

# Tooth Carving An Emphasis On Its Significance – A Review

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## ABSTRACT

Study of tooth morphology is an age-old exercise. It is designed to reinforce the theoretical knowledge gained in the lectures as well as contributes towards the development of manual dexterity, a skill which is essential in the practice of dentistry. Now many experts after considerable years of experience are of the view that the study of tooth morphology serves no purpose in the present day context. Alternative, subjects like bioinformatics, molecular biology and comparative anatomy can be taught for dental students in order to make them better versed. Hence here in this paper we would like to throw light on this debatable topic.

**Keywords:** dental morphology, dentistry, syllabus, tooth carving

## INTRODUCTION

Carving is the act of using tools to shape something from a material by scraping away portions of that material. Wax carving is the shaping of wax using tools usually associated with machining: rotary tools, saws, files and burins or gravers. Tooth carving is important in dentistry because without it, a dentist's job would not be possible. It is a study that enables the dentist to gain knowledge about a tooth's form. Knowing tooth morphology is important in various fields of dentistry.<sup>1</sup>

### Role of carving in dental curriculum

Knowledge of tooth morphology and function is fundamental aspects of dental practice. As a foundational course in the preclinical dental curriculum, tooth carving introduces students to the anatomical and morphological characteristics of human permanent and primary dentition. This course begins to develop students' psychomotor skills for restoring teeth to proper form and function. Students acquire knowledge to identify teeth, recognize and

diagnose tooth anomalies, and treat or manage dental pathology.<sup>2</sup> As this is the first course directly related to teeth and oral function, dental anatomy has a special status in the preclinical curriculum. Students are usually eager to learn the material, but the course is frequently isolated from other pre-patient care courses. The dental anatomy course prepares students a little for the transition from pre-patient care to patient care.<sup>2</sup>

### Objective of Tooth Carving

It is an auxiliary method in the assimilation or memorization of the anatomical knowledge and a process of manual ability, which is useful and necessary in professional activities. The primary goal of tooth carving course is to introduce students to cognitive and psychomotor skills related to the morphology and spatial and functional relationships of human dentition. Psychomotor skills associated with recognition and reproduction of tooth morphology are learned by examining preserved tooth specimens and their cross-sections, combined

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with producing two-dimensional line drawings and carving teeth from wax blocks.<sup>3</sup>

### **Syllabus covered associated with tooth carving**

1. Morphology of each individual tooth,
2. Basic terminologies and definitions of structure of teeth,
3. Tooth numbering system,
4. Chronology of dentition.

### **SKILLS INVOLVED IN TOOTH CARVING:**

#### **Psychomotor skills**

Psychomotor learning is the relationship between cognitive functions and physical movement. Psychomotor learning is demonstrated by physical skills such as movement, coordination, manipulation, dexterity, grace, strength, speed; actions which demonstrate the fine motor skills such as use of precision instruments or tools, or actions which evidence gross motor skills such as the use of the body in dance, musical or athletic performance.

#### **Chiral Adeptness**

Dentistry is all about Chiral Adeptness. Tooth abstraction is one of the best means to advance your chiral dexterity, it's in fact miniature abstraction area where students are able to carbon the three dimensional analysis of tooth analysis from a wax block. If you access in the aboriginal year of dental academy it accord you an exercise to acuminate you Hand-Eye allocation and advance your accomplished motor skills. (4)

### **METHOD OF TEACHING**

Tooth carving helps to gain knowledge regarding major morphologic characteristics of individual teeth, basic concepts of dental occlusion, and common variations in tooth morphology. It is taught by manual demonstration of carving in wax blocks. Basic armamentarium required for tooth carving are the following Rubber sheet 1m, metal scale – 15cm, wax knife, le cron wax carver, 9 inch wax block for carving three times the dimension, 1.5 inch wax block.

