penis was then covered with a well-oiled linen rag, and kept wet with cold water.

No untoward symptoms occurred, and in less than two weeks the wound had entirely healed, and the penis was immensely increased in size. The prepuce was sufficiently long to cover the glans, and could be readily glided over it without any irritation whatever.

From the very day of the operation, the child began to improve in his general health; slept quietly at night, improved in his appetite, and, although confined to the house all the time, yet at the end of three weeks he had recovered quite a rosy color in his cheeks, and was able to extend his limbs perfectly straight while lying upon his back.

From this time he improved most rapidly, and in less than a fortnight was able to walk alone with his limbs quite straight.

He left for his home in the West about the 1st of April, entirely recovered; having used no remedy, either iron, electricity, or other means to restore his want of power, but simply quieting

his nervous system by relieving his imprisoned glans penis as above described.¹

The case that just now presents itself before us is one of this description:

CASE. *Double Talipes Equino-Varus, Paralytica, dependent upon Congenital Phimosis and Adherent Prepuce.*—This boy, C. H. W., aged three years, has been under treatment in a public institution in this city for two or three years, with the hope of overcoming his deformity; and that treatment has been solely by the application of instruments to hold the feet in their proper position. The mother states that the deformity was present at birth; in other words, it is congenital. As soon as he began to walk, his feet began to get more crooked, and have at last got into the shape you see here. When I take the foot in my hand, you see that it can be immediately restored to its normal position with the greatest possible ease; and when I let go it flops around the ankle like the loose end of a flail. This shows that the deformity is paralytic in its nature.

In order to remove this paralytic deformity, he has worn all manner of machinery until both his tibial bones have been bent out of shape, and still he is as bad as he was at first. His general health is good, and he has never had any sickness which can account for this condition of things.

In looking about for a cause of this paralyzed condition of the muscles of the lower extremities, I find that the head of his penis has never been uncovered; in other words he has *congenital phimosis*, and adherent prepuce, as proved by the introduction of a probe. The external opening of the prepuce is scarcely large enough to admit the smallest probe, and as the probe is made to sweep around the glans the prepuce is found everywhere adherent, except for a few lines back from the orifice of the urethra.

This penis is in an almost constant state of erection, and the conclusion I have arrived at is, that this boy has been the subject

¹ D. Campbell Black, M.D., in his work on "Functional Diseases of the Renal, Urinary, and Reproductive Organs," after reprinting some of my cases in full, says, page 213: "I offer no apology for thus giving considerable prominence to the foregoing cases. I attach to them immense importance, as disclosing, possibly, a frequent source of infantile paralysis, and the numerous indications of nervous irritability in childhood, while, so far as known to me, Dr. Sayre's cases are unique in medical literature."

of undue nervous irritation from genital excitement, which has resulted in partial paralysis of the lower extremities, and in consequence of this partial paralysis the deformity has been developed.

This subject of nervous irritation and consequent exhaustion from undue genital excitement is one of a vast deal of importance, and has not received the attention at the hands of the profession that it justly deserves. The pressure continually exerted upon the glans penis by the contraction of the adherent prepuce keeps the organ in an almost constant state of irritation and erection.

Such a constant genital excitement, no matter what its cause may be, whether occurring in a child or in an adult, is certainly detrimental to the best condition of the nervous system. In the class of cases before us, this undue genital excitement ends in paralysis, and the consequent deformity varies according to the manner in which the weight of the body is placed upon the foot. A simple mechanical support will restore the foot to its normal position, but the child can only be relieved permanently of the deformity by removing the cause which has given rise to the paralysis. The first step, then, to be taken toward curing this case is to perform the operation of circumcision, and liberate the glans penis from the adherent prepuce; for I am firmly of the opinion that the paralysis in this case is the result of nervous irritation from genital excitement which is caused by this adherent prepuce. [The operation was performed.] The child will be returned at the end of two weeks, and we shall then see whether any benefit has been derived from the operation. Meanwhile, no dressing whatever will be applied to the distorted feet, in order that we may see what effect this nervous affection had in producing the deformity.¹

¹ The mother returned at the end of the two weeks, stating that the child had been perfectly quiet every night since the operation, sleeping without any disturbance, and passing his water without difficulty, which had never occurred before. He ate well, was very much improved in his general appearance, and could stand flat on his feet without any assistance. Upon stripping the child's feet the mother's statement was fully corroborated, as will be seen by the annexed figure (Fig. 1), which was taken immediately after by Mr. Mason, photographer to Bellevue Hospital, just two weeks from the operation. As will be seen, the child stands perfectly flat upon the feet, with simple inversion of the great-toe of the left foot. The increased muscular power without the use of any electricity has been almost marvelous, and now by the

We will add another case of *reflex paralysis*, which beautifully illustrates the rapidity with which the muscles regain their power of contraction, and also how readily they will respond to



FIG. 1.

the directions of the will when the source of irritation is removed.

