Dental Anatomy and Tooth Morphology

Year 1 — Bachelor of Dental Surgery

Reference and Resource List — Chapters 1 to 6

Supporting the MCQ, SBA, SAQ and flashcard question bank

BM Education FZE

Disclaimer

Questions in this bank were generated with the assistance of artificial intelligence and reviewed against the references listed. They are provided for educational revision only, are not a substitute for prescribed textbooks, clinical guidelines or supervised clinical training, and no warranty is given as to their accuracy or completeness.

References are presented in Vancouver style. Part 1 lists the core sources that apply across the whole subject; Part 2 lists, for each chapter, the relevant sections of those core texts together with sources specific to that chapter. Numbers in square brackets in Part 2 refer to the numbered entries in Part 1.

PART 1 — CORE REFERENCES (ALL CHAPTERS)

1.1 Principal dental anatomy and tooth morphology texts

1. Nelson SJ. Wheeler's Dental Anatomy, Physiology and Occlusion. 11th ed. St Louis: Elsevier; 2020.

2. Scheid RC, Weiss G. Woelfel's Dental Anatomy. 9th ed. Philadelphia: Wolters Kluwer; 2017.

3. Fuller JL, Denehy GE, Schulein TM. Concise Dental Anatomy and Morphology. 4th ed. Iowa City: University of Iowa College of Dentistry; 2001.

4. Berkovitz BKB, Holland GR, Moxham BJ. Oral Anatomy, Histology and Embryology. 5th ed. Edinburgh: Elsevier; 2017.

5. Fehrenbach MJ, Popowics T. Illustrated Dental Embryology, Histology, and Anatomy. 6th ed. St Louis: Elsevier; 2025.

6. Osborn JW, editor. Dental Anatomy and Embryology. Oxford: Blackwell Scientific Publications; 1981.

7. Kraus BS, Jordan RE, Abrams L. Dental Anatomy and Occlusion: A Study of the Masticatory System. Baltimore: Williams & Wilkins; 1969.

1.2 Supporting oral biology, histology and gross anatomy

8. Nanci A. Ten Cate's Oral Histology: Development, Structure, and Function. 10th ed. St Louis: Elsevier; 2024.

9. Chiego DJ Jr. Essentials of Oral Histology and Embryology: A Clinical Approach. 5th ed. St Louis: Elsevier; 2019.

10. Standring S, Tubbs RS, editors. Gray's Anatomy: The Anatomical Basis of Clinical Practice. 43rd ed. London: Elsevier; 2025.

11. Norton NS, Willett GM. Netter's Head and Neck Anatomy for Dentistry. 4th ed. Philadelphia: Elsevier; 2024.

1.3 Development, chronology and the developing dentition

12. van der Linden FPGM. Development of the Dentition. Chicago: Quintessence Publishing; 1983.

13. Moyers RE. Handbook of Orthodontics. 4th ed. Chicago: Year Book Medical Publishers; 1988.

14. Cameron AC, Widmer RP, editors. Handbook of Pediatric Dentistry. 5th ed. Edinburgh: Elsevier; 2021.

15. Welbury R, Duggal MS, Hosey MT, editors. Paediatric Dentistry. 5th ed. Oxford: Oxford University Press; 2018.

1.4 Occlusion, function and the classification of malocclusion

16. Okeson JP. Clinical Management of Temporomandibular Disorders and Occlusion. 9th ed. St Louis: Elsevier; 2026.

17. Wassell R, Naru A, Steele J, Nohl F. Applied Occlusion. 2nd ed. London: Quintessence Publishing; 2015.

18. Ash MM, Ramfjord S. Occlusion. 4th ed. Philadelphia: WB Saunders; 1995.

19. Dawson PE. Functional Occlusion: From TMJ to Smile Design. St Louis: Mosby Elsevier; 2007.

20. Fields HW, Larson BE, Sarver DM, Proffit WR. Contemporary Orthodontics. 7th ed. St Louis: Mosby Elsevier; 2025.

21. Mitchell L, editor. An Introduction to Orthodontics. 5th ed. Oxford: Oxford University Press; 2019.

1.5 Variation, anomalies and clinical correlation

22. Neville BW, Damm DD, Allen CM, Chi AC. Oral and Maxillofacial Pathology. 5th ed. St Louis: Elsevier; 2023.

23. Odell EW. Cawson's Essentials of Oral Pathology and Oral Medicine. 10th ed. Edinburgh: Elsevier; 2024.

24. Hillson S. Teeth. 2nd ed. Cambridge: Cambridge University Press; 2005.

25. Scott GR, Irish JD. Human Tooth Crown and Root Morphology: The Arizona State University Dental Anthropology System. Cambridge: Cambridge University Press; 2017.

