A64 A Comparative Analysis of Nasal Profile Estimation Methods for Facial Reconstruction

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Learning Overview: After attending this presentation, attendees will possess information of methods to investigate the nasal profile for enhancing the accuracy of facial reconstruction. In addition, attendees will better understand the importance of basal research for population-specific facial reconstruction.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing comparative research of the nasal profile for enhancing the accuracy of facial reconstruction.

The nose is an important facial feature that significantly affects the outcome of facial reconstruction and its recognition. For the 3D measurement analysis, the skin and bone of the nasal area were remodeled utilizing Computed Tomography (CT) images. Then the methods and results of previous facial reconstruction studies on the nasal aperture area with Korean adult samples were compared. One hundred CT scans of Korean adults were selected for this study. The subjects were patients who undertook craniofacial CT scans for clinical purposes at the Department of Radiology at St. Mary's Hospital in Seoul, South Korea. Patients with a history of head trauma, severe deformities, or asymmetry were excluded from this study. 3D models of the cranium and face were remodeled and measured by Mimics® software, version 14.1. Six studies were selected to compare various sample populations and materials for nasal profile reconstruction.[1-6]

The measurement system for 3D models was programmed with referring landmarks from previous studies to facilitate comparison process. In cases of referring measurements and landmarks of lateral cephalograms, the landmarks were positioned at the profile view of each 3D model. The paired *t*-test of corresponding measurement with previous studies showed there was a significant difference between actually measured values that are measured in the same manner as previous studies and predicted values that are calculated from regression equations of previous studies ($p<0.05$). As the results have shown, differences of research material, of whether to use cephalogram or 3D models, and a measurement method that involves 2D measurement and 3D measurement was an important factor in deciding its accuracy for nasal profile reconstruction. Moreover ethnic-specific differences in the field of facial reconstruction should be taken into considerable consideration since studies made quite different predictions.

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Nasal Profile, Comparative Analysis, Facial Reconstruction

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