

Ex crescent Lesion: A Diagnosis of Lateral Talar Exostosis In Chronically Symptomatic Sprained Ankles

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ABSTRACT

The ex crescent lesion is a symptomatic anterolateral exostosis at the insertion of the anterior talofibular ligament. It is found in patients with chronic ankle pain after inversion injuries. It is most reliably diagnosed by computed tomography scan, but physical examination and oblique radiographs are suggestive in most cases. A technique for surgical excision and, in some cases, repair of the anterior talofibular ligament is described.

Five patients having a history of inversion sprains of the ankle, without significant symptomatic improvement for a mean of 21 months after the injury, were evaluated. None had significant instability in the ankle or subtalar joints, clinically or with stress radiographs. The diagnosis of ex crescent lesion was confirmed with computed tomography scan in all five patients. Each underwent excision of the exostosis. Removal of the exostosis produced laxity of the anterior talofibular ligament in four of the patients and required an additional modified Broström procedure to tighten the anterior talofibular ligament.

Clinical results were evaluated at a mean of 33 months postoperatively, using the Ankle-Hindfoot scale from the American Orthopaedic Foot and Ankle Society. The three patients without pending claims for Workers' Compensation or related litigation all had excellent results (mean score, 93 points). Two patients with active legal claims had fair and poor results (mean score, 53 points).

INTRODUCTION

Inversion sprains of the lateral ligaments of the ankle are common injuries, with an uncomplicated recovery in most patients. Those who continue to have pain in the hindfoot, but not ankle instability, can present a

diagnostic difficulty. The differential can be divided into two groups. The first group is a missed diagnosis from the original injury. These include fractures of the lateral talar process, anterior calcaneal process, or base of the fifth metatarsal, Salter-Harris type I injuries to the lateral malleolus in the skeletally immature, lateral talar osteochondritis dissecans, or Maisonneuve fractures are also part of the differential diagnosis.^{3,6,8,15,17,18} Unrecognized injuries to soft tissue such as subtalar sprains, tibiofibular ligamentous sprains, peroneus brevis longitudinal splits, and os peroneum syndrome may also present with lateral ankle pain after a history of inversion injury.⁴

The second group of differential diagnosis includes pathologic conditions that may develop concurrently with a chronic ankle sprain. Anterolateral ankle soft tissue impingement, adhesion, and meniscoid lesions have been described after ankle sprains and fractures of the ankle.^{1,11,16} Anterior talar exostoses, or "footballer's ankle," which can impinge on the tibia with dorsiflexion of the ankle, arise with repeated strains of the anterior capsule.^{2,12,14,19} These injuries present with pain in the anterior or anterolateral ankle that continues to be symptomatic after the normal recovery from the sprain.

We describe an exostosis at the insertion of the anterior talofibular ligament (ATFL) after inversion injury to the ankle. We call this the ex crescent lesion, after the common term used by veterinarians for a similar lesion in horses. This bony prominence was tender to palpation and was a source of chronic pain in the anterolateral ankle. A technique for its excision and the postoperative clinical results are discussed.

MATERIALS AND METHODS

From 1992 to 1995, five patients underwent an excision of a lateral talar exostosis at the insertion of the ATFL. They all had a history of inversion ankle sprains with chronic lateral ankle pain. These included four women and one man (mean age, 42 years). Two left

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and three right extremities were involved. The mean time from initial injury to operative intervention was 21 months (range, 11–36 months). All patients were examined and operated upon by the senior author.

The diagnosis of chronic ankle pain secondary to an excrescent lesion was made after a careful history and physical examination with the appropriate radiographic studies. The history included chronic pain in the ankle after an ankle sprain that had no frank instability. Gait and heel alignment were observed. Each patient underwent palpation to determine the point of maximal tenderness. The range of motion of the ankle and subtalar joints were ascertained. Provocative maneuvers, including anterior drawer and talar tilt, were done to investigate instability.

