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## **Percutaneous Harvest of Calcaneal Bone Graft**

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**T**he authors present a technique for harvesting cancellous bone graft from the calcaneus. This technique is useful when a small amount of autogenous cancellous bone is required for foot and ankle surgery.

### **Surgical Technique**

The patient may be placed supine with or without an ipsilateral hip bump, or in the lateral decubitus position so that the lateral body of the calcaneus is exposed. The lateral rearfoot landmarks are identified to include: the superior and inferior poles of the calcaneus, fibula, plantar and posterior heel, peroneal tendons, peroneal trochlea, and the glabrous skin line (1). A 2- to 4-mm stab incision is placed within a resting skin line and perpendicular to the lateral aspect of the calcaneus (Fig 1). The incision is placed inferior to the sural nerve and peroneal tendons, proximal to the peroneal trochlea, and superior to the glabrous skin line. Typically, it is located 2 cm posterior and 3 to 3.5 cm inferior to the distal fibula. Alternately, the incision may be placed approximately 2 cm superior to the plantar surface of

the heel and 2 cm anterior to the posterior aspect of the calcaneus (2). A periosteal elevator is used to bluntly dissect to the lateral calcaneal wall and reflect the periosteum (Fig 2). A 3.5-mm drill bit with a sleeve is inserted perpendicular to the lateral calcaneal wall and used to penetrate the lateral cortical bone (Fig 3). A #3 curette is then inserted into the lateral calcaneal drill hole with the concave side inline with the surgeon's palm. As the surgeon applies pressure and forcefully supinates the wrist, the cutting edge of the curette engages the calcaneus, and the curette gathers cancellous bone. The graft is delivered from the donor site by completing the scooping maneuver and manipulating the curette so that it exits the incision with the concave side up and cradles the cancellous bone (Fig 4). If desired, additional graft is harvested in the same manner by using #4 and #5



**FIGURE 1** Incisional approach on the lateral aspect of calcaneus.

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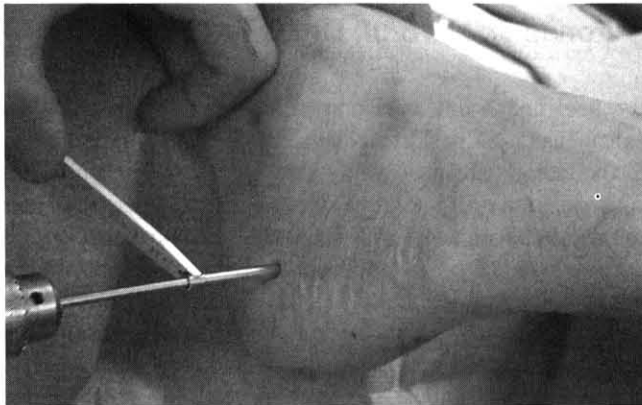
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**FIGURE 2** Use of the elevator to expose lateral cortical wall.



**FIGURE 3** Drill bit perforation of the cortical surface.

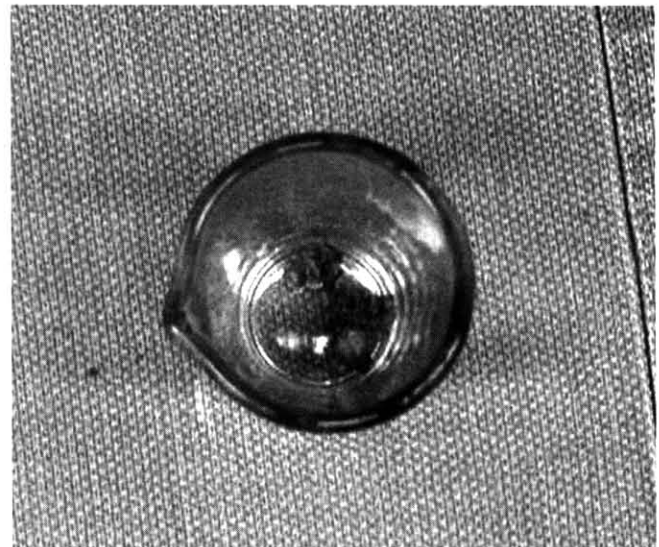
curettes, respectively. Approximately 3 cm<sup>3</sup> to 5 cm<sup>3</sup> of cancellous bone can be harvested from this site (Fig 5). The harvest site is visually inspected, palpated, and irrigated to ensure residual graft is not left within soft tissue. One simple, interrupted nylon suture is utilized to reapproximate the skin, a compressive dressing is applied, and the patient activity is dictated by the primary procedure.

## Discussion

Identified advantages of this technique include: utilization of viable tissue (osteogenic, osteoinductive, and osteoconductive properties) (3–4), fiscal responsibility (avoids the expense of graft substitutes, drain utilization, and removal), time efficiency (approximately 2 to 3 minutes skin to skin), minimal soft tissue trauma, early postoperative weightbearing, decreased wound dehiscence, 1 surgical field (5–8), reduced graft rejection, the rare possibility of host pathogen transfer associated with allograft and xeno-



**FIGURE 4** Curette full of cancellous bone graft.



**FIGURE 5** Volume of cancellous bone from one harvest site.

graft (9–12), and it is a predictable and reliable procedure that is not technically difficult to perform.

Identified disadvantages of the technique include: confines of the incision size can limit the amount of bone harvested, graft is limited to cancellous bone, and there is a possible loss of graft within surrounding soft tissue.

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