1.6 Forensic odontology and human identification

26. Senn DR, Weems RA, editors. Manual of Forensic Odontology. 5th ed. Boca Raton (FL): CRC Press; 2013.

27. INTERPOL. Disaster Victim Identification Guide. Lyon: INTERPOL. Available from: https://www.interpol.int/How-we-work/Forensics/Disaster-Victim-Identification-DVI

28. President's Council of Advisors on Science and Technology. Forensic science in criminal courts: ensuring scientific validity of feature-comparison methods. Washington (DC): Executive Office of the President; 2016.

29. American Board of Forensic Odontology. ABFO standards and guidelines for evidence collection, analysis and reporting. Available from: https://abfo.org

1.7 Terminology, standards, curriculum and professional requirements

30. International Organization for Standardization. ISO 3950:2016. Dentistry — Designation system for teeth and areas of the oral cavity. Geneva: ISO; 2016. Available from: https://www.iso.org/standard/68292.html

31. Fédération Dentaire Internationale. Two-digit system of designating teeth. Int Dent J. 1971;21(1):104-6.

32. The Glossary of Prosthodontic Terms 2023: Tenth Edition. J Prosthet Dent. 2023;130(4 Suppl 1):e1-e126.

33. General Dental Council. The Safe Practitioner: a framework of behaviours and outcomes for dental professional education. London: GDC; 2023. Available from: https://www.gdc-uk.org

34. Dental Council of India. Bachelor of Dental Surgery (BDS) Course Regulations, 2007 (as amended). New Delhi: DCI.

35. Field JC, Cowpe JG, Walmsley AD. The Graduating European Dentist: a new undergraduate curriculum framework. Eur J Dent Educ. 2017;21 Suppl 1:2-10.

36. Matthan J, Cobb M, McHanwell S, Moxham BJ, Finn GM. The anatomical society's core anatomy syllabus for dental undergraduates. J Anat. 2020;236(4):737-51.

37. Moxham BJ, McHanwell S, Berkovitz B. The development of a core syllabus for the teaching of oral anatomy, histology, and embryology to dental students via an international 'Delphi Panel'. Clin Anat. 2018;31(2):231-49.

Key journals for currency

Journal of Dental Research · Archives of Oral Biology · Journal of Anatomy · American Journal of Orthodontics and Dentofacial Orthopedics · The Angle Orthodontist · Journal of Oral Rehabilitation · The Journal of Prosthetic Dentistry · International Journal of Paediatric Dentistry · European Journal of Oral Sciences · Journal of Forensic Sciences · Forensic Science International · European Journal of Dental Education

PART 2 — CHAPTER-SPECIFIC REFERENCES

Chapter 1 — Foundations of Dental Anatomy and Tooth Morphology

1.1 Scope of dental anatomy and basic anatomical terminology · 1.2 Tooth surfaces, angles, contours and dental notation · 1.3 Geometric tooth form, contacts and embrasures

Core texts: [1] Chs. 1, 4 and 5, with Appendices A and B · [2] Part on comparative tooth anatomy and the introductory terminology chapters · [3] Introductory sections on nomenclature and tooth form · [4] Chs. on the dentitions and the oral cavity · [5] Units 1 and 4 · [6] Chs. on tooth form and descriptive terminology · [10] Section on the oral cavity and dentition · [11] Chs. on the oral cavity and the teeth · [30] whole standard · [31] whole paper · [32] entries for the descriptive and occlusal terms · [36] and [37] for the expected scope at this level

Additional

- Federative International Programme for Anatomical Terminology. Terminologia Anatomica. 2nd ed. FIPAT; 2019. Available from: https://fipat.library.dal.ca
- Ash MM. Wheeler's Atlas of Tooth Form. 5th ed. Philadelphia: WB Saunders; 1984.
- Newman MG, Takei HH, Klokkevold PR, Carranza FA, editors. Newman and Carranza's Clinical Periodontology. 14th ed. Philadelphia: Elsevier; 2023.
- Magne P, Belser U. Bonded Porcelain Restorations in the Anterior Dentition: A Biomimetic Approach. Chicago: Quintessence Publishing; 2002.
- Chiche GJ, Pinault A. Esthetics of Anterior Fixed Prosthodontics. Chicago: Quintessence Publishing; 1994.