Radiographic studies included a weightbearing anterior-posterior, oblique, and lateral roentgenogram of the ankle. If there remained a question of instability after the physical examination, then stress anterior drawer, talar tilt, and Broden's radiographs were performed of both extremities. Computed tomography (CT) scans of both hindfeet in the coronal and axial planes were performed on all patients. These are helpful to rule out a fracture of the lateral process as well as to identify the excrescent lesion.³

SURGICAL TECHNIQUE

Patients were positioned laterally with a bump under the ankle. A thigh tourniquet was used on all patients. A reverse "J" incision, anterior and inferior to the fibula, was made sharply through the skin, as described by Gould et al.⁷ Blunt subcutaneous dissection was carried down to the ATFL. Care was taken to avoid the lateral branch of the superficial peroneal nerve. The exostoses lay at the insertion of the ATFL just proximal to the inferior extensor retinaculum. Soft tissue over the exostosis was sharply incised, and a periosteal elevator was used to expose the bony prominence. The exostosis was shelled out with a rongeur or an osteotome. Care was taken to avoid detaching the insertion of the ATFL.

The lateral ligament was then inspected for appropriate tension. If it was found to be redundant, then a modified Broström repair of the ATFL was done. The repair was reinforced with a hemisection of the inferior extensor retinaculum rotated on its inferolateral pole, as described by Harper.⁹ The incision in the skin was closed, using staples. The patient was placed in a well padded splint with the ankle positioned in neutral dorsiflexion.

Postoperative management consisted of 2 weeks nonweightbearing in the postoperative splint. Those who also had a modified Broström repair were placed

in a short leg walking cast for an additional 3 to 4 weeks. In this series, four patients (patients 2–5) had additional operative procedures performed at the time of excision of the excrescent lesion. Three patients also underwent excision of the distal fascicle of the anteroinferior tibiofibular ligament (AITFL), as described by Bassett et al.,¹ for symptoms of anterior impingement. Modified Broström procedures were performed on four patients.

A follow-up evaluation was made at a mean of 33 months postoperatively (range, 10–51 months). Each patient completed a questionnaire assessing satisfaction, employment, use of tobacco, and ongoing litigation or claims for Workers' Compensation. Additionally, a score on the Ankle-Hindfoot scale of the American Orthopaedic Foot and Ankle Society (AOFAS) was determined for each patient.¹⁰ These results were further categorized as excellent, good, fair, or poor according to this scale (Table 1).

RESULTS

Chronic pain in the anterolateral ankle was the primary complaint with all patients, although two had additional diffuse pain about the ankle. At the time of evaluation, treatment of the sprain included modification of activity, orthoses, and peroneal muscle strengthening. No patient demonstrated relief of symptoms before operative intervention. Three had a palpable, tender bony prominence on the anterolateral talus. No patient demonstrated lateral or subtalar laxity with stress testing.

The exostosis was subtly visible on ankle radiographs in three patients. It appeared as a bony prominence or ossicle off the anterolateral talus, inferior to the fibula (Fig. 1). The CT scan was the best study to identify this lesion. In all five patients, the osseous lesion could be seen in the semicoronal and axial sections through the talus at the level of the insertion of the ATFL (Figs. 2 and 3). Histological examination of the surgical specimen revealed fibrocartilage and osteocartilaginous tissue.

All patients reported that they were satisfied with the surgery and would have it again under similar circumstances. Pain was the reason for seeking treatment for all patients. Three patients reported their pain as "much improved," one as "slightly improved," and one as "without change" at the most recent follow-up. Three patients returned to their preinjury levels of activity, including recreational activities and employment. Two patients had not returned to work. One had an active claim for Workers' Compensation, and the other had ongoing litigation concerning the injury. Both of these patients were being treated at a chronic

