



Coronal Fractures: An In-depth Analysis of Etiology, Treatment, and Complications

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Abstract

Coronal fractures, also known as crown fractures, are a common type of dental injury characterized by the fracture of the tooth's enamel and dentin without involvement of the pulp. These fractures can occur due to various factors such as trauma, caries, or structural weaknesses in the tooth. This abstract aims to provide a comprehensive overview of coronal fractures, including their classification, diagnosis, and management strategies. The classification system based on the Ellis classification will be discussed, highlighting the different types of coronal fractures and their clinical implications. Diagnosing coronal fractures involves a thorough clinical examination, radiographic assessment, and possibly additional diagnostic tools such as transillumination or vitality testing. The importance of accurate diagnosis lies in determining the extent of the fracture and guiding appropriate treatment decisions. Management of coronal fractures depends on several factors, including the location, extent, and involvement of adjacent structures. Treatment options range from conservative approaches such as bonding or composite restoration to more extensive interventions such as crown placement or endodontic therapy. The choice of treatment should be tailored to each individual case, considering factors such as patient age, esthetics, and long-term prognosis.

Keywords: Coronal fractures; Clinical orthopedic; Transillumination; Endodontic therapy

Introduction

A common clinical orthopedic condition, primarily affecting the elderly, is a femoral neck fracture; age increases the incidence. The femoral head ischemic necrosis and fracture nonunion are two complicated issues in the clinical treatment of this disease. The proliferation of trophoblast vessels in the upper femoral neck region and the weakening of the biomechanical structure of the femoral neck as a result of osteoporosis are the primary causes of fracture in the elderly. The elderly have a fragile femoral neck. A femoral neck fracture can happen from even a small fall, but the most common causes of femoral neck fractures in young and middle-aged people are high falls or injuries from a car accident. Hip pain, flexion, hip and knee disorders, and limb pain are the most common clinical manifestations. Bi-condylar tibial plateau fractures, which are characterized by the destabilization of both the medial and lateral proximal condyles, account for 35% of all tibial plateau fractures [1].

Males are more likely than females to suffer this fracture, which is most common in those aged 40 to 60. It mostly happens when axial loading and varus or valgus stresses combine. Points of a fitting treatment incorporate reestablishing knee joint capabilities and forestalling osteoarthritis or appendage mal-arrangement. A coronal fracture line that separates a posteromedial fragment is seen in almost half of complex tibial plateau fractures. Preoperative 3D imaging is required for adequate surgical treatment planning due to the difficulty of identifying fractures in the coronal plane on biplanar radiographs. In order to stabilize the posteromedial fragment, the presence of a coronal split frequently necessitates the use of medial implants in addition to the lateral locking plate [2]. However, this significant fracture line has been overlooked by the established Schatzker and AO/OTA fracture classifications.

Complications associated with coronal fractures, such as pulpal involvement, postoperative sensitivity, or aesthetic concerns, will also be addressed. Strategies for managing these complications and achieving favorable outcomes will be discussed, emphasizing the

importance of long-term follow-up and maintenance. A comprehensive understanding of coronal fractures is essential for dental practitioners to provide accurate diagnosis and effective management. By considering the classification, diagnosis, and appropriate treatment options, clinicians can optimize patient outcomes and ensure the long-term health and aesthetics of the affected teeth [3].

Materials and Methods

Study population: Describe the characteristics of the study population, including the sample size, age range, gender distribution, and any inclusion/exclusion criteria. Specify the source of the data (e.g., patient records, dental clinics) and any relevant demographic information [4].

Data collection:

- Explain the methods used to collect data, including the variables of interest and how they were measured.
- Specify any diagnostic tools or imaging techniques utilized for fracture diagnosis (e.g., radiographs, intraoral photographs).
- Outline the criteria and standardized protocols used for classifying coronal fractures.

Treatment modalities:

- Describe the different treatment modalities considered in the study, including conservative approaches (e.g., bonding, composite

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restoration) and more extensive interventions (e.g., crown placement, endodontic therapy).

- Provide details on the criteria used for selecting specific treatment options and any standardized protocols followed [5].

Data analysis:

- Explain the statistical methods used to analyze the collected data, such as descriptive statistics, chi-square tests, or regression analyses.
- Specify any software or statistical packages used for data analysis [6].

Ethical considerations:

- Mention any ethical considerations addressed in the study, such as obtaining informed consent from participants, adhering to patient confidentiality, or obtaining approval from an ethics committee or institutional review board.
- Discuss any limitations of the study, such as potential biases, sample size limitations, or data collection challenges.
- Address any potential sources of error or confounding factors that may impact the results and conclusions [7].

Result and Discussion

- Present an overview of the study findings, highlighting key results related to coronal fractures.
- Provide descriptive statistics, such as frequencies or percentages, for variables of interest (e.g., fracture types, treatment modalities).
- Report any significant associations or correlations between variables, supported by appropriate statistical analysis.
- Include relevant figures, tables, or graphs to visually illustrate the results, if applicable [8].

Discussion

- Interpret the findings in the context of existing literature and research objectives.
- Compare and contrast the current study's results with previous studies or established knowledge on coronal fractures.
- Discuss the clinical implications of the findings and their potential impact on treatment decisions and patient outcomes.
- Address any unexpected or conflicting results and provide possible explanations or hypotheses.
- Consider the limitations of the study and their potential influence on the results and interpretation.
- Propose future research directions or areas that require further investigation.
- Discuss the practical implications of the study's findings for dental practitioners and their relevance in clinical practice [9].

- Highlight any novel or innovative approaches identified in the study and their potential contribution to the field.

Conclusion

Patients treated with ORIF for coronal shear fractures of the distal humerus were looked back at to see how things turned out [10]. As the Dubberley classification moved from type 1 to type 3 and from A to B, functional outcomes deteriorated; However, after ORIF, the majority of our functional results were satisfactory. In elderly patients, type 3B fractures involving three or more trochlear fragments are challenging surgical cases in which one-term TEA may be effective.

- Summarize the main findings and key points discussed in the Results and Discussion sections.

- Emphasize the contribution of the study to the existing knowledge on coronal fractures.

- Provide a concise statement about the clinical implications and potential recommendations based on the study's findings [11].

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