CASE.—T. B., aged three years and eight months, was brought to me by Dr. P. Brynberg Porter, of 65 West Forty-eighth Street, on the 1st of June, 1875, to be treated for paralysis of the lower extremities and prolapsus of the rectum.

The doctor had detected the phimosis and constant priapism, and, suspecting that it might possibly be the cause of his trouble, brought him to me for examination.

The child was very peevish and fretful, very costive, and the mother states that "in straining at stool and in making water his bowel would frequently come down, and give her great trouble in pushing it up."

application of the galvanic current to the peroneal muscles we have a prospect of the perfect recovery of the child without any further mechanical support.

He began to tumble down very frequently about a year ago, and was growing more and more clumsy in walking. He could not stand alone without support, and even when supported his legs would bend in different directions, as seen in Fig. 2, from a photograph by O'Neil, June 1, 1875.



FIG. 2.

He was circumcised on the 2d of June. The lining membrane of the prepuce was firmly adherent to the glans, requiring section by the knife before it could be torn off. Behind the corona was the usual hardened smegma, which had produced erosion of the mucous membrane.

The parts were dressed with an oiled rag and cold water.

June 4th.—The boy could stand without support, and had slept quietly the past two nights.

At the end of twelve days he was entirely well; could walk and run without tripping, and his bowels had become perfectly regular, without any prolapsus.

The annexed photograph by O'Neil, taken July 1st, shows the improvement in his limbs.

In the picture taken June 1st, his shoes had to be laced tightly around the ankle to enable him to stand even with support;



FIG. 3.

but in that taken July 1st (Fig. 3), it will be seen that he stands erect without any assistance.

One of his limbs is slightly abducted in the photograph, but that was on account of his restlessness—it is not so constantly.¹

In continuation of the subject of causation, we next observe that deformities of the spine occur most frequently during the period of growth and development. Young girls are more disposed to have the so-called lateral curvature of the spine than boys, for the changes which their systems undergo during this period of growth and development are more marked than those which take place in boys, and occur just at the time when the bony structures are more or less pliable and not fully developed.

Certain derangements in the health are also to be noticed in

¹ For a more full report of injury to the nervous system by irritation of the genital organs of both sexes, see author's paper in "Transactions of the American Medical Association," for 1875.

this connection as causes for deformities. Diseases caused by sedentary habits, such as dyspepsia, hypochondriasis, melancholia, etc., frequently seem to give rise to rotary and lateral curvature. It is in this class of cases that your efforts toward effecting a cure will be most unsatisfactory; for you have to deal with a loss of power, and an extreme sensitiveness to all influences, especially heat and cold, which, combined with other derangements of the nervous system, render these cases very intractable.

The last kind of cause of acquired deformity which I shall mention here is the traumatic.

Under this head may be embraced blows, bruises, burns, wounds, etc.

Most of those causes which have been indicated, as well as those which have not received special mention, will be more fully considered as we proceed with our lectures, for subsequently I shall dwell more fully upon the special causes of each deformity, which have thus far been referred to only in a general way.

PROGNOSIS.—In general, your prognosis should be extremely guarded. There are very many exceptions, it is true, to this general rule, but to those exceptions your attention will be directed further on in the course. In the treatment of deformities, particularly those of long standing, you will find that the practical application of the principles which are to guide you, however simple these principles may be, will in many cases be exceedingly difficult. You may be led, on account of the seeming simplicity of many principles which are to be laid down, to anticipate speedy relief and rapid recovery; but in a majority of cases you will really be very much disappointed. Your faith in being able to produce rapid improvement by the treatment of deformities of long standing will be very much weakened, when you come to have a few such cases under your own personal observation and care. Nevertheless, it may truthfully be said that, with patience and perseverance *in the right direction*—these are words full of meaning—you will be able, in a majority of cases, to accomplish such results as will be extremely satisfactory to the friends, and more than compensate you for your extra labor. In some cases, the improvement will be so rapid that it will become a source of great astonishment to you. In general, however, such results are not to be obtained. There is one exceedingly

important element in the management of all cases of deformity, and it is one which will materially affect your prognosis, namely, the coöperation of the patient. If the hearty coöperation of the patient can be obtained, a long step has been taken toward effecting a permanent and complete cure.

