

THE HELICAL ROTATOR

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The orthotist sees a certain group of patients whose only problem is that of internal or external rotation of the feet. In such cases a device is needed that will control the rotation with a minimum amount of restriction.

In the past, many devices have been used, such as bilateral long leg braces with pelvic band, which are not only restricting, but expensive; or twister straps which are inexpensive but not very effective. The cable rotator has fulfilled this need better than most devices, but it too presents problems.

You must use a cable with a left hand twist on one leg and a right hand twist on the other. The cable, unless stainless steel, will rust, and of course, as the cable frays, it will present sharp points that can injure the patient.

However, the most objectionable feature is that you must over-correct the foot and let the slack be taken up as force is applied. This gives a somewhat spongy effect.

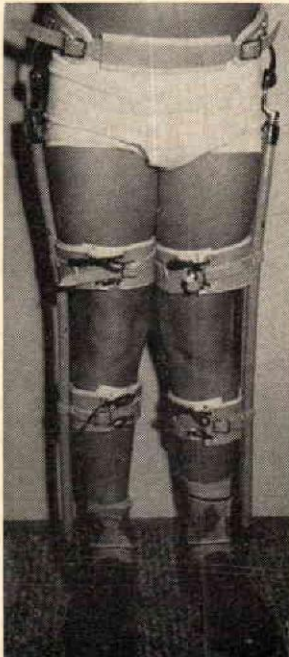


Figure 1



Figure 2

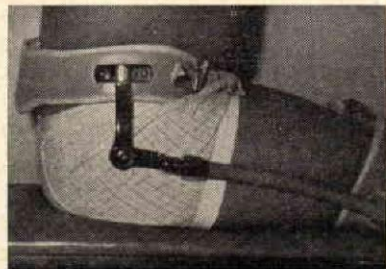


Figure 3

With these problems in mind an attempt was made to develop a device that would solve some of these problems. This work led to the development of the helical rotator.

The helical rotator (Fig. I) consists of two helically woven steel sheathes, one placed over the other and dipped in rubber. The two helical weaves provide a unit that is flexible but has virtually no torque. Unlike the cable, there are no sharp edges and no over-correction is needed. You merely place the feet in the desired plane and tighten the friction blocks (Fig. II) Because the helical rotator will not yield to a rotational force, the feet stay where they are set.

The helical rotator consists of the following parts:

- 2 @ shoe plated with friction blocks
- 2 @ helical rotators with ends
- 2 @ ball bearing hip joints
- 1 @ pelvic band

In the first fitting a regular hip joint was used. However, due to the torque applied at the hip joints, the pelvic band had a tendency not to conform to the patient when sitting. Ball bearing hip joints were added, which alleviated this problem. (Fig. III)

The use of friction blocks at the ankle provide an infinite adjustment, as well as a three inch adjustment for growth. If the patient outgrows this adjustment, it is a simple matter to loosen the end fittings on the helical rotator and insert a new one.

It was found that soft leather bands at the calf and thigh were helpful in holding the rotator closer to the leg for better cosmesis.

To date, approximately fifty patients have been fitted with the helical rotator with good results. It has been especially useful in the cerebral palsy, where control of rotation without undue restriction is most important.

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