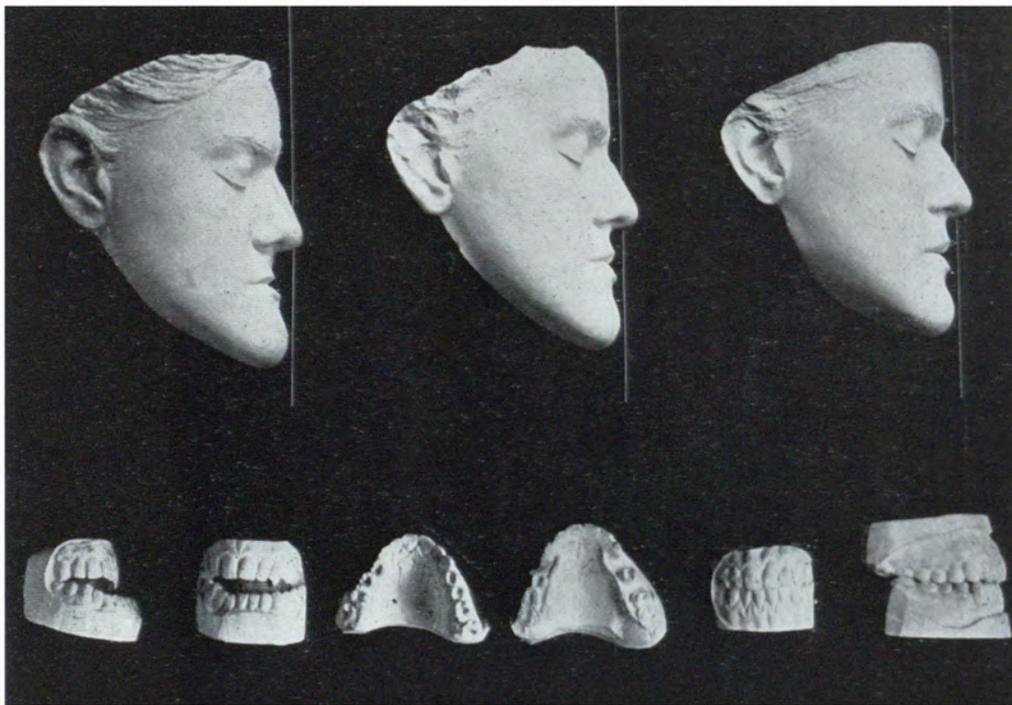


Lines of Disharmony

Skeletal Malocclusions and Aesthetics in the Development of American Orthodontic Practice



OHSU Historical Collections & Archives
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This exhibit examines the development of orthodontics and oral surgery in the United States, specifically the corrective practices for Class I, Class II and Class III skeletal malocclusions, using rare books, artifacts, and archival materials from OHSU Historical Collections & Archives. In addition, the exhibit highlights the psychosocial stigma patients faced in regards to beauty standards and descriptions within early medical literature.

Skeletal malocclusions occur when the mandible (lower jaw) and maxilla (upper jaw) do not align when closed. A Class I malocclusion is the least severe – the molars of the occlusion can be properly aligned, but the other teeth are over-erupted, crowded or unevenly spaced. A Class I can also manifest in a cross bite or a bimaxillary protrusion, the forward projection of the maxilla and mandible. Treatments for a Class I malocclusion can include tooth extraction, anchorage and surgical palatal expansion. A skeletal Class II malocclusion, also known as maxillary retrognathia, is caused by the recession of the mandible, which creates an overbite. A skeletal Class III malocclusion, or mandibular prognathism, occurs when the mandible protrudes past the maxillary teeth, which manifests as an under-bite. Bone removal, palatal expansion and orthodontic preparatory work are included in correction of Class II and Class III.

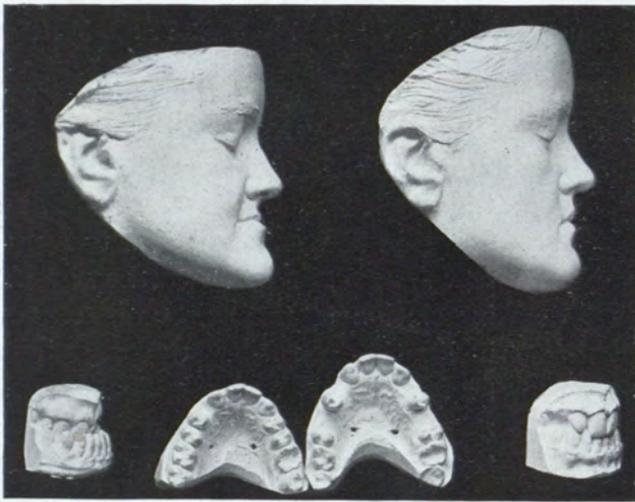
Orthodontia, the treatment of irregularities in teeth and jaw, was the first concentration created within the dentistry profession. In the latter part of the 19th century, the introduction of electricity and local anesthesia spurred the evolution of oral surgical procedures. In conjunction with orthodontic treatment, orthognathic surgery is an essential form of correction for abnormalities related primarily to jaw structure rather than teeth placement. Orthognathic surgery is an operative procedure involving the manipulation of the dentofacial skeleton to restore functional properties.



