



F22 Examination of Dental Remains From a 19th-Century Burial Site

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The goal of this presentation is to describe dental restorations and prostheses recovered from a burial site dating from the 19th-century.

This presentation will impact the forensic science community by providing a historical perspective of dental practices and materials associated with this time period.

In the year 1851, the Erie County Almshouse was constructed on a 154-acre property. The building functioned at first as a poorhouse and later expanded to include a hospital and an insane asylum. In 1909, the property was sold to the University of Buffalo.

Those who perished while at the poorhouse were buried beginning at the eastern edge of the property, with later burials extending westward. When the University acquired the property, many of the graves were unmarked. They were also not relocated.

Although isolated remains had been found during minor construction over the years, it was not until a major infrastructure improvement project in 2012 that the possible extent of the cemetery started to become apparent. In the course of a salvage excavation, 480 burial locations were discovered, of which 383 contained human remains. It is estimated that there may be 3,000-5,000 remaining unexcavated gravesites within the property boundaries.

In a number of cases, dental restorative materials and prosthesis were found with the skeletal remains. Portable X-Ray Fluorescence (XRF) verified the composition of the metals present. The principal advantage of this technique is that it is non-destructive and rapid. This allowed verification of dental amalgam, gold foil restorations, platinum crowns, gold crowns, and precious metal bridgework.

An inspection of the metal prostheses suggested that the crowns were fashioned by a process called swaging. In this process, an impression of the patient's teeth would have been taken and a model made. The crowns would then be adapted to the teeth on the model by hammering the metal to fit. Both gold and platinum prostheses were present. These metals are malleable, making them desirable to use in this process, though platinum is more ductile than gold and would have been easier to work with. In the instance of fixed bridgework seen, the crowns were connected by solder.

Vulcanite dentures, complete and partial, were also discovered. The vulcanization process was discovered earlier in the 19th century; addition of sulfur and heat to natural rubber produced material capable of maintaining a precise but flexible shape. One of the first applications of this material was for denture bases. When cured, the material was dark orange in color. In order to make the material more esthetic, pink porcelain was adapted around the teeth to more naturally simulate gingival tissue. The teeth associated with these prostheses were made of white porcelain. Aspects of the dentures recovered indicated that the practitioners at the time were capable of precise work.

While the availability of vulcanite dentures became widespread and affordable during the time period of the burials, the use of precious metals in dental applications must have been expensive for the patient. This burial site continues to reveal a fascinating picture of the life and times of those who passed through the doors of the Erie County Almshouse.

Though the Almshouse has been gone for more than 100 years, the main building of the original hospital is currently still in use. It has been modified and is now known as Hayes Hall and houses the State University of New York (SUNY) at Buffalo School of Architecture.

Forensic Science, Forensic Odontology, Dental Materials