Chapter 2 — Development and Chronology of the Dentitions (Morphology Focus)

2.1 Human dentitions and types of teeth · 2.2 Chronology of tooth development and eruption · 2.3 Dentition periods

Core texts: [1] Ch. 2 · [2] Part on comparative tooth anatomy · [4] Chs. on tooth development and eruption · [5] Unit 2, particularly Ch. 6 · [8] Chs. on tooth development, eruption and shedding · [9] Chs. on tooth development · [12] whole text · [13] Chs. on the developing dentition and the analysis of space · [14] Chs. on child growth, development and the developing dentition

Additional

- Logan WHG, Kronfeld R. Development of the human jaws and surrounding structures from birth to the age of fifteen years. J Am Dent Assoc. 1933;20(3):379-427.
- Schour I, Massler M. The development of the human dentition. J Am Dent Assoc. 1941;28:1153-60.
- Moorrees CFA, Fanning EA, Hunt EE Jr. Age variation of formation stages for ten permanent teeth. J Dent Res. 1963;42(6):1490-502.
- Nolla CM. The development of the permanent teeth. J Dent Child. 1960;27:254-66.
- AlQahtani SJ, Hector MP, Liversidge HM. Brief communication: the London atlas of human tooth development and eruption. Am J Phys Anthropol. 2010;142(3):481-90.
- Baume LJ. Physiological tooth migration and its significance for the development of occlusion. I. The biogenetic course of the deciduous dentition. J Dent Res. 1950;29(2):123-32.
- Nance HN. The limitations of orthodontic treatment. I. Mixed dentition diagnosis and treatment. Am J Orthod Oral Surg. 1947;33(4):177-223.
- Wise GE, King GJ. Mechanisms of tooth eruption and orthodontic tooth movement. J Dent Res. 2008;87(5):414-34.

Chapter 3 — Morphology of the Permanent Teeth

3.1 Anterior teeth: maxillary and mandibular incisors and canines · 3.2 Maxillary and mandibular premolars · 3.3 Molars and comparative, trait-based morphology

> **Core texts:** [1] Chs. 6-13 and Appendix B · [2] Part on comparative tooth anatomy · [3] Tooth-by-tooth descriptive chapters · [5] Unit on the permanent dentition · [6] Chs. on the permanent teeth · [7] Descriptive chapters on crown and root form · [24] Chs. on crown and root morphology and on variation · [25] whole text for trait definition and scoring

Additional

- Turner CG II, Nichol CR, Scott GR. Scoring procedures for key morphological traits of the permanent dentition: the Arizona State University Dental Anthropology System. In: Kelley MA, Larsen CS, editors. Advances in Dental Anthropology. New York: Wiley-Liss; 1991. p. 13-31.
- Scott GR, Turner CG II. The Anthropology of Modern Human Teeth: Dental Morphology and Its Variation in Recent Human Populations. Cambridge: Cambridge University Press; 1997.
- Kieser JA. Human Adult Odontometrics: The Study of Variation in Adult Tooth Size. Cambridge: Cambridge University Press; 1990.
- Vertucci FJ. Root canal anatomy of the human permanent teeth. Oral Surg Oral Med Oral Pathol. 1984;58(5):589-99.
- Vertucci FJ. Root canal morphology and its relationship to endodontic procedures. Endod Topics. 2005;10(1):3-29.
- Cleghorn BM, Christie WH, Dong CCS. Root and root canal morphology of the human permanent maxillary first molar: a literature review. J Endod. 2006;32(9):813-21.

Chapter 4 — Morphology of the Deciduous (Primary) Teeth

4.1 Overview and general differences of primary versus permanent teeth · 4.2 Chronology of the primary dentition · 4.3 Tooth-by-tooth morphology of the primary teeth

> **Core texts:** [1] Ch. 3 · [2] Chs. on the primary dentition · [3] Sections on the deciduous teeth · [5] Unit 2 and the sections on the primary dentition · [12] Sections on the deciduous dentition and its spacing · [14] Chs. on the primary dentition, paediatric restorative care and dental anomalies · [15] Chs. on the developing dentition and the restoration of primary teeth

Additional

- Kraus BS, Jordan RE. The Human Dentition Before Birth. Philadelphia: Lea & Febiger; 1965.
- Lunt RC, Law DB. A review of the chronology of calcification of deciduous teeth. J Am Dent Assoc. 1974;89(3):599-606.
- Liversidge HM, Molleson T. Variation in crown and root formation and eruption of human deciduous teeth. Am J Phys Anthropol. 2004;123(2):172-80.
- Hillson S. Dental Anthropology. Cambridge: Cambridge University Press; 1996.
- Innes NPT, Ricketts D, Chong LY, Keightley AJ, Lamont T, Santamaria RM. Preformed crowns for decayed primary molar teeth. Cochrane Database Syst Rev. 2015;12:CD005512.
- American Academy of Pediatric Dentistry. The Reference Manual of Pediatric Dentistry. Chicago (IL): AAPD. Available from: https://www.aapd.org/research/oral-health-policies--recommendations/

Chapter 5 — Occlusion and Functional Dental Anatomy

5.1 Basic concepts of occlusion · 5.2 Factors influencing occlusion · 5.3 Centric occlusion and centric relation · 5.4 Functional jaw movements · 5.5 Characteristics of normal occlusion · 5.6 Introduction to malocclusion

