

## ABSTRACT OF DISCUSSION

DR. P. S. ROY, Washington, D. C.: I wish Dr Rosenow would tell us what change has taken place in nerve tissues which respond so quickly to treatment. It is almost analogous to the changes in polyneuritis or beriberi in pigeons. If you pour yeast vitamins down that pigeon's throat it will get well in a few hours. It is very interesting to know what change takes place in nerve cells which are completely restored to action in three hours.

DR. E. C. ROSENOW, Rochester, Minn.: There is much evidence to believe that loss of muscle power in poliomyelitis does not necessarily mean the death of the motor cells in the anterior horns. The paralysis may, in part, be the result of inhibition of physiologic function due, early, to the toxic effect of the micro-organism causing the disease, and late, to lack of oxygen or nutrition from infiltration. The fact that paralysis which starts to disappear soon after the acute attack is more prone to disappear entirely than when improvement begins late, indicates that this is true. The very prompt restoration of function which is observed following the injection of my antipoliomyelitis horse serum containing neutralizing substances is thus to be expected. In the case of the rabbit, the paralysis, and even death from respiratory failure appear to be due in many instances to inhibition of physiologic function of the ganglion cells in the anterior horns. The amount of infiltration is relatively slight, hence the immediate striking beneficial effects noted in this species following injection of the neutralizing serum.

## AN OPERATION FOR STABILIZING THE FOOT AND ANKLE IN POLIOMYELITIS

A FURTHER REPORT \*

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In cases of poliomyelitis with paralyzed foot muscles, the foot is usually equinus, equinovarus or valgus.



Fig. 1 (Case 1).—Right talipes equinus varus and left talipes valgus.

In the treatment of such cases, operative measures would not be considered until a long time had elapsed after the acute attack and until all remedial measures had been exhausted. There comes a time, however,

when something has to be done with deformity, and when tenotomies and brace wearing are not very satisfactory. The brace wearing is never kept up very long with any degree of efficiency, and after a while parents become tired and careless and give up all mechanical treatment.



Fig. 2 (Case 1).—Patient standing on the feet after correction.

At the meeting of the American Orthopedic Association in Philadelphia, Dr. G. G. Davis impressed on us the importance of in some way getting these children into such a condition that they could walk fairly well without apparatus of any kind. It was to accomplish some such result that the operation in question was devised. It was described<sup>1</sup> in 1917, and again<sup>2</sup> in 1918. The results seem to be so satisfactory and so permanent that I shall describe the technic once more. Perhaps this is best done by reporting the first case in detail:

CASE 1.—E. F., a boy, had an acute attack of poliomyelitis at 11 months of age. An operation was performed in August, 1917, when the patient was 7 years of age. Figures 1 and 2 show the right equinovarus and left valgus deformity. The position of the feet had first been corrected by tenotomies and held in such position for four weeks. On the right foot the fascia transplant operation consisted of first removing a piece of fascia lata from 2 to 2½ inches wide the whole length of the thigh. An incision was then made nearly the whole length of the leg. A second incision was made through the tough fascia which surrounds the tendons. These tendons were then dissected out and separated clear down to the annular ligament. In this case the tendons separated were the common extensor and the peroneus longus. The fascia covering the common extensor was split its whole length on the side nearest the crest of the tibia. The fascia lata was then stitched around the tendons at the lowest possible point in such a manner as to form a cuff. The dissected surface was placed next to the tendons and muscle. After this cuff of fascia was securely fastened the foot was held in an over-corrected position, while the upper end of the strip of fascia lata was firmly attached to the split tendon fascia at the upper end of the tibia or leg. Then, at the lower end, again the strip of fascia lata was split to allow for a separate cuff to be arranged around the tendon of the peroneus longus, and the upper end was thoroughly attached in the same manner as described above. Then the sides or edges of the fascia trans-

\* Read before the Section on Orthopedic Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Peckham, F. E.: Paper read before the American Orthopedic Association, May, 1917.