Norman W. Kingsley (1825 – 1896), known best as a painter and sculptor, was one of the first orthodontic pioneers. His emphasis was primarily on correcting the alignment of teeth by removing the back molars and pulling the anterior teeth back, and experimentation with the treatment of cleft palates. Kingsley published one of the first books related to orthodontics, *A Treatise on Oral Deformities* (1880), which detailed diagnosis, causes, and treatment planning. The second chapter weighs the idea that oral irregularities could possibly correlate with “idiocy” and the “jaws of cretins.” Kingsley sets the stage for stigma by frequently comparing the “higher” and “lower” orders of society in relation to malocclusions.

Edward H. Angle (1855-1930), known as the “Father of Modern Orthodontics,” advocated for orthodontics to be separated from dentistry and recognized as its own specialty. Angle was the first to establish a classification system for malocclusions based on the alignment and position of the indentation - known as the buccal groove - of the maxillary first molar with the mandibular first molar. This classification was groundbreaking and has been referenced in the diagnosis of malocclusions throughout the century. But Angle did not consider that the first permanent molars are not always fixed points in the skull and he did not account for individual tooth malposition or differentiate between dental and skeletal cases.

In his text *Malocclusion of the Teeth and Fractures of the Maxillae* (6th ed.), Angle dedicates a chapter to the objective of correcting “one of the evil effects of malocclusion”: the “ugliness,” “inharmony,” and “deformity” of the face. Angle expounds on the ideal of Apollo Belvedere, a Greco-Roman marble sculpture located in Vatican City, as the ideal that many artists of the classical era replicated.

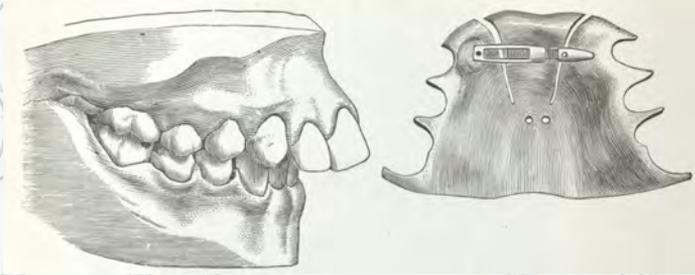
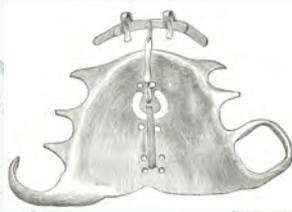
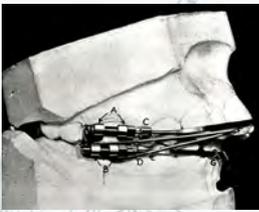


Like the artists of antiquity, Angle believed that orthodontists could use the law of normal occlusion as their guide. And while acknowledging that orthodontists must put the functionality of a corrected occlusion at the highest level of importance, Angle states that patients wouldn't reach out for correction if it weren't for the way their faces appeared. Thus, orthodontists were to answer the call of duty:

Our opportunities for benefiting humanity are very great in this field, far exceeding those offered by any other branch of dental science, for patients with facial lines so distorted as sometimes to be a marked deformity and a source of constant humiliation to themselves and their friends may now be treated as to bring about a complete transformation of the facial expression, even to the establishment of lines of beauty.

- Angle, E. (1900). *Treatment of malocclusion of the teeth and fractures of the maxillæ: Angle's system*. Philadelphia: The S.S. White Manufacturing Company, pg. 61.

Calvin S. Case (1847 – 1923) pioneered the use of rubber elastics and light wires for the bodily movement of teeth, and wrote *A Practical Treatise on the Technics and Principles of Dental Orthopedia and Prosthetic Correction of Cleft Palate* (1908). Case was an admirer of Angle, but the two professionals tooth extraction as a means of treatment for malocclusions. While Angle believed that no teeth should be extracted, but rather manipulated by force appliances such as braces and headgear, Case thought that tooth extraction could be necessary in order to make room for movement. This controversy lasted for many years, but professional consensus eventually settled on evaluating the need for tooth extraction on a case-by-case basis.