TABLE 1
Summary

Case	Follow-up (months)	Age/Sex	Physical exam	X-ray	CT scan	Procedure	Result: AOFAS A-H score
1	10	49 F	Palpable excrescent nodule	Exostosis not visible	Bony prom at ATFL	Excision	Excellent, A-H score: 97
2	17	52 F	Diffusely tender	Exostosis subtly visible	Bony ossicle at ATFL	Excision, Broström	Fair, A-H score: 61
3	39	40 F	Palpable excrescent nodule	Exostosis subtly visible	Bony prom at ATFL	Excision, Broström, exc AITFL	Excellent, A-H score: 97
4	48	24 F	Palpable excrescent nodule	Exostosis not visible	Bony prom at ATFL	Excision, Broström, exc AITFL	Excellent, A-H score: 88
5	51	46 M	Lateral ankle tenderness	Exostosis subtly visible	Bony prom at ATFL	Excision, Broström, exc AITFL	Poor, A-H score: 45

AOFAS, American Orthopaedic Foot and Ankle Society; F, female; M, male; prom, prominence; ATFL, anterior talofibular ligament; A-H, ankle-hindfoot; exc, excision; AITFL, anteroinferior tibiofibular ligament.

pain clinic at the time of the most recent follow-up. One patient (patient 5) had an additional procedure 10 months after the indexed procedure: release of the anterior tarsal tunnel, release of the nerve to the extensor digitorum brevis, and removal of an anterior

talar spur, performed for symptomatic anterior tarsal tunnel syndrome.⁵

Each patient was evaluated using the AOFAS Ankle-Hindfoot Scale. The mean score of the five patients was 77 points. The mean AOFAS Ankle-Hindfoot Scale score of the three patients not involved with Workers' Compensation or litigation was 93 points compared with a mean score of 53 points for the two patients with an active legal claim. This was a significant difference ($P = 0.010$), even given the small numbers in this series. One patient who smoked at the time of surgery also had an active claim for Workers' Compensation at the time of surgery. This patient (patient 5) had the only "poor" score on the AOFAS Ankle-Hindfoot scale.

DISCUSSION

Patients with chronic pain in the ankle after latent sprain, but without instability, require that additional diagnoses be sought. Occult fractures of the hindfoot and ankle are well described in published reports.^{3,13} Injuries to soft tissue, adjacent ligaments, or tendons need to be ruled out at differential diagnosis. There are also a number of soft tissue and bony impingement lesions that can complicate recovery from a sprained ankle.^{2,20}

The excrescent lesion is an anterolateral talar exostosis or ossicle present at the insertion of the ATFL. It can be a source of chronic pain in the ankle after an inversion injury and should be considered in the differential diagnosis. Its presence is suggested by a small tender bony ossicle, which may be palpated at the insertion of the ATFL. Like many bony lesions in

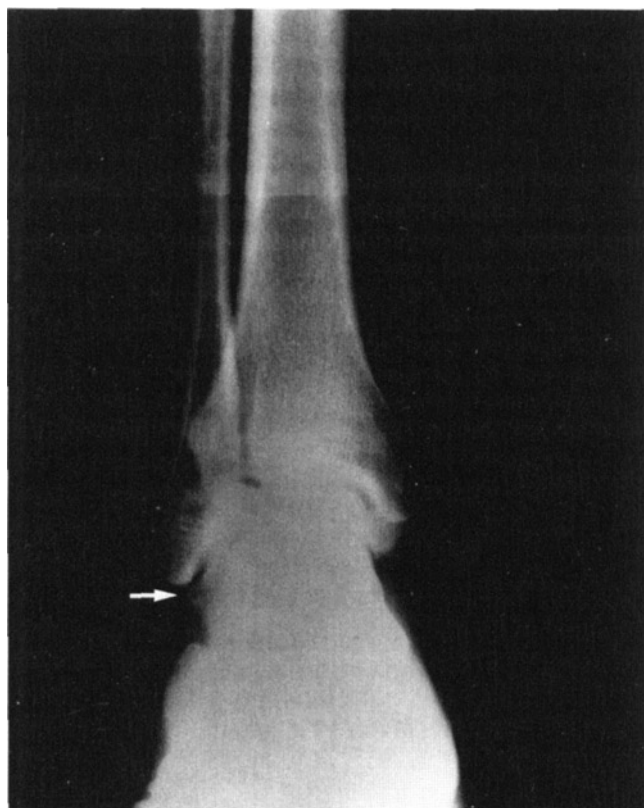


Fig. 1. Plain radiograph of the ankle revealing a subtle bony prominence of the lateral talus.

