



Physical Anthropology Section – 2008

H66 In Vivo Facial Tissue Depth Study of Adult Chinese Americans in New York City

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After attending this presentation, attendees will understand the basic principles of facial soft tissue depth studies, differences between facial soft tissue depth studies by populations, anatomical differences between Chinese-Americans and other American populations, and the elements and applications of forensic facial reconstructions.

This presentation will impact the forensic community by providing key information to help identify remains from the underrepresented Chinese-American population in the American forensic community.

The Chinese population has increased dramatically in the urban areas of the United States in the last five years. Despite this increase in population size, facial tissue depth information is limited for the population. As a result, when forensic facial reconstructions are created for Chinese individuals, datasets for other Mongoloid populations must be used. Previous studies have shown that different racial populations have varying facial tissue depth and this practice can result in inaccurate reconstructions that diminish the possibility of a positive identification. It is detrimental that each racial population has their own facial tissue depth dataset.

Forensic facial reconstructions are created by forensic artists as a means of identification of skeletal remains when other conventional methods to produce an identification are unsuccessful. Traditional American methods of creating three dimensional facial reconstructions require the use of facial tissue depth datasets. Facial tissue depth datasets comprise of measurements collected at various facial landmarks. The number of landmarks used in data collection and facial reconstructions are at the forensic artist's discretion. Some researchers obtain measurements from as few as 14 to as many as 54 facial landmarks for their datasets. Rubber markers are placed at the landmarks and clay is placed around the stoppers and slowly built up to resemble a human face. Soft tissue areas such as the nose and the ears are open to artistic interpretation.

Various methods have been employed to collect facial tissue depth data. The oldest and most commonly used method for facial tissue depth data is the needle puncture method. Sooted needles are inserted into facial landmarks on cadaver subjects and the portion of the needles without soot is measured. Variations of the sooted needle method, including the needle and rubber stopper method, were used to collect facial tissue depth measurements. In recent years, ultrasound, CT, and MRI techniques have replaced the more traditional needle methods. In addition to these new techniques, cadaver studies were abandoned in favor of using live subjects. The use of live subjects for data collection produces accurate measurements and subsequently, more exact facial reconstructions. In vivo datasets are the measurements of living individual whereas cadaver datasets try to mimic living individuals using measurements taken in the prone position and from recently deceased individuals.

The subjects of these facial tissue depth studies range in weight, body mass index, and age. The first studies divided the subjects into three weight categories: emaciated, normal, and overweight individuals. Emaciated individuals have the thinnest facial tissue whereas overweight individuals have the thickest facial tissue. The weight categories are divided using the body mass index. Age categories are divided at the researcher's discretion, usually spanning ten years.

The authors will present an in vivo adult New York City Chinese-American facial tissue depth dataset. The dataset consists of measurements from 101 individuals and 67 of the individuals are of normal weight. Normal weight is identified as individuals having a BMI of 19-25, as designated by the Center for Disease Control. The individuals range from ages 18-90. The results of the study show noticeable differences between the Chinese individuals and those of other racial populations.

Forensic Facial Reconstructions, Chinese Americans, Facial Tissue Depth