Chapter 5

RADIODIAGNOSTIC APPROACH TO TRAUMATOLOGY IN PEDIATRIC DENTISTRY PART 1

Hilal ÖZBEY[1]
Burak Kerem APAYDIN[2]

Injuries to the teeth and facial skeleton are common. The type and severity of injuries can vary considerably, from minor damage to the teeth to sorely comminuted fractures of the skull.

Although the type of injury may be evident clinically, radiographic inspection of all traumatized teeth is needed initially, to assess fully the degree of underlying damage (Whaites & Drage, 2013). The ideal radiologic examination may be difficult to perform after trauma because of the patient discomfort. Although the prescription of the appropriate radiographs should be ordered only after a careful clinical examination, in some cases this is not always possible (White & Pharoah, 2014). Whatever the suspected injury, radiography is an essential requirement both in the initial assessment and in the follow-up examinations.

The diagnostic information provided by the radiographs may include; the type of injury to the teeth (Whaites & Drage, 2013), presence of root fractures, fracture regions, extent of displacement of the tooth fragment, degree of extrusion or intrusion, stage of root development, size of the pulp chamber and root canal, condition of the apical tissues, presence, site and displacement of alveolar bone fractures, presence of jaw fractures, condition of adjacent or underlying teeth, evidence of healing, post-trauma complications including resorption, infection, cessation of tooth development, tooth fragments and foreign bodies lodged in soft tissues, location of the tooth if swallowed or inhaled (Whaites & Drage, 2013; Ghom & Ghom, 2016; Ozdede & al., 2016).

There is great value in using panoramic radiographs in young children. In the very upset or difficult child, it may be the only way that some clinical information can be gained in the acute phase of management (Cameron & Widmer, 2008). Although a panoramic image may be useful for localizing injuries to the teeth and supporting structures, it may not have the image resolution to reveal injuries of anterior region teeth. Dentoalveolar trauma always requires intraoral radiographs

[1] Assist. Prof. Dr., Pamukkale University, hilalozbey@gmail.com
[2] Assist. Prof. Dr., Pamukkale University, drkeremapaydin@gmail.com

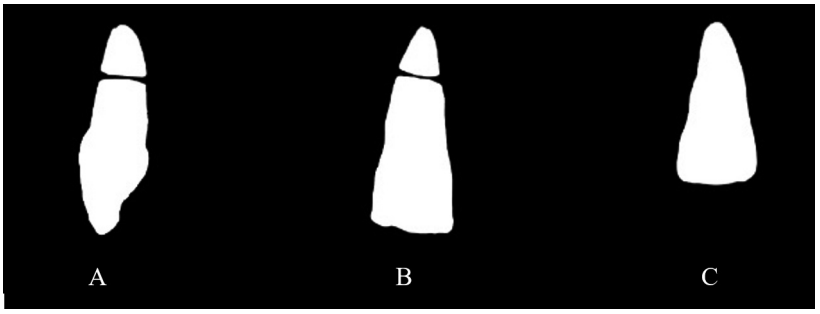

Figure 16. The different radiographic appearances of a horizontal root fracture.
A. From the side;
B. Using a horizontal X-ray beam;
C. Using an angled (65°) X-ray beam.

REFERENCES

Andreasen, J. O., Andreasen, F.M., Andersson, L. (2007). *Textbook and color atlas of traumatic injuries to the teeth.* (Fourth edit). Copenhagen: Blackwell Munksgaard.

American Academy of Pediatrics Committee on Environmental Health. Risk of ionizing radiation exposure to children: a subject review. (1998). *Pediatrics, 101* (4 Pt 1), 717-719.

Cameron, A. C., Widmer, R. P. (2008). *Handbook of Pediatric Dentistry.* (Third edit). E book: Elsevier Mosby.

DiAngelis, A. J., Andreasen, J. O., Ebeleseder, K. A., Kenny, D. J., Trope, M., Sigurdsson, A., Andersson, L., Bourguignon, C., Flores, M. T., Hicks, M. L., Lenzi, A. R., Malmgren, B., Moule, A. J., Pohl, Y., Tsukiboshi, M. (2012). International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 1. Fractures and luxations of permanent teeth. *Dental Traumatol, 28* (6), 2–12.

Ghom, A. G., Ghom, S. A. (2016). *Textbook of Oral Radiology.* (Second edit). India: Elsevier.

İçöz, D., Akgünlü, F. (2016). Effects of positioning upon the vertical dimension on cone beam computed tomography. *Edorium J Dent*, *3*, 40–44.

Kim, I. H., Mupparapu, M. (2009). Dental radiographic guidelines: a review. *Quintessence Int*, *40* (5), 389-98.

Kullman, L., Al Sane, M. (2012). Guidelines for dental radiography immediately after a dento-alveolar trauma, a systematic literature review. *Dental Traumatol*, *28* (3), 193-199.

Lofthag-Hansen, S., Huumonen, S., Gröndahl, K., Gröndahl, H. G. (2007). Limited cone-beam CT and intraoral radiography for the diagnosis of periapical pathology. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, *103* (1), 114-119.

Malmgren, B., Andreasen, J. O., Flores, M. T., Robertson, A., DiAngelis, A. J., Andersson, L., Cavalleri, G., Cohenca, N., Day, P., Hicks, M. L., Malmgren, O., Moule, A. J., Onetto, J., Tsukiboshi, M. (2012). International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 3. Injuries in the primary dentition. *Dental Traumatol*, *28* (3), 174–182.

Ozdede, M., Sarikir, C., Akarslan, Z., Peker, I. (2016). Maksillofasiyal fraktürlerin konik

ışınlı bilgisayarlı tomografi ile retrospektif olarak değerlendirilmesi. *Atatürk Üniv. Diş Hek. Fak. Derg. 1* (26), 8-14.

Stavropoulos, A., Wenzel, A. (2007). Accuracy of cone beam dental CT, intraoral digital and conventional film radiography for the detection of periapical lesions. An ex vivo study in pig jaws. *Clin Oral Investig*, *11* (1), 101-106.

Suomalainen, A. K., Salo, A., Robinson, S., Peltola, J. S. (2007). The 3DX multi image micro-CT device in clinical dental practice. *Dentomaxillofac Radiol, 36* (2), 80-85.

Whaites, E., Drage, N. (2013). *Essentials of dental radiography and radiology.* (Fifth edit). E book: Churchill Livingstone Elsevier.

White, S. C., Pharoah, M. J. (2014). *Oral Radiolgy Principles and Interpretation.* (Seventh edit). Missouri: Elsevier Mosby.

World Health Organization. (1995). *Application of international classification of diseases to dentistry and stomatology, ICD-DA*. (Third edit). Geneva: World Health Organization.

Zimmermann, C. E., Troulis, M. J., Kaban, L. B. (2006). Pediatric facial fractures: recent advances in prevention, diagnosis and management. *Int J Oral Maxillofac Surg*, *35* (1), 2-13.