2. Peckham, F. E.: Rhode Island Med. Jour., 1918, 2, 35.

plant were stitched firmly to the edges of the split tendon fascia all the way up and down the leg, and incidentally to the muscle bellies as well. Through all this time the foot was held firmly in the overcorrected position. When this part of the operation was completed the skin incision was closed with silkworm-gut.

So firm is the anchorage in such an operation that the foot remains in the corrected position without any mechanical assistance; consequently no plaster of Paris is necessary. A strip of adhesive plaster is applied, however, beginning at the top on the inside of the leg, passing down under the anterior part of the foot and up on the outside of the leg. This steadies the foot sufficiently and is all the fixation I now use. The patient is usually kept in the hospital in bed for six weeks, then sent home and asked to report in two weeks. I have applied braces for six or eight weeks while they are beginning to walk again, but I feel pretty sure that even this is unnecessary.

This operation has been useful, and to the parents very satisfactory, because their children not only walk, but are walking without braces of any kind.

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#### ABSTRACT OF DISCUSSION

DR. WALTER G. STERN, Cleveland: I had an experience similar to that which Dr. Peckham has had, in doing the Gallie operation. We found that we did not get enough surface for perfect fixation. I think it is more simple to do the operation devised by Putti, that is, putting the severed tendon through a hole in the bone and sewing it firmly. With the extreme anchorage of Dr. Peckham's operation the results—as we have heard from this paper—must be quite satisfactory and permanent.

DR. FRANK E. PECKHAM, Providence, R. I.: I can only say that in doing the Gallie operation, and also the Putti, I did not get absolute anchorage. Each one has to figure out what he can do best.



Fig. 3 (Case 2).—Right foot held at right angle by muscular effort. Left foot hanging on account of paralysis.



Fig. 4 (Case 2).—Lateral view of hanging foot.



Fig. 5 (Case 2).—Patient standing on foot. This patient was operated on in August, 1917, and during the past winter went skating.

The left or valgus foot was treated as will be described in Case 2:

CASE 2.—I. M., a girl, had an attack of poliomyelitis at the age of 1 year and 3 months, and the operation was performed in August, 1917, when the patient was 8 years and 11 months of age. This was a talipes valgus in which the tibialis anticus and posticus were the paralyzed muscles. Figures 3 and 4 show how the toe drops. An operation similar to the one described in the foregoing was performed, except that the two inner tibial muscles were the ones anchored.

The correction in position is shown in Figure 5. When the mother brought the child for observation this spring she said that the little girl had been skating on it all winter. This would seem to demonstrate functional ability.

The advantage of the operation is that there is a long anchorage, nearly the whole length of the leg, from which so far there has been no giving way. These children walk without any apparatus, and practically do a heel and toe walk because with the foot held they strike on the heel. Then the remaining good muscle, whether it is the tibialis anticus or the common extensor, steadies the foot while the Achilles tendon pulls up the heel.

**Workmen's Health Insurance.**—The *American Labor Legislation Review* for the first quarter of 1918 summarizes the legislation enacted in 1917 providing for official studies of workmen's health insurance. Commissions were appointed in several states to report to the legislatures in 1919: in California, to report on social insurance; in Connecticut, on health insurance, old age pensions, free employment bureaus, hours of labor, minimum wage, and nine other topics relating to agriculture and business; in Illinois, on sickness and accidents of employees and their families not covered by workmen's compensation, etc.; in Massachusetts, on the alleviation of poverty due to sickness, the provision of medical care for wage earners, the health of wage earners and conditions of work, and existing insurance system; in New Hampshire, on health insurance and workmen's compensation; in New Jersey, on the operation of pension, annuity and insurance systems; in Ohio, on sickness, causes, influence of working and living conditions, etc., prevention of sickness, health insurance and old age insurance; in Pennsylvania, on sickness and accidents of employees and their families not covered by workmen's compensation loss resulting from sickness to individuals and the public, adequacy of present methods of treatment and care on meeting financial loss, influence of working conditions on health, and sickness prevention; in Wisconsin, to report on insurance against sickness and occupational disease.