Guidelines for the Blood Transfusion Services

21.9: Additional guidelines for skeletal tissue retrieval and processing

http://www.transfusionguidelines.org/red-book/chapter-21/21-9-additional-guidelines-for-skeletal-tissue-retrieval-and-processing

21.9: Additional guidelines for skeletal tissue retrieval and processing

21.9.1: Procurement of surgically removed bone

A system of documentation must be in place to ensure that theatre staff are clearly informed that a particular patient has or has not consented to bone donation. This may be by enclosing a copy of the consent form in the patient's notes, or some equivalent method.

Where bones are retrieved during surgery by theatre staff on behalf of the Tissue Establishment, these staff must follow a protocol provided by the Tissue Establishment in accordance with third party agreements. The removed bone should be placed, as quickly as possible, and whilst in the surgical field, in a sterile container and labelled in a manner to distinguish it from bone authorised for transplant.

Documentation must be completed in theatre, detailing the time of bone retrieval and providing the identity of the staff members carrying out the retrieval and labelling. Details of consumables and reagents coming in direct contact with the procured bone must be recorded (this does not include any items used during the elective surgery).

If the donated bone is not destined for terminal antimicrobial processing, it must be cultured for microbial contamination at the time of collection, using a collection and transport system provided by, or approved by, the Tissue Establishment. Bone sampling must be carried out immediately prior to placing in the container.

Tissue samples for culture should comprise of chips of bone from the cut end of the bone, which should be placed in appropriate transport or culture media. The bone should be finally packaged in a double sterile container.

A secure system utilising barcodes for the identification and linkage of the donation to the donor and samples must be in place.

The bone container, tissue samples and blood samples, if collected at this time, must each be clearly labelled with the barcoded donation numbers and stored at appropriate temperatures until collection.

Alternatively, protocols can be put in place to arrange for the hospital blood bank or other appropriate laboratory, to separate serum from the blood samples and to store it and the donation at –20°C or lower, for collection at a later date. Testing should be performed within 1 month of sampling and any handling or storage of the sample prior to testing must be aligned with the test kit manufacturer's recommendations or suitably validated. Please see Chapters 9 and 20 for further details. Note: If tissues are stored by a hospital for more than 48 hours then the hospital requires to be licensed by the HTA, as storage cannot be covered by a 'third party agreement'.

Bone which is not subject to antimicrobial processing can only be released for use if cultures for aerobic and anaerobic bacteria, and fungi are negative.

Where environmental contaminants are detected on surgically retrieved bone, this bone may be further processed and subjected to terminal sterilisation, e.g. gamma irradiation (>1.5 megarads = >15 kGy) (see section 21.5.4).

21.9.2: Procurement of skeletal tissues from deceased donors

If iliac crest is to be retrieved, it should be taken last in case the bowel is perforated and should be stored in a separate container. Where osteochondral allografts are to be retrieved, care should be taken to avoid drying of articular surfaces. It is best to retrieve the joint entirely and to dissect it later in the laboratory.

21.9.3: Processing of skeletal tissues

Cycles of thawing and freezing must be minimised. Skeletal tissues should not be heated above 60°C and tendons and costal cartilage should not be warmed above 30°C.

Cryopreservation of allografts must begin within 48 hours of procurement. These allografts must not be exposed to gamma irradiation and must therefore be procured and processed aseptically.