┃ 초청강연

SAFETY of Human Allograft Transplantation (Tissue Banking) in the United States

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The safety of tissue in the United States may be evaluated by reviewing its history in terms of numbers versus safety related events. According to annual surveys of its members performed by the American Association of Tissue Banks (AATB), 1,279,000 musculoskeletal /soft tissue allografts and 18,000 square feet of skin were distributed in 2003; the most recent year for which data was collected. Since 1999 through 2003, AATB accredited banks have distributed over 4 million allografts. It is estimated that 2 million allografts were distributed in 2005. A recent review of disease transmission by Eastland and Strong in 2003* found that bacterial transmission was rarely reported, and that rates were similar to use of autografts or other major orthopedic surgeries without allografts. This may indicate that many or most bacterial infections were not of the donor to recipient transmission variety. No fungal infections were reported with musculoskeletal allograft transplantation, nor were there any reports of malignancy transmission attributed to musculoskeletal tissue. Most of the cases of donor to recipient transmission found in the literature were due to viral transmission.

Perhaps viral transmissions receive a higher level of scrutiny and reporting due to their relative rarity and seriousness compared to the number and potential threat of bacterial infections found in the operating arena. It is also much easier to show the donor to recipient connection with viruses.

Viruses that have been documented to have donor to recipient transmission are hepatitis C virus, human immunodeficiency virus type 1 (HIV1), and human T-lymphotropic virus type 1 (HTLV1). There is no known transmission of hepatitis B virus. The combined total of such reports is less than a dozen.

There has been a fatality in 2001 due to a bacterial infection (Clostridium sordelli). Resulting from this death (perhaps the first focused attempt to look at bacterial transmission due to allograft transplantation of musculoskeletal tissue), reviews of potential donor to recipient bacterial transmission caused by musculoskeletal allografts initiated by the U.S. Centers for Disease Control (CDC)** documented two dozen cases which may have been caused by donor to recipient transmission. Ted Eastland, M.D., in his review, determined that less than six were classified as "probable" for donor to recipient transmission.

The reasons for this excellent (if not unbelievable) safety record are due to a combination of factors working together with each part contributing to the historical safety record allograft transplantation has had. I present these factors not in order of importance because I believe that all contribute to the safety record and none should be removed:

Nature of Musculoskeletal Allografts Use of Sterilization Steps

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Standard Setting Organizations Donation is Voluntary Medical and social behavior screening Autopsy Results Medical Director Review Recovery Time and Recovery Cultures Tracking of Tissue to Recipient

* Infectious Disease Transmission through Tissue Transplantation by Ted Eastland and D. Michael Strong in Advances in Tissue Banking Vol. 7 2003

** Centers for Disease Control (2002a). Update: Allograft-associated bacterial infections-United States, 2002, MMWR 51 (March 15), 207-210