

Autologous Tissue Storage Program

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Objective: To increase awareness of the need for autologous tissue storage as part of successful treatment of traumatic brain injury and describe a successful program.

Background: Management of traumatic brain injury (TBI) frequently requires decompressive craniotomy with removal of a skull bone flap to relieve the cerebral edema. Resolution of this edema, permits replacement of the skull flap. Proper handling and storage of the skull flap must be undertaken to preserve and identify this important autologous tissue for subsequent reimplantation. A successful program has been established by the Mid South Tissue Bank (MST) of Memphis, Tennessee which offers a "Structured Autologous Tissue Program" to 43 Local Hospitals for trauma and surgical patients. All autologous donor tissue sent to MST from an institution or outside facility is received, stored, handled, and returned in accordance with the American Association of Tissue Banks (AATB), and Food and Drug Administration (FDA) standards for tissue banking. We report on the utilization of this program at The Regional Medical Center at Memphis (The Med), in providing this service to neurosurgical patients.

Summary of Methods/Implementation: MST provides donor hospitals with a unique autologous tissue storage program. MST supplies sterile materials needed to package the autologous tissue and instructions for whom to call to arrange for storage. Hospital personnel are trained to properly handle and package autologous tissues via in service programs conducted by MST. MST arranges for the pick up and transfer of the tissue to the MST facility assigning the tissue a unique identifying number. Tissue is received, recorded and stored in an MST freezer. Tissue inventory is reviewed each quarter and stored for a period of 5 years. Each year during the storage period, a letter is sent to the physician who initiated the storage request requesting an update regarding the disposition of this tissue. MST provides for irradiation of the autologous tissue. This process, however, takes up to 4 weeks and scheduled implantation dates must be considered to accommodate this process.

The Med is the regional trauma center located in Memphis TN. A large volume of TBI patients are treated each year and many require decompressive craniotomies. Surgeons and operating room staff were educated regarding these services and through coordination with tissue bank employees procedures followed to identify and store the autologous tissue and assure availability for reimplantation.

Outcomes: During the past 12 months, 58 patients treated with decompressive craniotomy at The Med had their bone flaps stored in the MST program. 39 flaps were successfully reimplanted. No adverse events related to the storage or reimplantation were reported.

Recommendations: Storage of autologous skull flaps from decompressive craniotomies is a unique, important service. A successful tissue program permits neurosurgeons to safely and reliably store and implant the patient's own bone that was removed as part of this life-saving procedure. Development of autologous programs should be encouraged at all hospitals engaged in any volume of management of closed head injuries. Education and coordination of services is required for successful program.