### **Advanced method:**

CAI (computer aided instruction) has the potential to supplement faculty instruction, especially when there is a need for repeated demonstration of technique. This feature is particularly attractive in a time of faculty shortages. DVD technology also allows students to customize acquisition of information. Students may view the DVD in its entirety once or multiple times, they may select parts to review again and again, and they can progress through the DVD at their own pace.<sup>5</sup>

### **Steps in carving**

**Step1.** Knowledge about the chronology and morphology

**Step2.** Hand grasps practicing with proper instruments

**Step3.** Artistic skill development to reproduce the tooth

### **IMPLICATIONS OF TOOTH CARVING IN CLINICAL DENTISTRY**

With sufficient knowledge of tooth morphology the dentist has the foundations for the diagnosis and management of most disorders like supernumerary tooth, any developmental disturbances concerned with morphology of tooth like taurodontism, dens in dente, peg laterals, germination, fusion, supernumerary roots or malpositioning

Anatomical abnormalities of tooth and root morphology not only influence the course and management of periodontal disease due to inaccessibility of periodontal instrumentation and oral hygiene efforts, but are also more likely to adversely become high risk areas for retention of dental plaque and calculus.<sup>7</sup>

In case of individual aesthetic restorations many factors contribute to the success of it. This is especially true when the indirect technique is used: technical awareness in the lab, together with knowledge of dental morphology, plays a fundamental role in the reproduction of a shape where attention to detail must be precise<sup>8</sup>

In case of surgical extraction identification of tooth plays a key role in it. The bulk of the tooth,

root morphology, its position in relation to adjacent anatomical structures determines the degree of difficulty of the case and its success.

The students in dentistry have to carve the tooth directly in a patient's mouth in the form of various direct restorative procedures, which include amalgam restorations, posterior composite restorations, direct filling gold restorations, anterior direct composite restorations, direct composite laminate veneers, and so on. Even for the indirect or castable restorations, (such as posterior metal or porcelain inlays, onlays or crowns, anterior ceramic crowns, or laminates), a dentist has to carve the wax pattern. Also for the metal ceramic or all ceramic crowns and bridges, the dentist has to literally build-up and carves the external tooth form. Although the indirect restorations are fabricated in the laboratory and the dentist may not directly be involved in the carving process of wax patterns or ceramic build-ups, the final adjustments ultimately have to be carried out by the dentist himself. So the three-dimensional architecture or anatomy of each and every tooth (at least of crown portion) can only be oriented by learning wax carvings in his initial period of curriculum.<sup>9</sup>

In case of alignment of tooth, the positioning of brackets on the appropriate surface of tooth determines the movement of tooth. The proper knowledge of the morphology of the tooth along with the knowledge of tooth division like incisal third, middle third, cervical third will help in proper positioning of brackets. Knowledge of morphology of tooth will help in differentiate the primary and permanent tooth, this is necessary because the treatment plan for both differs totally.

Dental identifications have always played a key role in natural and manmade disaster situations and in particular the mass casualties normally associated with aviation disasters. Characteristics, such as cusps of Carabelli, shovel-shaped incisors and multi-cusped premolars, can also assist in determination of ancestry<sup>10</sup>

Tooth arrangement and fillings and other dental treatments are unique to the individual, or

nearly so, and the teeth are highly resistant to fire and decay, so dental records permit positive identification<sup>11</sup>

### **Controversies among experts**

Tooth morphology needs an evolutionary change but recommending its total exclusion or abolition for the syllabus is a short sighted solution. The need of the hour is for the experts from all the branches to sit down and address the deficiencies and make the subject of tooth carving interesting, interactive and relevant to practice.<sup>12</sup>

The subject of tooth carving can be safely discarded from the syllabus of bachelor of dentistry. The subject of tooth carving is irrelevant and also waste of time and energy. These practices convert dentistry from biological sciences to mechanical sciences<sup>13</sup>

