32-AMB-WHW

AMBULATORY APPARATUS

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Mrs. La Du, Superintendents of the Institutions, Ladies and Gentlemen: The patient in infantile paralysis has now passed through the stages of treatment explained by Drs. Chatterton and Williamson, and we come to the time when the patient has made either a complete recovery, a partial recovery, or shown no improvement at all. At this period, after he has had all this treatment that you have just heard about, the patient should be gotten up out of bed; he should be up and about.

The first thing required is a complete muscle test, to see just where we stand with regard to absent or weak muscles. Weak muscles would tend to cause more deformity; such as, curvature of the spine, hyperextension of the knee, valgus deformities of the foot. To get a patient up out of bed, and have him walking about without support, would be adding insult to injury, in case he had weak muscles or muscles lacking all power, so we have supports and braces for the lower extremities, spinal braces and leather corsets for the back.

These braces are used to prevent malposition, to correct deformity, to enable patients to walk who cannot walk without support, and to enable patients who can walk somewhat to walk better.

There are very few cases of infantile paralysis that cannot be made to walk. They may have complete paralysis, but as long as they have arms with which they can control crutches, we are able to get them about. They do not at any time walk very well, but we feel it is better to have a patient on his feet than it is to have him in bed or in a chair.

Braces are used with the younger children to prevent deformities which cannot be treated by surgery while the patient is too young to be operated upon.

Case 1. We have a little fellow here, six years old. He has a paralysis of the muscles of the foot. If this boy were allowed to go without any support, he would probably go home, and the chances are the foot would become deformed. For this reason these little fellows wear braces.

Braces need constant readjustment and repair; otherwise they do no good.

This little fellow is wearing a brace which supports the foot and keeps it from dropping down. It is an outside type of brace, by which we mean a brace attached to the shoe with an inside "T" strap. The muscles on the inside of this boy's foot are much weaker than those on the outside and the ankle turns in.

As soon as this boy is old enough, probably two or three years from now, he will have arrived at the age of operation. What we will do at that time we do not know at present, because some of the muscles which are absent now may return to the support of the foot.

Because this boy is up and about does not mean that he is ready to go home. The massage and muscle training must be continued and, more than all else, the leg must be kept exceptionally warm in cold weather in order to keep up a normal temperature. When a child has had infantile paralysis, his local temperature is below normal and his limbs are cold.

Case 2. The next patient is a boy nine years of age. He had infantile paralysis in 1930. There is involvement of the spine and of the lower extremities. See what he can do without his apparatus. His arms are exceptionally weak; his back may be considered frail; but we know he has a little power with which to bring the hips forward. He cannot stand alone. He has a dangling left arm. His right arm is good. The nurses will put on his braces and we will see how he gets along with them.

Sometime in the future this boy will probably have some surgical work done. At present we do not know exactly what it will be. We may be able to do something to his back, as his back muscles are extremely weak. By holding the spine rigid, he is able to walk nicely with crutches and is able to walk some without them.

(This boy demonstrated how he walks with crutches without braces. To return later to show how he walks with braces.)

Case 3. Here is a little one who had infantile paralysis in 1930. She had involvement of both lower extremities. Both legs were paralyzed.

At the present time we find that the left leg is very good, but we feel that she should wear a brace on this leg also, in order to prevent deformity, such as back-bending of the knee.

With these young patients we very seldom use the so-called lock joint brace, which has a self-locking spring catch which allows the patient to bend his knee when sitting down. The little ones get along better with no joint at the knee. They cannot work it very well.

This child is wearing a right-angle stop joint brace. This is the type of ankle where the power in the front part of the foot is absent or extremely weak.

Case 4. This boy is twenty-three years old. He had infantile paralysis in 1925. I do not know whether he will demonstrate for us or not.

This patient has practically no power in his left leg. His right arm is paralyzed. He has not much power in his right foot.

We will try to have him walk with his crutches. He was walking quite well about two months ago, but at that time an operation was performed in order to stabilize the right foot. For this reason he has not been practicing very much lately. He does have some power in the right foot, although very little. He has practically a complete paralysis of his lower extremities.

This boy will demonstrate as well as he can what we call the tripod method of walking. With the tripod method the crutches are placed apart, slanting well forward, their lower ends forming the two anterior

points of the tripod. The upper part of the patient's body forms the third point of the tripod. Where a patient has severe or complete leg paralysis, he should begin to walk in this tripod fashion after he has sufficiently acquired his sense of balance. (Boy demonstrates.) You will note how he does this. He hitches one crutch forward a few inches, then the other, then he jerks his feet forward a few inches by a body movement. He bears down with his hands on the crutch bars. This tripod manner of walking gives the patient a shuffling type of gait.