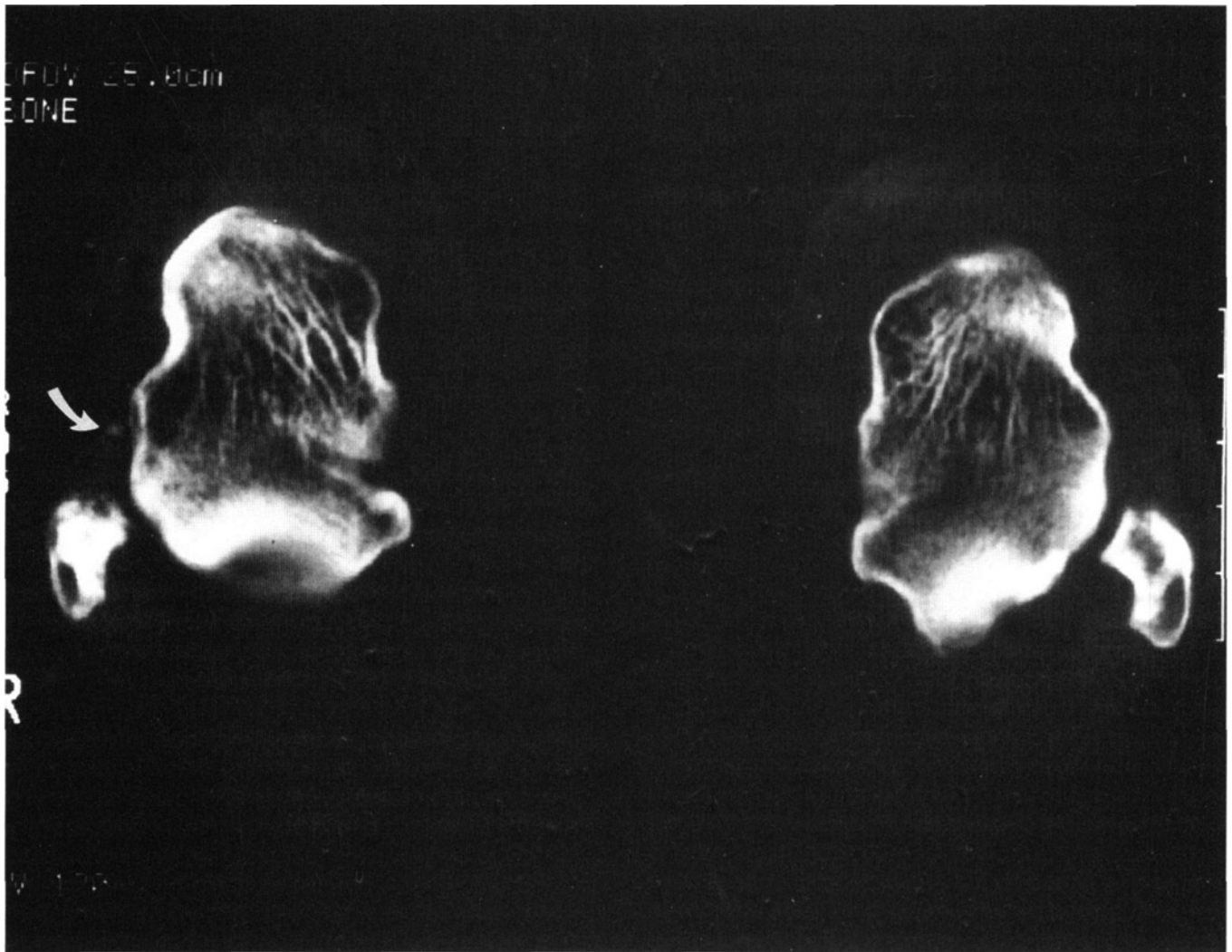


Fig. 2. CT scan with axial slice through the talus at the level of the exostosis.

