

## Management of foot problems in arthritis

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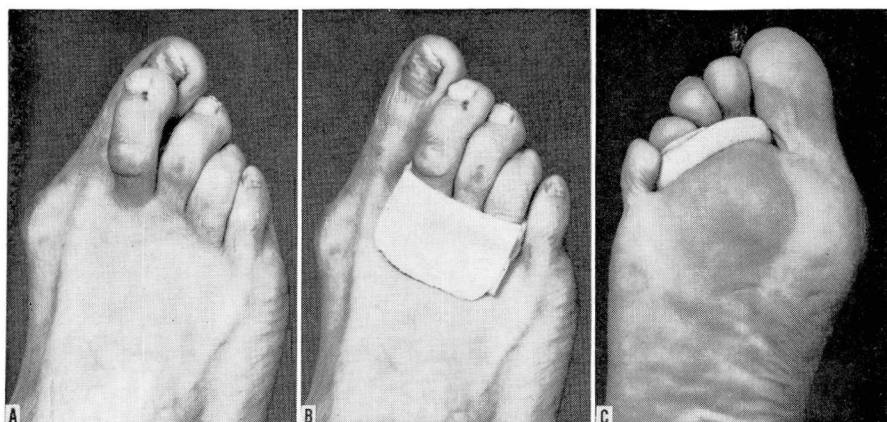
**P**AIN in the foot is often a disabling problem for the arthritic patient, and the pain may often be relieved by conservative, nonoperative treatment.

One of the most painful foot deformities is a hammertoe (*Fig. 1A*), caused by synovial thickening at the metatarsophalangeal joint, resulting in upward displacement of the toe. When there is direct pressure from the shoe or stocking on the proximal interphalangeal joint of the toe, a painful excrescence occurs over this joint; this may be a callus, a hard corn, or an adventitious bursa.

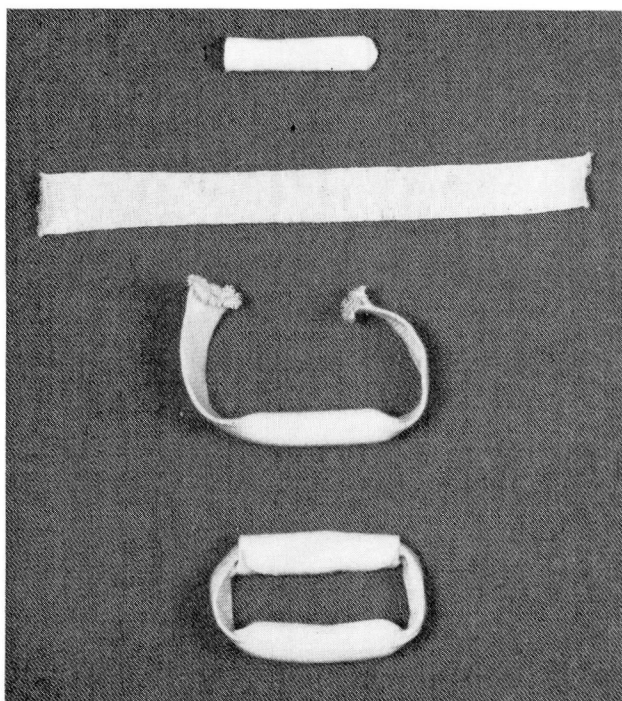
Conservative treatment for this painful condition consists of applying a buttress or sling pad. A sling pad (*Fig. 2*) is constructed of  $\frac{3}{4}$ -inch tubular gauze, felt dental roll, and moleskin in the following manner. (1) A piece of felt dental roll cut to the exact width of the affected toe is covered with tubular gauze; (2) this encased roll is then placed under the affected toe, with the loose ends brought up between the toes; (3) the loose ends are then joined together over the toe and secured with moleskin. The felt dental roll under the hammertoe extends the distal phalanx, and the moleskin removes pressure from the painful proximal interphalangeal joint (*Fig. 1B and C*). Continued use of this sling has proved most effective in giving prolonged relief to arthritic patients with painful contracted toes.

A metal ring and ball stretcher (*Fig. 3*) is used to "spot" stretch a patient's shoe, thereby providing more room for a contracted toe and relieving pressure on a tender bony prominence. This tool has a clamp in the handle to hold the device in place as pressure is being applied. It is simple to operate, but care must be taken not to crack the area of leather that is being stretched.

