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AN APPLIANCE FOR THE NON-OPERATIVE RELIEF OF PARALYTIC FOOT DROP

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Numerous appliances have been designed for the non-operative relief of paralytic foot drop. There are several groups of patients with foot drop on whom operative corrections cannot be done. First, there are those with foot drop due to peripheral neuritis in whom there is a possibility of recovery under medical measures. In these patients it is advisable to relieve the foot drop by conservative means for the comfort of the patient and to prevent contracture of the tendo Achilles until it is determined whether there will be a subsidence of the neuritis. Second, conservative measures must be employed for those patients who refuse operation or whose general condition makes operation inadvisable, and who have foot drop due to flaccid paralysis of the anterior elevator muscles of the foot from traumatic injury of the muscles or their nerve supply, intractable peripheral neuritis, or anterior poliomyelitis.

The present appliance is designed for use in such cases of foot drop due to flaccid paralysis of the dorsiflexor muscles of the foot. It has certain advantages in that it can be made readily and inexpensively by any shoemaker, it is light and comfortable, the patient's regular shoes are used without defacing alterations, it leaves the unaffected portion of the limb free from braces or straps, it permits the patient to walk with an almost normal amount of plantar flexion of the foot, and it is relatively unnoticeable on patients wearing long trousers. This appliance has been found to give good results in such cases as those described above. For satisfactory results it is necessary that the flaccid paralysis be limited to the foot, and that the neighboring weight-bearing joints be in a condition to cooperate, i.e., the hip and knee.

The appliance consists of a leather cuff four inches wide which fits about the ankle just above the malleoli. The cuff closes on the side with a single shoe lace which is tied through an eyehole at the bottom to prevent its loss, and then laces over hooks placed along both ends of the cuff. Hooks are used for facility in lacing the cuff, and one row is placed several inches in from the end of the cuff, thus making a tongue to protect the leg from the lace (Figure 1). Anteriorly the cuff has a half-moon notch at the inferior border to prevent binding where it lies over the tibialis anticus and anterior flexor tendons. Also anteriorly the cuff is reinforced by a narrow strip of leather sewn across the narrow width of the cuff. Through this reinforcement near the distal side of the cuff are placed two hooks, one above the other, with the hooks turned proximally. These hooks are of the standard type used in lacing shoes. The cuff can be padded with felt if so desired, but when used over heavy socks or stockings it is sufficiently comfortable without. The cuff is illustrated in Figure 1.

A hook with the hook turned distally is fastened to the shoe at the point best

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sued to give adequate correction of the foot drop in the given case. Usually the most satisfactory point is approximately over the distal head of the fourth metatarsal bone. A short, light spring is attached between the anterior hook on the cuff and the hook on the shoe. Two hooks on the cuff permit greater adjustment of the spring which should be under sufficient tension to just correct the foot drop against gravity, but not enough to put undue pressure on the ankle. This appliance in use is illustrated in Figures 2 and 3.

This appliance permits the patient to walk with a slight "spring" in his foot and ankle, and he can plantar flex his foot at will if these muscles are intact. Illustrated in Figures 2 and 3 is the relative position of the uncorrected foot to the foot with the appliance applied in a case of bilateral foot drop. By using the patient's regular shoes which are not disfigured it is possible to have several pairs available, to use house shoes as well as street shoes so that the foot drop can be corrected constantly, and to permit the use of the same kinds of shoes the patient would ordinarily wear. Best results are obtained when light shoes are used as this requires less pull on the spring and hence less pressure from the cuff about the leg above the ankle to correct the foot drop.

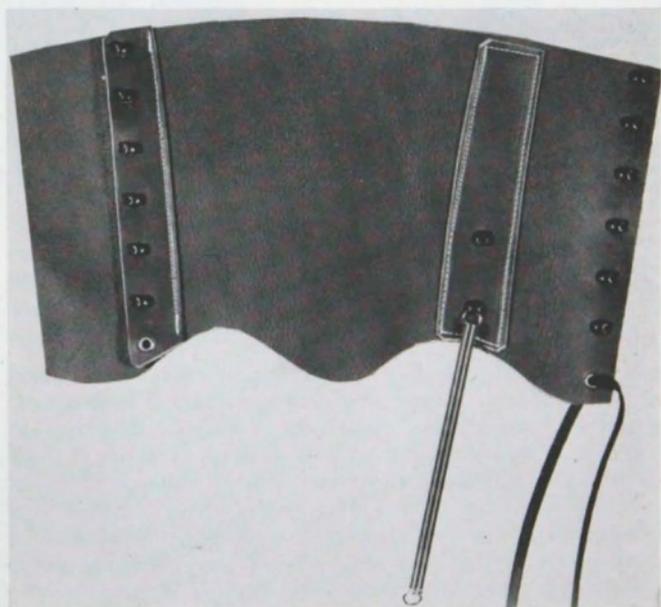


Fig. 1. The leather cuff which fits about the ankle, with spring.

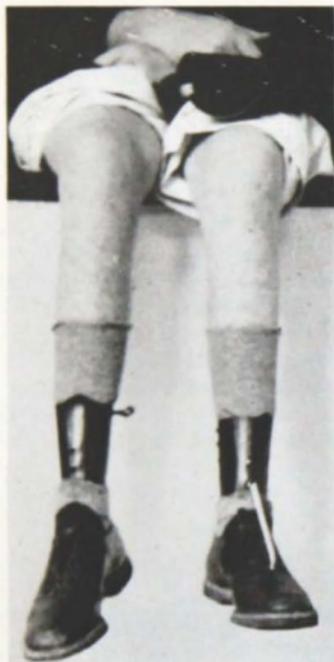


Fig. 2. The appliance in use, showing the uncorrected foot drop of the right foot and the corrected foot drop of the left foot in a case of bilateral foot drop. Note the position of the spring between the cuff and the shoe.



Fig. 3. The appliance in use, showing the uncorrected foot drop of the right foot and corrected foot drop of the left foot in a case of bilateral foot drop. Note the position of the spring between the cuff and the shoe.