

A Web-based, Searchable Database of Orthodontic Case Files for Patient Care, Education, and Research

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Abstract and Objective

In 2005, the Maxwell Museum of Anthropology accepted a donation of 5650 unique orthodontic patient records (treatment records, dental X-rays, dental casts, intra-oral and full facial photographs) from an orthodontist's practice in Albuquerque, New Mexico from 1972 through 1999. This collection includes large samples of Hispanic and Native American populations, two groups not often encountered in orthodontic training in the United States or elsewhere. While investigators can use the collection on site at the Museum for approved research, a Web-based, de-identified version of the collection is being developed with input from orthodontics students and faculty from multiple institutions, so the collection can be freely accessed the world over. The database's unique design allows users to search for cases with particular characteristics of interest (e.g., patient ancestry, extraction patterns, diagnoses, and cephalometric parameters) and then review the sequenced intra-oral and X-ray images to observe variations of outcomes from treatments applied to patients with racial and other factors not often encountered in training or practice before.

Keywords

Dentistry, Orthodontics, Medical Informatics Applications, Internet, Anthropology.

Description of the Scientific Demonstration

This demonstration will illustrate how the database's¹ novel design allows for a substantial portion of the collection to be freely accessed via the Web for a variety of clinical and research purposes. At the conclusion of this project the database will contain approximately 400,000 images (pre-, intra-, and post-treatment, intra-oral images, pre-, intra- and post-

treatment X-ray images in both lateral and panaview forms.) The collection also contains records of approximately 600 sibling pairs and several multi-generational families.

Statement of Innovation

This database is unique in that 1) it represents the population of one of America's most diverse cities over a 30-year time period, 2) is from a private practice and is completely de-identified, 3) is searchable on diagnoses, treatment, and outcome variables including cephalometric measurements, all on a population much more diverse that is typically encountered in orthodontic training. The database is also designed to accommodate multiple ancestry estimations, at multiple times, and by multiple raters in an attempt to define these variables in the most scientifically rigorous manner possible.

Conclusions

This database allows orthodontics students the world over to freely access a range of ethnic variation that the majority of students are currently unlikely to encounter during training. Practicing orthodontists can use this tool to incorporate normal population variation into their treatment plans, as well as patients' positive perceptions of facial features common in their own self-identified group. In addition to clinical benefits, this database also supports research in a variety of other domains including anthropology, forensics, and biomedical informatics.

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¹ <http://hscwebdev.unm.edu/programs/ocfs/>