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[Intervention Review]

Processed versus fresh frozen bone for impaction bone grafting in revision hip arthroplasty

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ABSTRACT

Background

Impaction grafting is a technique to restore bone loss both in the femur and the acetabulum during revision hip arthroplasty surgery. Initially impaction grafting was undertaken using fresh frozen femoral head allografts that were milled to create morselized bone pieces that could be impacted to create a neo-cancellous bone bed prior to cementation of the new implant. Results of medium and long term outcome studies have shown variable results using this technique. Currently both processed and non-processed allograft bone are used and the purpose of this review was to analyse the evidence for both.

Objectives

To determine the clinical effectiveness of processed (freeze dried or irradiated) bone in comparison to fresh frozen (unprocessed) bone.

Search methods

We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE (1985 to 2008), EMBASE (1985 to 2008), CINAHL(1985 to 2008) and the National Research Register. Additional sources were also searched. Handsearching of relevant journals and conference abstracts was also undertaken. Searches were complete to 31 August 2008.

Selection criteria

Randomised controlled trials that compared different types of bone for impaction grafting.

Data collection and analysis

Three hundred and sixty references were identified from the searches. Following detailed eligibility screening, three hundred and fifty nine references did not meet the eligibility criteria. Further details are required about one trial in order to determine it's eligibility.

Main results

No trials were identified that met the criteria for inclusion in the review.



Authors' conclusions

Good quality randomised controlled trials are required in this area so that a surgeon's choice of bone graft can be informed by evidence rather than personal preference.

PLAIN LANGUAGE SUMMARY

Processed versus fresh frozen bone for repairing the bone in revision hip surgery

This summary of a Cochrane review presents what we know from research about the advantages and disadvantages of using fresh frozen bone or processed bone for repairing the hip bone during surgery.

The review shows that no studies were found that compared the clinical utilities of processed versus fresh frozen bone in revision hip surgery.

What is revision hip surgery and what are processed and fresh frozen bone?

The most common problem with hip replacements is that the prosthesis used to replace the original diseased bone begins to loosen over time. This happens because some bone is lost at the hip joint over the years. This usually happens 10 or more years after having the operation. Sometimes another surgery, called a "revision surgery" is needed to remodel the lost bone. During this type of surgery a technique called impaction grafting can be used to replace the lost bone. Impaction grafting involves the pressing of small bone chips into the top of the thigh bone or the cavities either side of the hip bone.

Two types of bone can be used: processed or unprocessed (fresh frozen). The bone comes from donors and is stored and processed in "Tissue Establishments", similar to the way blood is donated and stored. Bone donations are thoroughly screened prior to use. Processing the donated bone prior to use in impaction grafting limits the rare possibility of transmitting infections e.g. HIV or Hepatitis. However there is concern that processed bone is less clinically satisfactory than fresh frozen bone.