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A NEW BRACE FOR THE TREATMENT OF CONGENITAL CLUBFOOT

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It is generally accepted that the treatment of congenital clubfoot must be started as soon as possible after birth. The most common procedure is to correct the malposition by repeated manipulations and to prevent recurrence between manipulations by a cast or brace. Rather frequently the treatment has to be combined with surgical intervention.

When optimal reduction is achieved, the treatment must be continued by braces which keep the foot in the reduced position, otherwise a relapse of the clubfoot will occur. There are many different braces available, but functionally they may be divided into two groups. Braces belonging to the first group only maintain the achieved correction, whereas the second group allows further correction. Braces belonging to the second group have a shoe-like construction, which is connected with a collar fastened proximally to the leg by an adjustable metal bar. The shoe part of the brace is also often connected to the shoe of the other side.

There are usually some disadvantages connected with these braces. Plastic braces are warm and uncomfortable to use over a long period of time. Some of the corrections may also be lost due to softening of the material or to elevation of the heel and rotation of the foot in the brace.

The braces, which have a shoe part, may give the impression of a well-corrected foot, while the foot has rotated in the shoe. Only an X-ray of the foot in the shoe may reveal a bad position, usually an elevation of the heel combined with inversion of the foot.

At the Orthopaedic Clinic in Gothenburg a new type of brace for the treatment of congenital clubfoot has been designed. The purpose was to create a brace, easy for the mother to apply, well-accepted by

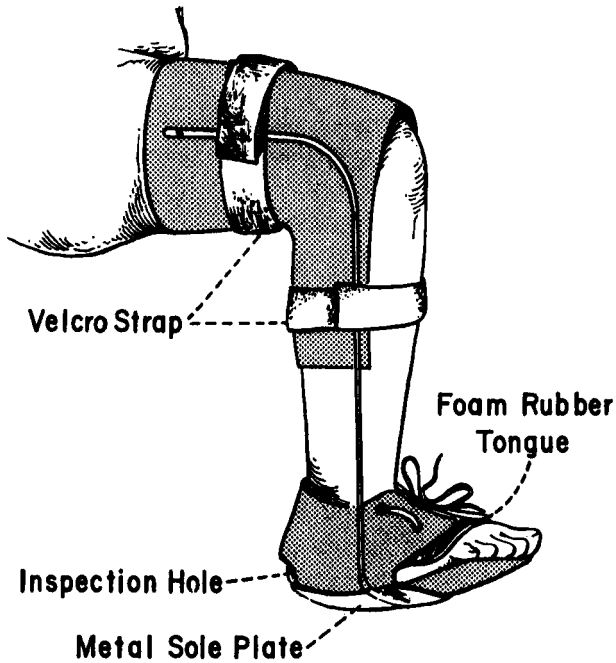


Figure 1.

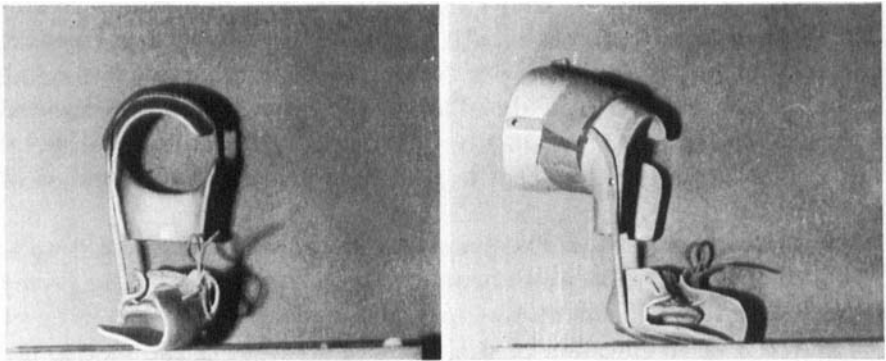


Figure 2. Brace for a right-sided clubfoot.

the child, allowing continuous correction and permitting visual control of the foot in the brace (Figures 1 and 2).

The mould should be done with the foot in maximum correction. The collar and shoe part of the brace are made of 1/8 inch polyethylene, the sole of 1 mm thick stainless steel, and the metal ba

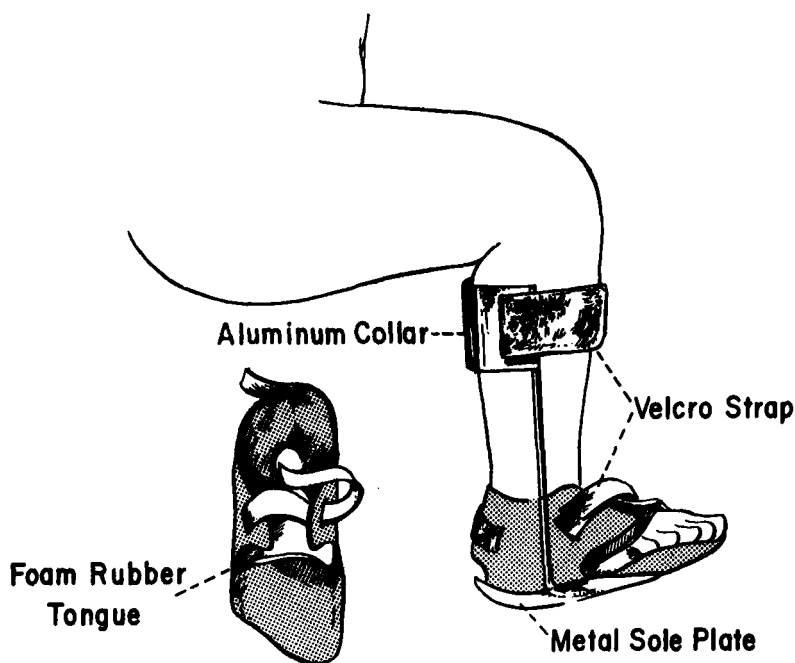


Figure 3.

which is soldered to the sole is made of round steel 5 mm in diameter. The collar has a metal opening which can be closed by two velcro straps, one above and one beneath the knee. The heel is kept down by laces and a tongue. A velcro strap was first tried, but was not sufficient. The heel part of the shoe is provided with a hole for inspection. Consecutive corrections are obtained by adjusting the metal bars.

The brace described can be used as soon as the foot is in valgus. The plantar flexion does not have to be corrected, as this is corrected as easily by the brace as with manipulation. It must be noticed that the brace should not be used before the heel is in valgus position.

As long as the final correction is not obtained, the brace must reach above the knee. When the final correction is achieved a night brace of similar construction, but ending just below the knee, should be used (Figure 3). The mould is taken in overcorrection, and the foot part must be so constructed that it keeps the forefoot in abduction. On its dorsal aspect the footpart is provided with an opening, which laterally is cut down to the base of the fifth metatarsal. The metal sole is connected with the aluminum collar around the calf by a metal bar made of round steel of a diameter of 6 or 8 mm. The metal parts are covered

with a plastic material. The aluminium collar is lined with foam rubber and is tightened to the leg by a velcro strap. The foot is kept firmly in the correct position in the shoe by another velcro strap over the ankle. This velcro strap is attached to the medial side of the shoe and passed through a slot laterally. A foam-rubber-lined tongue is also fastened to this strap. Over the back of the foot shoelaces keep the foot in place.

Some of the braces were supplied with metal bars adjustable by screws, so the mother could make daily corrections by turning the screws. However, this did not appear to have any advantages over the other construction.

In some therapy-resistant cases, where even after surgical intervention the result was not acceptable, we provided the brace with a continuous pulling spring instead of the metal bar. In these cases an appreciable improvement was achieved.