The arthritic patient with foot problems should be instructed in exercises to strengthen the intrinsic muscles of the foot and to increase the mobility of his toes. The following exercises have proved beneficial; the patient should be barefooted and sitting in a straight-backed chair. (1) The patient places a bath towel under both feet, then moving the toes, crinkles the towel under the toes. (2) The patient puts six marbles on the towel and places a dish in front of the feet. Grasping the marbles one at a time with the toes, he drops them into the dish. (3) The patient places a book under the feet, then bends the toes over the edge of the book. At first, each exercise is to be repeated five times. As each exercise becomes easier to do, the number of repetitions should gradually be increased to a maximum of 10 times. Two separate sessions of exercises should be performed each day.



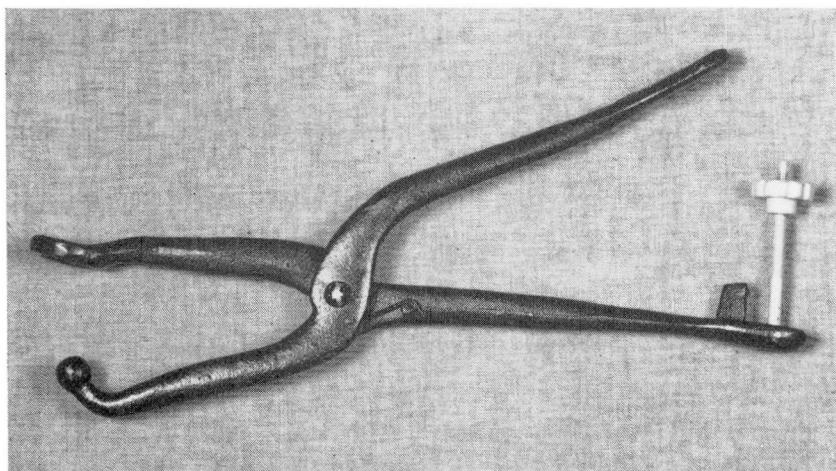
**Fig. 1.** A, Photo of dorsum of the right foot showing an overlapping hammered second toe with an adventitious bursa at the proximal interphalangeal joint. B, Dorsum of the foot shown in A, with correction of the hammertoe deformity by the use of a sling pad. C, Plantar view of the foot shown in A, with the sling pad under the plantar surface of the toes.



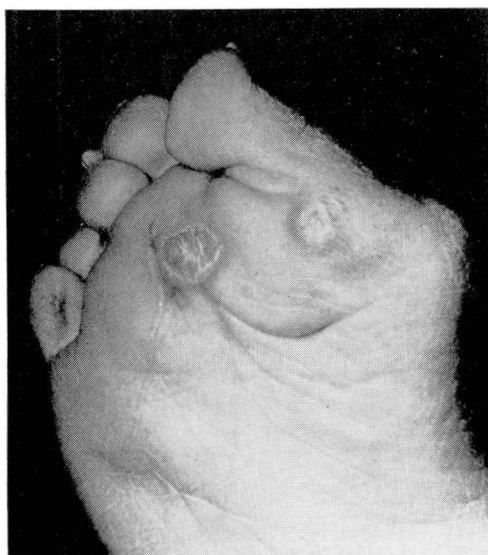
**Fig. 2.** Materials for construction of the sling pad: from top to bottom—felt dental roll, tubular gauze, dental roll encased in tubular gauze with loose ends joined by moleskin.

The most common foot problem in arthritic patients is a plantar callus over one of the metatarsal heads (*Fig. 4*). This callus usually is due to improper weight bearing across the ball of the foot because of a laxity in the metatarsal ligaments, and because of poorly designed shoes that cause pressure or allow friction in this area, or by localized pressure on a metatarsal head from a hammertoe.

