H114 Bionic Remains: Positive Identifications From Surgical Implants

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After attending this presentation, attendees should appreciate the forensic potential of surgical implants in making positive identifications. The attendees will become aware of the forensic and future bioarchaeological implications of the information presented, the types of procedures that require surgical implants, and a novel method for rapid
identification of the implants and their uses.

This research will benefit the forensic community by facilitating positive identifications of victims who possess surgical implants. Additionally, this research may provide future bioarchaeologists a valuable single-source reference on twentieth and twenty-first century medical procedures.

Surgeries as treatments and preventative medicine have been around almost as long as man has had ailments. From trepanation in prehistoric times to complex neurosurgery in modern times, surgeries of all sorts (preventative, treatment, or cosmetic) have left their mark on human skeletal remains for millennia. Increasingly, surgeons are relying upon devices—from simple to electronically or mechanically driven—to replace or enhance organs and organ systems. Medical implants are now used in surgeries involving all major organ systems and are a frequent find in decomposed, burned and skeletal remains. Their significance in life as a medical aide is transformed in death to a tool for identification. This paper proposes to provide a single-source compilation (i.e., printed and/or online reference manual) of common surgical implants along with their forensic significance for identification.

The presence of an implant of any type tells the investigator that medical records exist on the questioned remains. The presence of certain types of remains (e.g., testicular implants, breast implants, fallopian tube rings or clips, etc.) may provide an indication of the sex of the questioned remains, or, in some cases, the preferred sex of the questioned remains. A general indication of age may be revealed by the presence of implants such as porcine verses mechanical heart valves, since porcine heart valves are at risk of calcification and breakdown and are not commonly placed in the young. The postmortem interval (PMI) may be garnered from the style of the implant as the manufacturer frequently modifies or redesigns them, varies manufacturing materials through time as research dictates, or the implant may contain power sources with known limits. A baseline for time since death (TSD) can be determined through identification of the implant and when it was manufactured. Finally, the morphological uniqueness of the implant may provide a means of specific identification from comparisons of antemortem and postmortem radiographs.

When analyzing forensic remains to determine identity, specific information on an implant is a valuable source of information, but is often problematic and time consuming to find. Although many implants possess manufacturer names and logos, contact information for the manufacturer may not be readily obtainable and may require library or computer searches. The purpose of this paper is to provide a convenient source of information on implants commonly used in a variety of medical specialties, including orthopedics and sports medicine, cardiothoracic surgery, bariatric surgery, and cosmetic surgery. Specifically, under each specialty the name and representative photographs or illustrations will be provided of the more common implant, a description of their function, the manufacturers' logos when present, contact information for the manufacturer, whether lot numbers are present on the device, and any known forensic value.

Forensic Anthropology, Surgical Implants, Positive Identification

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