the ankle and hindfoot, plain radiographs are not always adequate to identify this lesion. When standard plain radiographs are not diagnostic, obtaining a CT scan of the hindfoot in two planes, both perpendicular to the posterior facet of the talus and parallel to the bottom of the foot, is a reliable way to diagnose the excrescent lesion as well as many other occult fractures about the hindfoot.³

It is not clear whether the excrescent lesion represents a traction osteophyte at the insertion of the ATFL, or ossification of an injured ligament. In four of the patients reviewed, there was an osteocartilaginous exostosis contiguous with the anterolateral talus. One patient had an ossicle within the substance of the ligament. Removal of the bone resulted in redundancy of the ATFL in four of five patients. This required an additional modified Broström procedure to regain appropriate ligamentous tension.

Three patients had an additional procedure to excise the distal accessory portion of the AITFL. This is a ligament described by Bassett et al.¹ that can impinge on the anterolateral corner of the talus with dorsiflexion of the ankle. Each of these patients had a distinct area of tenderness over the accessory ligament at physical examination which was different from that over the excrescent lesion. The accessory ligament was removed through the same skin incision as the exostosis. The distal AITFL may become symptomatic after a lateral ligament sprain of the ankle.

As is commonly seen, the involvement of litigation in the perioperative period has a negative influence on outcome. Patients involved in litigation had a deficit in their scores on the AOFAS Ankle-Hindfoot compared with those not so involved. Both patients with legal claims were unable to return to work after their surgery. The remaining three patients returned to full