Learning tooth morphology can equip a student to become a good technician rather than a clinician. Most of the restorative works are done by technicians, and as surgeons or anatomists are never required to carve the maxilla or mandible to learn the anatomy to perform corrective surgery, dental students can become skilled surgeons even without learning tooth morphology.<sup>14</sup>

### **DENTISTRY WITHOUT TOOTH MORPHOLOGY**

If a dentist has not carved a tooth in his student life, how can he/she build the composite restoration in a patient's mouth? Even a single millimetre of a high-point in a faulty restoration (direct or indirect) can lead a patient into more detrimental temporomandibular joint disorders.<sup>9</sup> Without knowing the shape and size of tooth dentist will not be able to differentiate the primary and permanent dentition. The course of dental morphology provides knowledge about morphological characteristics of teeth and associated oral structures upon which a functional concept of intra-arch relationships is based for the clinical application to patient assessment, diagnosis, treatment planning and oral rehabilitation. Hence without this proper treatment cannot be provided. Without proper

knowledge of occlusal morphology one cannot do occlusal correction or equilibrium.<sup>12</sup>

### CONCLUSION

Herewith conclusion is tooth carving is the one which gives life to dentistry. Without knowing tooth carving and the basics in morphology a dentist cannot shine in his practice. So tooth carving makes a dentist perfect. It sounds tooth carving in initial stage is waste of time but it is the time saver in the clinical practice because it trains the eyes and hands of the dentist simultaneously. Hence tooth carving in dentistry is always a must in curriculum. Dental anatomy subject must be revised to improve learning in both aspects by making them more relevant to clinical practice and by incorporating more opportunities for students to actively engage in the learning process.(12)

### REFERENCES

1. *The Importance of Tooth Morphology in Dentistry by Lionheart Groupon* October 13, 2012 2012-10-13 12:05:47 from [lionheartgroup.net](http://lionheartgroup.net)
2. Ales Obrez, Charlotte Briggs, James Buckman, Loren Goldstein, Courtney Lamb, William G. Knight M.S, M.S: *Teaching Clinically Relevant Dental Anatomy in the Dental Curriculum: Description and Assessment of an Innovative Module. Journal of Dental Education* 2011; 75(6); 797-804
3. Selma siéssere, mathias vitt1, luiz gustavo de sousa1, marisa semprini, simone cecílio hallak regalo1; *Educational Material of Dental Anatomy Applied to Study the Morphology of Permanent Teeth. Braz Dent J* 2004; 15(3); 238-242
4. *Treatment. What Is the Sense in Carving Tooth on Wax? . Weblog forum.chinesesavvy.com. (accessed 19 dec 2012).*
5. Elizabeth T. Nance, D.D.S., M.S.H.A., F.A.G.D., Sharon K. Lanning, D.D.S. and John C. Gunsolley, D.D.S., M.S; *Dental Anatomy Carving Computer-Assisted Instruction Program: An Assessment of Student Performance and Perceptions. Journal of Dental Education* 2009; 73(8); 972-979
6. *Regulations – Dental council of India,*
7. Hou GL, Tsai CC; *Clinical significance of tooth morphology correlated with periodontal disease-I. Kaohsiung J Med Sci. 1997 Apr; 13(4); 200-12.*
8. Daniele Rondoni; *the Course of Time in Dental Morphology. International Dentistry Sa – Australasian; 1(2); 76-81*
9. Pravinkumar G Patil; *Tooth carving: A response: Indian J Dent Res: 2012; 23:691-692*
10. A. Pretty, and D. Sweet; *a look at forensic dentistry —Part 1: The role of teeth in the determination of human identity. British Dental Journal* 2001; 190(7); 359-366
11. *Utility of Dental Records in Forensic Sciences: A Review*
12. Ranganathan.k. *Tooth carving: A response. Indian J Dent Res* 2010; 21; 464-465
13. PK.Bhaskar. *Tooth carving: A response: Indian J Dent Res* 2009; 20:130
14. Irulandy ponniah. *Tooth carving: A response: Indian J Dent Res* 2010; 21:403