In a similar vein to many of his contemporaries, Case veers into scientific racism in *A Practical Treatise* (1908) in comparing prognathism, normal occlusions, and perceived cranial features of skull of different races with those of other species. Case also waxes poetic on the aesthetics of normal versus irregular occlusion:

The teeth in normal occlusion may not be irregular in their relations to each other; but what is irregularity of the teeth, broadly and truly speaking, if it is not malposition of the teeth in relation to the facially esthetic, as well as the anatomical, and expressed by a dental marring or deforming of that perfect type which, from the birth of classic art, has appealed to the esthetic sense?

- Case, C. (1908). *A practical treatise on the technics and principles of dental orthopedia*. Chicago: C.S. Case Company, pg. 133.

As with orthodontia, there have been several individuals designated “Father of Oral Surgery” title. Simon P. Hullihen (1810 – 1857) was the first known oral surgeon to conduct orthognathic surgery to correct a jaw deformity during the years before modern anesthesia . His most famous case reported was the surgical correction of an elongated mandible using a method called bilateral sagittal split osteotomy . This method involved cutting the jaw bone bilaterally to move it either forward or backward for facial alignment. Oral surgery, in the years before modern anesthesia, was a slower process and a painful one. Cocaine was commonly used as a local anesthetic beginning in the 1880s, until Novocain was introduced in the early 20th century as a less dangerous alternative.



James Edmund Garretson (1828 – 1895), also known as the founder of oral surgery, created a new department for the practice at the Philadelphia Dental College where he served as dean. Garretson published *A Treatise on the Diseases and Surgery of the Mouth, Jaws and Associate Parts* (1869), which helped to establish oral and maxillofacial surgery as a medical concentration.

Beside bone removal from the jaw, expanding an overly narrow palate (also known as RME - rapid maxillary expansion), can contribute to the correction of a Class II or Class III Malocclusion. Emerson C. Angell (1822 - 1903) is known as the founder of RME, and he was the first to use a split plate worn by the patient to keep a median incision on the palate expanded during healing. RME appliances are still used to this day.

In present day, though medical advances have improved the surgical procedure, skeletal malocclusion patients can still face psychosocial stigma. Popular cultural ideas of beauty or normalcy, along with negative peer interactions like bullying, can affect patient self-esteem, body image, and expectations about post-surgery appearance and confidence. It is becoming more common for patients to receive counseling and psychological assessment pre-surgery regarding realistic expectations and how to adjust after the surgery.

FIG. 48.

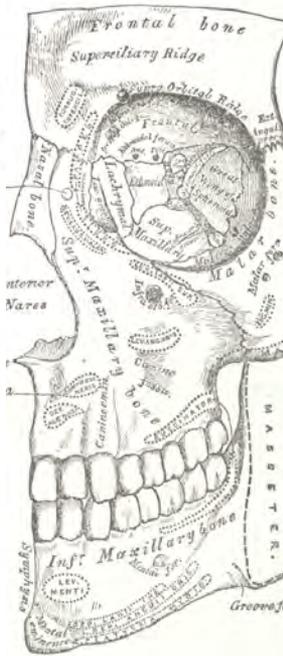
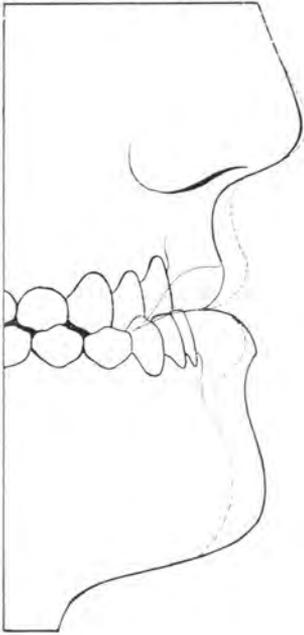
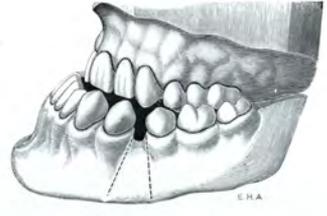


FIG. 615.



FIG. 616.



By Sylvie Huhn, Historical Collections & Archives student assistant

Sylvie holds a B.A. in Fine Art from Humboldt State University and is currently completing her MLIS with a concentration in archives through Emporia State University's distance-learning program. In addition to her work at HC&A, she is also a student worker at the UO Portland Library and Learning Commons, and an archives assistant at the City of Portland Archives and Records Center.



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