

G37 An Analysis of a Dental Prosthesis Technique in Korean War Casualties

Seoeun Oh*, Ministry of National Defense Agency, Seoul 06984, SOUTH KOREA; Hyejin Lee, Ministry of National Defense Agency, Seoul 06984, SOUTH KOREA; Seokdong Oh, Ministry of National Defense Agency, Seoul 06984, SOUTH KOREA; Kyoungmin Koh, Ministry of National Defense Agency, Seoul 06984, SOUTH KOREA; Yu Ryang Jang, PhD, MAKRI, Seoul 156-080, SOUTH KOREA

Learning Overview: After attending this presentation, attendees will understand the differences in materials used in dental prosthetic manufacture between Korean and Chinese dentistry in the 1950s.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by employing an unusual attempt to analyze the materials used in dental prosthesis through Laser-Induced Breakdown Spectroscopy (LIBS).

During three-year Korean War (1950-1953), numerous soldiers were killed or went missing. In 2007, the Korean government established a special organization, the Ministry of National Defense Agency for KIA (Killed in Action) Recovery and Identification (MAKRI), to recover and identify the remains of unaccounted-for casualties. However, due to the fact that most of casualties are of Asian origin, determining the nationality based on the DNA haplotype is sometimes very challenging. Therefore, various studies have been attempted to overcome those limitations. Analysis of prosthetic materials by nation is one of those efforts. In addition, due to the lack of previous studies, it was important to compare the results and accumulate a database.

The 35 dental remains with dental prosthesis, determined to be those of Korean and Chinese service members from the Korean War collected at the MAKRI Central Identification Laboratory (CIL) during the period from 2015 to June 2019, were assessed. All samples were analyzed using LIBS equipment to contrast atomic emission peak results by nation and prosthesis type.

In the results of LIBS, it was observed that metal crowns confirmed specific atomic emissions, such as Al, Mg, Zn, Fe, and Cu, in Korean and Chinese prosthesis. All silver-colored crowns were confirmed to contain specific atomic emissions, such as Ni, Al, Cu, Ag, Cu. Furthermore, it was observed that there were similar spectral peak values on Ni, Au and Ag. However, silver-colored crowns were not observed among the Chinese dental remains. It seems that this dental technique is not shared in both countries. This study indicates that the results of dental prosthesis comparison has considerable utility in cases of the same Asian ancestry in which is difficult to estimate the ancestry.

In conclusion, Korea's dental technique was very similar to the Chinese dental technique, such as full-coverage crowns and full-coverage crowns with a cantilever pontic, but was not similar as regards silver-colored crowns at the time of Korean War.

Korean War, Nationality Determination, Dental Restoration