INFORMATION FOR YOU:

Bone Allografts

What is the risk of disease transmission with bone allografts?

An allograft is a graft between genetically dissimilar members of the same species. An allograft may be obtained from living donors who are having bone removed during surgery or cadaveric donors. Allograft material has been used for more than 30 years in periodontal therapy. There are several types of allografts:

1. Fresh; fresh-frozen allograft - THIS MATERIAL IS NOT USED IN THIS OFFICE
2. Freeze-dried bone allograft (FDBA)
3. Demineralized freeze-dried bone allograft (DFDBA)

Both FDBA and DFDBA materials are widely used in periodontal therapy and there are no reports of disease transmission during the 30-year history of using freeze-dried bone allografts. However, there have been four cases of human immunodeficiency virus (HIV) infection following procedures using fresh-frozen bone allografts. These cases involved surgeries of the spine, hip, and knee. It is important to note, however, that fresh-frozen and fresh allografts are not typically used in periodontal therapy. Also, when using FDBA and DFDBA, the delay in processing ensures adequate time for testing for potential pathogens.

The bone bank we use adheres to the following guidelines: Most bone banks adhere to the guidelines of the American Association of Tissue Banks (AATB) with respect to procurement, processing, and sterilization of bone grafts. The AATB advocates excluding collection of bone under the following circumstances:

1. Donors from high-risk groups, as determined by medical testing and behavioral risk assessments.
2. Donors test positive for HIV antibody by ELISA.
3. Autopsy of donor reveals occult disease.
4. Donor bone tests positive for bacterial contamination.
5. Donor and bone test positive for hepatitis B surface antigen (HbsAG) or hepatitis C virus (HCV).

6. Donor tests positive for syphilis.

Using donor screening recommendations, it has been calculated that the chance of obtaining a bone graft from an HIV-infected donor (e.g., one who failed to be excluded by one of the exclusionary techniques) is one in 1.67 million [Buck 1989]. Furthermore, the probability that DFDBA might contain HIV has been calculated to be one in 2.8 billion [Russo 1995]. Therefore, the established exclusionary criteria combined with recommended processing procedures (harvesting in a sterile manner, repeated washings, immersion in ethanol, freezing in liquid nitrogen, freeze-drying, demineralization, and vacuum sealing) render DFDBA and FDBA grafts safe for human implantation.

Selected References and Additional Resources


CDC. Epidemiologic notes and reports transmission of HIV through bone transplantation: Case report and public health recommendations. MMWR 1988;37:597–599.


Russo R, Scarborough N. Inactivation of viruses in demineralized bone matrix. FDA workshop on tissue transplantation and reproductive tissue, June 20, 1995, Bethesda, MD.