A technique for minimally invasive long bone biopsy

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Infrapatellar fat pad: an aid in revision total knee arthroplasty

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In order to obtain a cancellous bone biopsy from the distal tibia using a minimally invasive technique, we suggest the use of the bone graft harvesting system from Acumed (Hillsboro, OR, US). It allows direct and controlled access into the bone with minimal cortical disruption, all via a mini incision. The bone is loaded directly into the flute, thereby reducing the risk of contamination during extraction (Fig 1). The smallest cutting flute measures 6mm in diameter and provides sufficient graft (0.48cc) while leaving an acceptable defect in the bone.

Figure 1 Cancellous bone biopsy from the distal tibia using the bone graft harvesting system

BACKGROUND

Excision of the infrapatellar fat pad during primary total knee arthroplasty helps improve exposure of the knee joint. Achieving good exposure in revision knee arthroplasty surgery can sometimes be challenging owing to formation of thick scar tissue over the patellar tendon when the fat pad has been excised. The scar tissue often has to be carefully excised, which risks damaging/thinning the patellar tendon and compromising the extensor mechanism.

TECHNIQUE

During primary total knee arthroplasty, the fat pad can be retained and good exposure achieved by detaching its synovial attachment from the anterior aspect of the tibia. This keeps the scar tissue separated from the patellar tendon (Figs 1–3) during revision surgery, making the identification and excision of the scar tissue easy.

DISCUSSION

A deformable space filler, the infrapatellar fat pad adapts to the changing contours of the articular surfaces during movement of the knee joint; it also facilitates distribution of synovial fluid, and cushions the patellar ligament and exposed articular surfaces during pressure and direct impact.¹ It has a shared blood supply with the patellar tendon.^{2,3} The synovial lining covering it has a rich capillary supply,⁴ which helps in synovial fluid production and removal of debris.⁵

Retaining the infrapatellar fat pad not only has the above advantages but also allows easy identification and excision of infrapatellar scar tissue, providing better exposure during revision surgery by allowing eversion of the patella without compromising the extensor

Figure 1 Fat pad separating patellar tendon and scar tissue