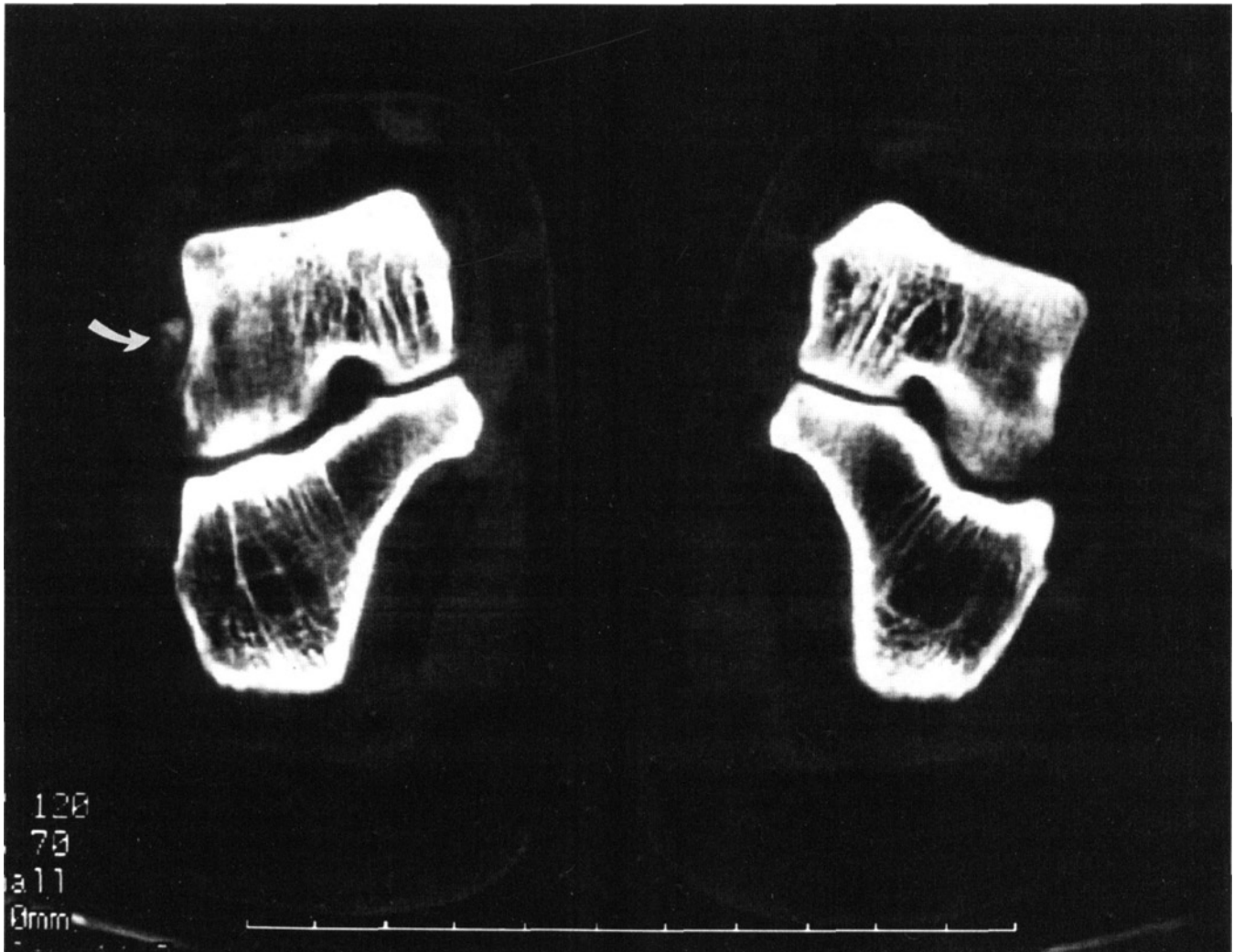


Fig. 3. Semicoronal cut of CT scan showing the large bone exostosis at the insertion of the ATFL.

activities, including employment and recreational activities. The mean score on the AOFAS Ankle-Hindfoot scale for these three patients was 93 of 100 possible points.

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June 8–11, 1996

56th Annual Meeting of Scientific Sessions of the American Diabetes Association. The deadline for abstracts was January 5, 1996. Original data may be accepted for exhibition in abstract, poster, and/or oral presentations. Abstract applications and meeting information may be obtained by contacting: Jill Thompson, American Diabetes Association, 1600 Duke St., Alexandria, VA 22314, Tel: 1-800-232-3472, ext. 212, Fax 703-683-1839.

June 13–15, 1996

The Foot and Ankle in Elite Athletic Competition, Atlanta, GA. Chairmen: Pierce Scranton, M.D., and Donald Baxter, M.D. For more information, contact the American Orthopaedic Foot and Ankle Society, 1-800-235-4855.

June 26–29, 1996

Summer Meeting, American Foot and Ankle Society, Hilton Head, SC.

July 5–6, 1996

21st Annual Meeting of the Japanese Society for Surgery of the Foot, Tokyo, Japan. For more information, contact Haruyasu Yamamoto, M.D., Department of Orthopaedics, Tokyo Medical and Dental University, 1-5-45, Yushima, Bunkyo-ku, Tokyo 113, Japan, Tel: 3-5803-5272, Fax: 3-5803-0142.

April 24–27, 1997

Third Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Barcelona, Spain. Organizer: Prof. A. Navarro, Hospital Vail d'Hebron, Orthopaedics Surgery and Traumatology Department. Organizing Secretary: Grupo Geyseco, Muntaner 77, Barcelona 08011, Spain, Tel: 34 3 453 92 89, Fax: 34 3 453 24 94.

ERRATA

In the Roger A. Mann Award article "Juvenile Hallux Valgus: Etiology and Treatment" by M. J. Coughlin (16:682-697, 1995, November issue), the artist has misrepresented the hallux valgus angle in Figure 1. The hallux valgus angle is the acute angle formed by the longitudinal axes of the first metatarsal and of the proximal phalanx. The artist is representing the hallux valgus angle as the solid obtuse angle of 140, as measured.

In the Author Index of December 1995 issue (16:819-824, 1995), the second entry under D. R. Bohay's name is incorrect. It should read:

Bohay, D. R.

Manoli, A., II: Foot Fellow's Review: Subtalar Joint Dislocations, 16:803

Sanders, Marcus, and Swanson did not contribute to this article.

In the article "Foot Function in Diabetic Patients after Partial Amputation" by Garbalosa et al. (17:43-48, 1996, January issue), co-author James H. Campbell's academic degrees and honors were listed incorrectly. The correct listing is: MBAPO.HDip.PO.

We deeply regret these errors and any inconvenience they may have caused.