The lame, the crooked, and deformed, are all influenced mentally by their misfortunes. In many instances, I have seen the strongest evidence of this influence upon the mind: one in particular I will mention, which is that of a young girl who was brought to me, to be treated for chorea in a very aggravated form.

As this case is a beautiful illustration of the principle we are now speaking of, I cannot do better than refer to it here, although I have already published it in the *New York Journal of Medicine* for 1849.

CASE. *Chorea induced by Anxiety, on Account of a Deformity; and cured by Removal of the same.*—Mary Pheeny, Pearl Street, aged sixteen, was brought to me in March, 1848, for chorea, with which she had been afflicted for two years previous; she had also had several epileptic convulsions.

She was a large, robust, healthy-looking girl, but exceedingly desponding and gloomy, almost an idiot in appearance, wishing to be by herself, and seldom speaking to any one.

She was strangely deformed in her feet and one hand; having ten toes on her left foot, and eight on the right, with their proper number of phalanges, and each articulated with a separate metatarsal bone, except the second and third on the left foot, which were joined together, so as to resemble one toe with two nails, which gave that foot the appearance of but nine toes; but after their removal I found a double row of phalangeal bones, inclosed in a common tegumentary envelope.

On the right hand she had five fingers, besides an extra joint upon the thumb.

Upon taking hold of her hand, my attention was drawn to her extra finger, and when I alluded to it she gave an hysterical sob, followed immediately by a severe convulsive fit, caused, as her mother informed me, by my allusion to her deformity, as she was exceedingly sensitive upon that point.

After talking to her mother a few moments, she wished me to look at her feet, as they were also deformed; and, upon my ex-

amining them, another convulsive fit was induced, which led me to believe that the cause of disturbance in her nervous system, upon which these fits and the chorea depended, was anxiety of mind about her deformity; and she had pondered on it so constantly, and let it obtain such complete control of her nervous system, that any allusion to her misfortune would be immediately followed by a fit.

After examining the case carefully, I found every organ healthy, and all their functions properly performed. She had been under treatment for some time past, for suppressed menstruation, which had been successful; and for the last two months her menstruation had been perfectly regular.¹

Therefore, finding no other cause to which I could attribute this derangement of her nervous system, I was compelled to believe it caused by anxiety on account of her deformity, and advised the removal of her extra toes and finger, to which she readily assented.

From that moment her countenance assumed a cheerful, smiling aspect, she laughed and talked half hysterically, and walked about with almost a frenzied delight, and exhibited not the slightest evidence of chorea. She was exceedingly anxious to have the operation performed at once, but it was deferred in order to take the casts, from which the accompanying drawings were made. (See Figs. 4 and 6.)

On the 9th of March, assisted by Drs. Trudeau and Van Buren, I removed her supernumerary toes, having first put the patient under the influence of ether, which had the desired effect

¹ Dr. Porcher, now of Charleston, who treated her for some time, has published the case in the *Charleston Medical Journal and Review* for March, 1848, and states that she was perfectly cured in four weeks, by the use of carbonate of iron and rhubarb.

If he had reference to her menstruation simply, he would have been correct. But, in including in the word cure the chorea and epilepsy under which she labored (as I presume he does, for he has headed his article "St. Vitus's Dance"), he is evidently mistaken; for her gait was exceedingly unsteady when she came to my office, and the fact of her having two convulsive fits upon my alluding to her deformity proves that her epilepsy and chorea still continued; and it is to correct this statement that I have by the advice of several medical friends made the case public.

She was not relieved of her chorea and epilepsy until she was assured that her deformity could be removed: from that moment her countenance assumed a cheerful aspect, and her chorea and epilepsy left her entirely, without any medical treatment whatever, and have never returned.

of benumbing all sensation, and, when restored to consciousness, she expressed great surprise at their removal.

