Surgical treatment of posteromedial talus dome lesions is frequently necessary for Berndt and Harty grade IV osteochondral defects and nondisplaced osteochondral fragments resistant to conservative modalities. When operative intervention is indicated, the approach and management can be complicated by the location and extent of the injury. The operative technique we advocate allows direct exposure of the lesion and minimizes damage to healthy articular cartilage and surrounding soft tissue. Use of a drill guide assists the surgeon in precisely placing a transmalleolar portal through the tibia for subchondral drilling of osteochondral defects when the lesions are inaccessible through traditional arthroscopic portals. (J Am Podiatr Med Assoc 96(3):260-263, 2006)

Operative management of posteromedial osteochondral lesions of the talus can be a formidable challenge for the surgeon. Throughout the years, a variety of techniques have been used to treat these lesions. Until the early 1980s, open techniques were the mainstay of the surgical treatment of most talus osteochondral defects. Facilitated by instrumentation advances in the past 25 years, arthroscopy of the ankle has become an increasingly common treatment for intra-articular abnormalities. Arthroscopic surgery of the ankle allows direct visualization of intra-articular structures and causes much less surgical trauma than open arthrotomy or malleolar osteotomy. Excision, curettage, and subchondral drilling have proved to be effective in active patients with talus dome defects. Furthermore, an arthroscopic approach significantly reduces morbidity compared with open surgical techniques. Despite recent innovations, certain intra-articular abnormalities, such as posteromedial talus dome lesions, are still difficult to manage arthroscopically owing to anatomical considerations (Fig. 1). Placement of a transmalleolar portal facilitated by a drill guide (MicroVector; Smith & Nephew Inc—Endoscopy Division, Andover, Massachusetts) allows precise drilling of osteochondral defects in this difficult-to-access region of the talus.

Operative Technique

The technique we advocate for the difficult-to-access posteromedial talus dome lesion is an arthroscopic approach followed by establishment of a transmalleolar portal immediately superior to the defect. Arthroscopy is performed with the patient in the supine position using the traditional anteromedial and anterolateral portals. After portals are established for arthroscopy, further distention of the ankle is achieved using a noninvasive distraction device. The posteromedial defect is visualized, and the fragment is removed from the joint (Fig. 2). Synovectomy is performed using the full-radius resector. Care is taken not to disrupt any intact cartilage present on the talus dome when passing instruments over the talus dome.

Next, the drill guide probe is inserted into the anteromedial portal and is placed centrally over the os-
A 0.062 Kirschner wire is inserted percutaneously through the medial malleolus, directed toward the probe tip, which is retracted immediately before contact using the probe lever. The surgeon must be careful not to move the ankle joint at this time to avoid breaking the Kirschner wire, which is now placed securely from the talar dome defect out the medial malleolus. The anterior cruciate ligament guide is removed. A No. 15 blade is used to make a stab incision immediately surrounding the percutaneous 0.062 Kirschner wire. Blunt dissection is performed to the periosteum, which is carefully preserved. A 5.1-mm trephine is placed over the Kirschner wire, and a circular periosteal incision is made around the trephine to allow the periosteum to be used as an anchor by suturing it to the remaining tibial periosteum after treatment of the lesion. The trephine is advanced completely through the tibia, using arthroscopic visualization to prevent passage into the talus (Fig. 5). Periosteal tissue, cortical bone, and medullary bone, as well as the centrally located Kirschner wire, are now removed from the patient and are maintained for placement later in the operation. In this manner, intact cartilage from the medial tibial plafond is unaltered.

Arthroscopy-guided drilling of the defect is performed using a 0.062 Kirschner wire. Once adequate bleeding is seen, the trephined plug of cartilage bone and periosteal tissue is reinserted into the tibial void. 3-0 Vicryl sutures are used to sew periosteal tissues from the plug to the remainder of the tibia (Fig. 6). This adequately maintains placement of the plug.
without the need for further fixation. The arthroscope is removed, all incisions are closed, and distraction is stopped. A dressing consisting of a nonadherent contact layer, 4 x 4-inch gauze, roll gauze, and a posterior mold is applied. The posterior mold is maintained for 2 weeks before the patient is placed in a nonweightbearing below-the-knee cast, which is worn for 4 weeks. Weightbearing to tolerance is allowed thereafter in a cast boot for 2 additional weeks. Physical therapy consists of gentle stretching, range-of-motion, and light resistance exercises.

Discussion

More than 250 years ago, William Hunter, MD, stated, "Ulcerated cartilage is a troublesome thing—once destroyed it is not repaired."25 Multiple studies on the physiology of articular cartilage have since proved this insightful statement to be true. Curettage and subchondral drilling of osteochondral defects to stimulate the body's intrinsic reparative process was initially described by Ray and Coughlin25 in 1947 and is still a plausible treatment modality today. Although subchondral drilling facilitates fibrocartilage growth across the injury site and relieves pain, the degree of actual healing is highly variable.28-30 Furthermore, the reparative substance is less durable and much less smooth than hyaline cartilage.33,35 Although the results of arthroscopically treated transchondral talon dome fractures have been very good in the short term,6,22,25,28,29 long-term fibrocartilage repair of a defect is under scrutiny. In 1999, Baker and Morales9 published a long-term follow-up study that showed good or excellent results in 10 of 12 patients at an average follow-up of 10 years. This study's conclusion lends optimism to the long-term results of subchondral drilling, but many practitioners remain appropriately skeptical. Hyaline cartilage replacement by autologous means is a promising option in more severe osteochondral defects. Intermediate-term studies show favorable results in these procedures. Young, active patients with larger defects may benefit more from mosaicplasty or an osteochondral autograft transfer system procedure (Arthrex Inc, Naples, Florida) than from drilling alone. For these reasons, we use the described treatment modality only for lesions less than 1 cm in diameter.

In general, long-term results of arthroscopic subchondral drilling are similar to those of drilling by means of an open technique.15 Malleolar osteotomy does not seem to affect the results of treatment, but it improves postoperative management and decreases perioperative morbidity.4 In smaller lesions, where drilling is the surgeon's treatment of choice, a procedure with minimal morbidity and a relatively short recovery time, such as the procedure described here, is an enticing option. For these reasons, the operative strategy we advocate can be an attractive possibility for the management of posteromedial talar dome lesions.

References


Additional References