Core texts: [1] Chs. 15-17 · [2] Part on the application of tooth anatomy in dental practice · [7] Chs. on occlusal relationships · [11] Chs. on the temporomandibular joint and the muscles of mastication · [13] Chs. on the development of occlusion · [16] Parts I and II · [17] whole text · [18] whole text · [19] Chs. on centric relation and occlusal design · [20] Chs. on the development of the dentition and the classification of malocclusion · [21] Chs. on the development of occlusion and orthodontic assessment · [32] entries for the occlusal and mandibular-movement terms

Additional

- Posselt U. Studies in the mobility of the human mandible. Acta Odontol Scand. 1952;10(Suppl 10):1-160.
- Angle EH. Classification of malocclusion. Dental Cosmos. 1899;41(3):248-64.
- Andrews LF. The six keys to normal occlusion. Am J Orthod. 1972;62(3):296-309.
- Björk A, Krebs A, Solow B. A method for epidemiological registration of malocclusion. Acta Odontol Scand. 1964;22:27-41.
- Brook PH, Shaw WC. The development of an index of orthodontic treatment priority. Eur J Orthod. 1989;11(3):309-20.
- Schiffman E, Ohrbach R, Truelove E, et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for clinical and research applications. J Oral Facial Pain Headache. 2014;28(1):6-27.
- Manfredini D, Lombardo L, Siciliani G. Temporomandibular disorders and dental occlusion. A systematic review of association studies: end of an era? J Oral Rehabil. 2017;44(11):908-23.

Chapter 6 — Variations, Anomalies and Forensic Aspects of Tooth Morphology

6.1 Variations in tooth number · 6.2 Variations in tooth size and shape · 6.3 Developmental anomalies of form · 6.4 Developmental anomalies of structure · 6.5 Population and sex differences and the forensic relevance of tooth morphology

Core texts: [1] Ch. 4 · [4] Chs. on disturbances of tooth development · [8] Chs. on enamel and dentine formation and their defects · [22] Ch. on abnormalities of teeth · [23] Hard tissue pathology section · [24] Chs. on variation and on teeth in archaeology and forensic work · [25] whole text · [26] whole manual · [27] whole guide · [28] Section on bitemark analysis · [29] whole set of standards

Additional

- Polder BJ, Van't Hof MA, Van der Linden FPGM, Kuijpers-Jagtman AM. A meta-analysis of the prevalence of dental agenesis of permanent teeth. Community Dent Oral Epidemiol. 2004;32(3):217-26.
- Rajab LD, Hamdan MAM. Supernumerary teeth: review of the literature and a survey of 152 cases. Int J Paediatr Dent. 2002;12(4):244-54.
- Oehlers FAC. Dens invaginatus (dilated composite odontome). I. Variations of the invagination process and associated anterior crown forms. Oral Surg Oral Med Oral Pathol. 1957;10(11):1204-18.
- Alani A, Bishop K. Dens invaginatus. Part 1: classification, prevalence and aetiology. Int Endod J. 2008;41(12):1123-36.
- Jafarzadeh H, Azarpazhooh A, Mayhall JT. Taurodontism: a review of the condition and endodontic treatment challenges. Int Endod J. 2008;41(5):375-88.
- Crawford PJM, Aldred M, Bloch-Zupan A. Amelogenesis imperfecta. Orphanet J Rare Dis. 2007;2:17.
- Barron MJ, McDonnell ST, Mackie I, Dixon MJ. Hereditary dentine disorders: dentinogenesis imperfecta and dentine dysplasia. Orphanet J Rare Dis. 2008;3:31.

- Shields ED, Bixler D, el-Kafrawy AM. A proposed classification for heritable human dentine defects with a description of a new entity. Arch Oral Biol. 1973;18(4):543-53.
- Witkop CJ Jr. Amelogenesis imperfecta, dentinogenesis imperfecta and dentin dysplasia revisited: problems in classification. J Oral Pathol. 1988;17(9-10):547-53.
- Demirjian A, Goldstein H, Tanner JM. A new system of dental age assessment. Hum Biol. 1973;45(2):211-27.
- Cameriere R, Ferrante L, Cingolani M. Age estimation in children by measurement of open apices in teeth. Int J Legal Med. 2006;120(1):49-52.
- Kvaal SI, Kolltveit KM, Thomsen IO, Solheim T. Age estimation of adults from dental radiographs. Forensic Sci Int. 1995;74(3):175-85.
- Pretty IA, Sweet D. The scientific basis for human bitemark analyses — a critical review. Sci Justice. 2001;41(2):85-92.

Compiled for BM Education FZE. Editions were current at the time of compilation; readers should consult the most recent edition of each text and the current version of each standard or guideline.