



A safe and effective method of acquiring morcelised cancellous bone graft from frozen femoral head allograft

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INTRODUCTION

Bone allografts are acquired from tissue donors at post mortem and are available preserved (frozen or freeze dried) and as fresh specimens (2). Fresh specimens induce a significant immune response and are usually reserved for tumour reconstruction and joint resurfacing (3). The antigenicity of allografts is decreased by freezing or freeze-drying (1). However cells are destroyed during this process resulting in the allograft being devoid of any osteogenic activity (4). Fresh frozen allograft does however maintain osteoconductive, osteoinductive and structural properties (4).

Frozen femoral head allograft is commonly used for revision total hip arthroplasty to restore bone stock in order to provide stability for revision components (2). Using a bone mill to morcelise the frozen femoral head allograft can be time consuming and tiring. Using the bone mill results in bone graft containing elements of both cortical and cancellous bone. It is preferable to be able to utilise cancellous bone in isolation. We describe a safe and simple technique for acquiring morcelised cancellous bone graft from frozen femoral head allograft using a patella clamp and an acetabular reamer.

TECHNIQUE

The frozen femoral head allograft is held using a patella clamp (Fig. 1). The patella clamp is usually

used for re-surfacing the patella during total knee arthroplasty. It is therefore designed to grip the patella tightly whilst the cuts are made. As a femoral head has a similar diameter to that of the patella, the patella clamp allows the frozen femoral head allograft to be gripped equally well. An acetabular reamer is then used to core out the cancellous bone from within the frozen femoral head allograft (Fig. 1). This allows rapid provision of morcelised cancellous graft without the use of a bone mill which is time consuming and tiring and results in the production of sub-optimal bone graft.

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Fig. 1. — Frozen femoral head allograft held using a patella clamp whilst an acetabular reamer is used to core out morcellised cancellous bone graft.

REFERENCES

1. **Bos GD, Goldberg VM, Zika J, Heiple KG, Powell AE.** Immune response of rats to frozen bone allografts. *J Bone Joint Surg* 1983 ; 65-A : 239-246.
2. **Gamradt SC, Lieberman JR.** Bone graft for revision hip arthroplasty. *Clin Orthop Relat Res* 2003 ; 417 : 183-194.
3. **Gazdag AR, Lane JM, Glaser D, Forster RA.** Alternatives to autogenous bone graft : Efficacy and indications. *J Am Acad Orthop Surg* 1995 ; 3 : 1-8.
4. **Goldberg VM.** Selection of bone grafts for revision total hip arthroplasty. *Clin Orthop Relat Res* 2000 ; 381 : 68-71.