Treatment by the podiatrist consists of paring or shaving down the plantar

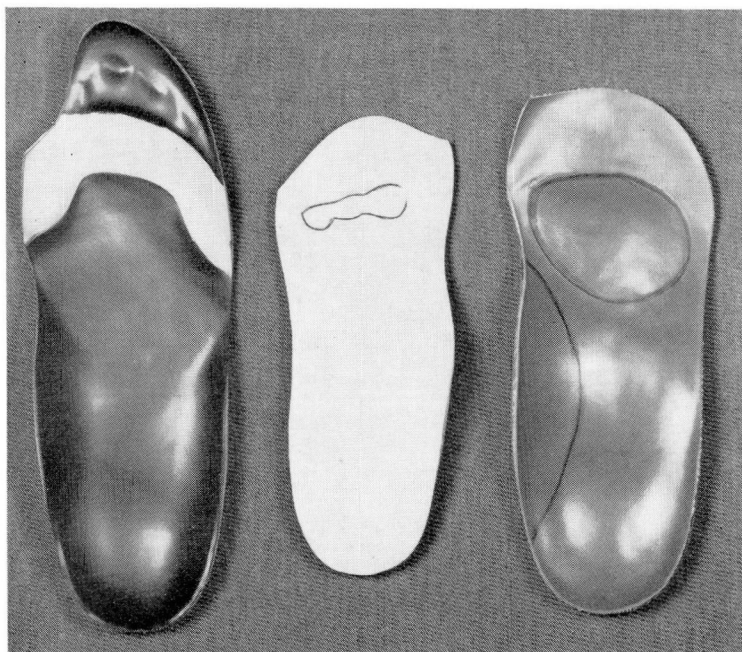


**Fig. 3.** Photo of the Hoke Ball and Ring Stretcher for spot stretching of shoes.



**Fig. 4.** Photo of plantar surface of the right foot showing plantar callus over the second metatarsal head.





**Fig. 5.** Photo of Levy and Rappel balance inlays, from left to right: A, Cut out area for callus over the first and fifth metatarsal heads. B, Cut out area for callus over the second, third, and fourth metatarsal heads. C, Inlay with longitudinal arch support and metatarsal pad.



**Fig. 6.** Photo of depth inlay shoes; darkest shoe demonstrates the removable  $\frac{1}{4}$ -inch insole.

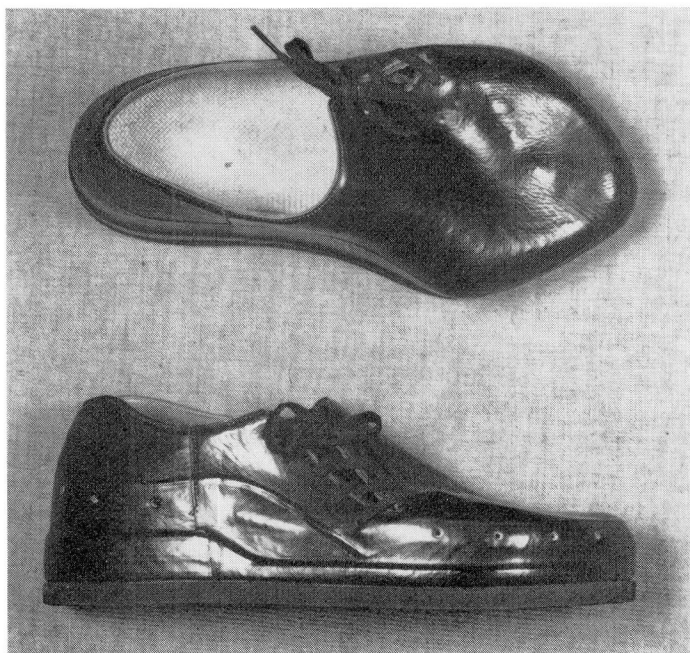


Fig. 7. Photo of custom-molded shoes.

callus and of applying an appropriate pad to relieve pressure over the affected metatarsal head. Pressure may be relieved most effectively by the use of a balance inlay (*Fig. 5*). A plaster or styrofoam impression must first be taken of the foot, and the callus is marked on this impression. From this, a plaster replica of the foot is made at the factory, and an arch support or balance inlay is constructed on the plaster model. The patient will wear this fabricated balance inlay in his shoe with considerable relief.

Shoes of oxford laced type are recommended for the arthritic patient. A special shoe, called a depth inlay shoe (*Fig. 6*) is particularly helpful for some arthritic patients. This shoe has a  $\frac{1}{4}$ -inch sponge insole, which may be removed completely in order to give extra space to the patient's foot when necessary for swollen joints. The special shoe is also prescribed for the patient who must wear a molded foot support. The molded support can be inserted into this shoe and the patient need not have to buy a larger pair of shoes. Any portion of the insole may also be removed to reduce pressure on a painful area of the sole.

When it is not possible for an arthritic foot to fit into any regular stock shoe, custom-molded shoes must be prescribed (*Fig. 7*). These shoes are fabricated over plaster casts of the patient's feet. Plaster impressions of the feet are made in two sections, plantar and dorsal. These sections are then joined at the factory and plaster is poured into this mold to make exact plaster replicas of the patient's feet. Different types of leather are available, includ-

ing calf, kid, or kangaroo. Special insoles, steel toes, or removable arches may be provided in these shoes. This type of shoe is not recommended for patients who have excessive edema of the feet. The arthritic patient with severely deformed feet will obtain much relief from the wearing of these shoes, although the bulky appearance is sometimes objected to by women patients, and the cost of a pair of shoes is high (at least \$85.00).

### **Conclusion**

The podiatrist can make important contributions to the treatment program for the arthritic patient with painful, deformed feet.