The parts were brought in close apposition by sutures, straps, and firm bandages, and dressed with cold water. Union of the

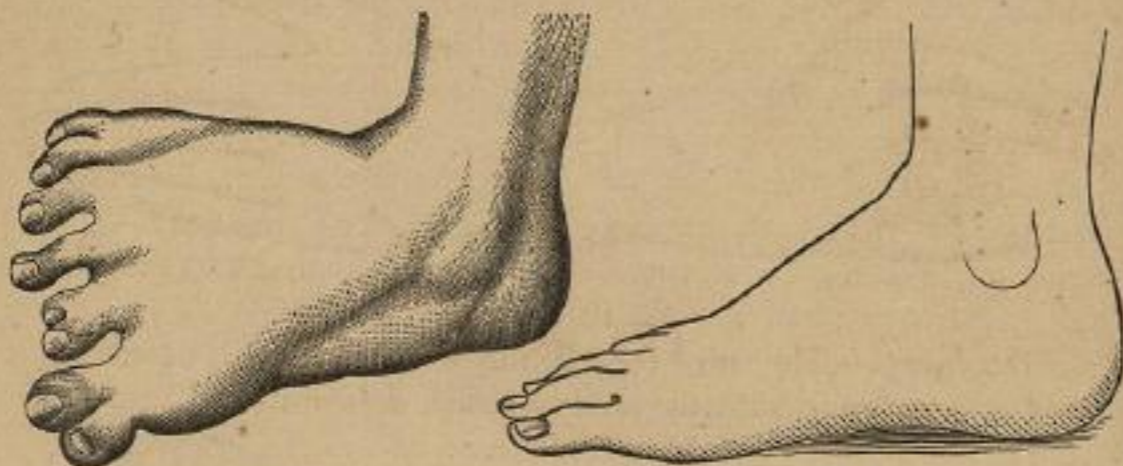


FIG. 4.

FIG. 5.



FIG. 6.

FIG. 7.

whole wound, in each foot, took place by first intention without the formation of any pus, and in twenty-three days after the operation she walked to my office (nearly one mile), and the second casts were taken from her feet, from which the improved drawings were made. (See Figs. 5 and 7.)

The most singular feature in this case is, that, from the moment she became convinced that her feet could be improved, her chorea left her, and has not returned; neither has she had a single epileptic convulsion.

I removed the extra finger under the influence of chloroform, at the carpo-metacarpal articulation, by a straight incision on the

back of the hand. The wound united by first intention, and the hand looks quite natural, as is seen by contrasting Figs. 8 and 9.

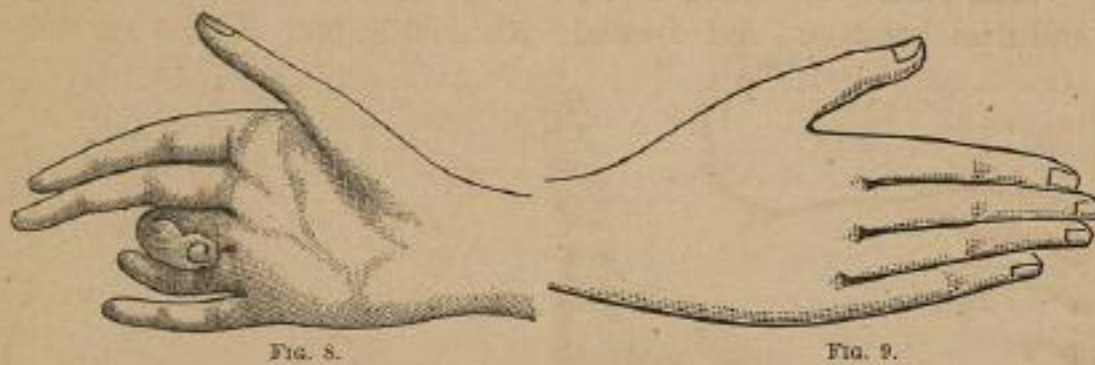


FIG. 8.

FIG. 9.

DIAGNOSIS.—The rules for making a diagnosis will be considered in connection with the study of each deformity.

LECTURE IV

DEFORMITIES.

Treatment.—General Principles.—Operative Treatment.—Tenotomy.—Myotomy.—Tenotomes.—Breaking up of Bony or Fibrous Anchylosis.—Anæsthetics.

GENTLEMEN: To-day we begin the study of *treatment* of deformities, and I will first invite your attention to the consideration of certain general principles.

TREATMENT.—The treatment of congenital deformities should commence *early*. This rule is especially to be observed in all those cases in which the deformity depends upon disorders of muscular power that are of a paralytic nature. When we come to speak of the treatment of congenital club-foot, we shall insist very strongly upon the recognition of this principle.

The great reason why treatment of this class of deformities should be commenced early is, the hope of preventing irritation or inflammation of the parts abnormally pressed upon, as well as the muscles and fasciæ involved, which may add a spastic deformity to the already-existing paralytic one.

Again, early treatment is important for the sake of prevent-