E1 The First Cut Is the Deepest

Tyrish Y. Page, MA, Sharing Hope SC, Charleston, SC 29405; Jeff Thomas, MBA*, Sharing Hope SC, Charleston, SC 29405; Angelina I. Phillips, MD*, MUSC, Charleston, SC 29425*

Learning Overview: After attending this presentation, attendees will understand that tissue procurement can preclude forensic autopsy without repercussions to the death investigation.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by highlighting the need to establish protocols between coroner/medical examiners and organ procurement organizations for pre- and post-autopsy tissue procurements.

Organ and Tissue Procurement Organizations' (O/TPOs) optimal goal is to maximize the "gift of life." The "gift of life" is offering hope and changing lives through organ, eye, and tissue donation. Tissue procurement must begin within 24 hours of the patient reaching asystole. This process may collide with the death investigation being conducted by the Medical Examiner and/or Coroner (ME/C), especially if an autopsy is necessary. The result has become a struggle about access to the body that pitted the transplant community's promise of "the gift of life" against the medical examiner's mandate to determine the cause of death in forensic case.[1] In 2017, 182 potential tissue cases were declined by coroners in South Carolina. These cases included donors who were eligible for either pre- or post-autopsy tissue procurement. Some ME/Cs deny procurement of organs and/or tissues for transplantation due to concerns of not being able to fulfill their legal mandate to determine the cause and manner of death, and to ensure that appropriate evidence is collected. With appropriate communication and cooperation between ME/Cs and O/TPOs, this should not be the case in the vast majority of situations.[2]

A referral for a 21-month-old female was called into Sharing Hope SC post-cardiac arrest from choking on a chewy candy, and the patient rapidly declined to death after admission. Organ procurement was unable to proceed due to the rapid decline, but the tissue procurement team immediately contacted the coroner for possible approval to procure. The coroner spoke with the family and medical examiner prior to giving authorization to procure heart valves. The coroner declined to have an autopsy but requested photos and a cardiac pathology report upon completion. During tissue procurement, the technician noted pulmonary edema and the heart was recovered for tissue processing. A detailed report provided by the processor's pathology laboratory examined the decedent's heart, myocardial thickness, coronary arteries, and valves and noted everything to be unremarkable. Several months later, the cause of death was amended due to the relaunching of the death investigation. The pre-autopsy photos and tissue procurement reports were momentous to the investigative team. The body was exhumed, an autopsy was completed, and the cause was changed to homicide.

Examining the heart during autopsy can be essential to the medical examiner when determining cause of death. Many O/TPOs and C/MEs have created and collaborated on methods to examine the heart while not disrupting the procurement of the allograft for transplantation. The result is that the medical examiner is able to determine and document the cause of sudden death, and heart valves that would previously have been denied are made available for transplantation.[3] Size-critical heart valves or tissue grafts are frequently requested by surgeons for patients that suffer from congenital defects of the pulmonary or aortic valve. Heart valves, especially pediatric heart valves, are in critical need. Nonetheless, the availability of homografts, especially in the smallest ranges, varies due to the limited donor pool.[4] This case study will highlight the need for pre-autopsy tissue, establish a protocol that MEs can visually examine the heart valve within a sterile environment and preserve evidence during pre-autopsy tissue procurements, and address ways the C/ME and O/TPO can work together to maximize the "gift of life" as well as be the voice for those who can no longer speak.

Reference(s):

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3. Wetli, C.V., Kolovich, R.M., & Dinhofer, L. (2002). Modified Cardiectomy. *The American Journal of Forensic Medicine and Pathology*, 23(2), 137-141.
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Tissue Procurement, Coroner/Medical Examiner, Modified Cardioectomy