

prevent the shoe insert portion of the orthosis from rocking. An immediate post-op foot can be used.

2) Vacuum mold the SACH foot with ¼-inch low density polyethylene. Polyethylene is ideal since it provides good strength and flexibility.

3) When the plastic has cooled, remove it from the SACH foot and initially trim it so that it does not protrude beyond the borders of the shoe. Refer to Figure 3.

4) Use standard methods and techniques to fabricate the orthosis.

5) Place the orthosis on the patient. Then place the orthosis on the patient into the shoe and shoe filler while ensuring that the shoe filler does not hinder this process.

6) Further trim the shoe filler along its medial and lateral sides, behind what would normally be the metatarsal heads of the sound foot. This allows the normal toe break of the shoe to function

properly and thereby ensure unrestricted motions of the ankle and foot.

Notes

To prevent the orthosis from slipping forward in the filler, the filler should curve around slightly, onto the dorsum of the foot. Refer to Figure 3. This trim, together with a properly laced shoe or a shoe laced with velcro straps, should provide the required counterforce to prevent the orthosis from slipping forward in the filler. It is further noted that one patient, who had worn the new orthotic system for one month, required foam padding that was placed anteriorly into the filler to prevent the orthosis from slipping.

Summary

The design and development of a shoe filler when bracing the

shortened foot is cosmetically appealing and financially beneficial to the patient who is consequently required to purchase only a single pair of ordinary shoes. In addition, fabricating the filler is a relatively simple procedure for the orthotist.

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Footnotes

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This article is reprinted with authors permission from the Feb. 1979 issue of "The Amp." Doctor Rubin discusses Phantom Limb Pain on a basic and objective level that is easily understandable, especially to the amputee.

Phantom Limb Pain

by

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This column was prompted by a letter from John Riegel, N.S.O., of Cleveland, Ohio. Let me expand on some of the points he wanted discussed.

First: A definition of terms. *Phantom Sensation* is the feeling that the absent limb is still there but not necessarily painful. *Phantom pain* is the same feeling but the absent limb (or part of it) is painful. Almost every amputee experiences phantom sensation but statistically only five to ten percent have varying degrees of phantom pain.

Second: Some of my medical colleagues still think that this type of pain is imagined by the amputee. It is not. It is a very real pain and can sometimes be so severe and continuous as to be disabling. However, in the great majority of instances it is intermittent, although it may last for days (and nights) at a time.

Third: The cause and cure are unknown, just as the cause and cure of the common cold, and even cancer, are unknown. We have difficulty satisfactorily treating such ordinary conditions as chronic arthritis and severe flat feet, so the difficulty in adequately treating phantom limb pain should not be surprising.

Fourth: The Cause. There are many theories about the cause. None is completely explanatory. As a working basis, the theory most acceptable to me is based on the fact that there is an area in the central nervous system which is a sort of way-station for messages on the way to our consciousness where they can be interpreted,

in this specific case, as pain. Signals can either go up from the absent limb, or down from the conscious part of the brain (cortex) and affect the way-station. Sometimes if an amputee talks about or thinks about phantom pain he will trigger an episode. The signals that go up can be described as either "excitatory" or "inhibitory." These terms require no explanation. The inhibitory effect is partly *maintained* by messages from the skin. If a leg is amputated then a large part of the inhibitory messages that would ordinarily come from the skin of that part will be absent. The excitation messages will dominate and pain could be experienced. A way of thinking about the effect of inhibitory messages from the skin could be exemplified by the instance of the person who bumps his shin and then *rubs the skin* over a broad area to relieve the pain. He sends skin inhibitory messages to the brain to relieve the pain.

Fifth: Treatments. Many different methods of treatment have been used. It is a simple fact that, when there are many ways to treat a condition, not one of them is much good. If there was one good way that would be the method used.

Treatments attempted have ranged from the use of a freezing spray, to injections of novocaine, either locally or into the lower spine, cutting the nerves to the stump, cutting the roots of the nerves near the spinal cord, cutting the nerve pathways in the spinal