In about a month or six weeks, this boy will be able to walk up and down the hall and to the physiotherapy room unassisted.

For the older patients we have the lock joint at the knee. It is much more convenient for them in sitting down. To be able to sit down and get their feet out of the way the lock joint is absolutely essential. Otherwise, when they sat down the leg would stick out straight. If this joint did not lock, the leg would drop forward and the patient would invariably fall.

Case 5. Here is a boy who had infantile paralysis in 1925. He has a spinal involvement; his back is extremely weak. He has practically no muscle in the abdomen. There is involvement of the left leg. The rectus femoris of the quadriceps extensor muscle, the one in front of the thigh which holds the leg out stiff, is extremely weak.

In the house, by being extremely careful, this boy gets along nicely. Outdoors, if at any time he does not get the knee joint locked, if it comes forward beyond a straight line, he will fall. He is wearing a long leg brace with a lock joint. He can lock the joint without much trouble.

The abdomen is supported here by an abdominal support and he is wearing a back brace. In cases where the spine is about normal, the abdominal support can be applied nicely without the back brace. When this boy's brace is off, his back will sag over to the left side and his abdomen will push out to the left.

Case 6. This boy is not an anterior poliomyelitis case, but we have this type of brace in such cases.

We find that this type of brace, the Taylor brace, with two steel uprights, can be adjusted nicely and holds the patient in good position. This boy at one time was bent forward. By adjustment of the Taylor brace we got him up in a very nice, satisfactory position.

The braces are practically all made over plaster-of-Paris models. A brace, in order to be satisfactory and not uncomfortable, as relatively as a brace can be comfortable, requires perhaps a week or ten days for the making.

(Here is that little fellow with his leather corset and his leg braces on. You will see he does very well.)

Making braces over plaster-of-Paris models gives you the exact size and shape desired. It is easy to make any desired change in the plaster cast. In that way you can correct the deformity very nicely.

The cast is first made as a body corset. This is applied to the patient and taken off within about fifteen minutes, then sent to the brace shop where they take the plaster-of-Paris powder and water mixture and pour it into this mold. As soon as this is set, this part here is then torn off. It makes a rough job at the time, but it is then filed down, all irregularities taken out, and it is refinished again with plaster-of-Paris powder and water. After this is done the bracemaker cuts his leather to fit, takes in different darts, and so on, to mold it absolutely to the plaster. It is then applied in this manner. It is now put in the oven, heated to about 130 degrees Fahrenheit, and allowed to remain over night. After this is finished, the brace is then taken off and steels are applied with a lock-joint brace, and elastic is put in the back. Here we have the finished brace. The lock-joint snaps in and holds the leg straight. It cannot get away. If the patient had a full joint like this, he would fall.

There are two types of braces for the ankle. One is called the outside type of brace, which is attached to the shoe, and then we have the inside type of brace, which is made to fit directly onto the foot. The inside type of brace is especially used in cases where we expect the patient to wear his brace all the time, day and night. It keeps the foot in perfectly good position, and we know that the bedclothes cannot turn it over to one side. This brace holds the foot in position, whereas if the shoes are mates and the paralyzed foot is smaller and there is no support whatever, it will turn. This brace will fit very nicely into the shoe and prevent the deformity from developing.

Here is another type of brace, the socket-joint type of brace, which gives full motion. This brace is used where we have no paralysis or difficulty in this motion here, but where we are trying to stabilize the foot from side-twisting. We prevent the side-twist like this. It is also used as an apparatus to support the lower limb for various other reasons.

This brace is a stop-joint brace. It does not allow the foot to drop down. If the paralysis is of the anterior tibial group it will finally develop into a drop foot if not held with this type of support.

Then we have a type of spine brace, the Steindler support. The back brace can be made just as it is to support the spine, but in some cases, where the spine tends to drop to one side, we find that we can prevent this lopping over by applying this cuff to the thigh and keeping it absolutely rigid. They can walk with this and they are not very uncomfortable.

Mrs. La Du: Thank you, Dr. von der Weyer.

Dr. Cole, who is assistant surgeon-in-chief of the hospital, is going to give a "Demonstration of Surgical Results, Lower Extremities."