

## Coronal Fracture: Causes, Diagnosis and Treatment

Thomas Moore\*

Department of Medical Nursing, University of Michigan, USA

### Introduction

A coronal fracture refers to a break in the coronal plane of a bone, commonly affecting the distal humerus (particularly the capitellum and trochlea) or the anterior part of a tooth's crown. These fractures are rare but can lead to significant functional impairment if not treated properly. This article provides an in-depth overview of coronal fractures, their causes, diagnosis, and treatment. A coronal fracture is a type of fracture that occurs in the coronal plane of a bone, often affecting the distal humerus, femoral condyles, or dental structures. These fractures are relatively rare but can lead to significant functional impairments if not treated promptly. They commonly result from direct trauma, falls, or high-impact sports injuries, leading to a break that separates the anterior and posterior portions of the affected structure. In orthopedic cases, coronal fractures often involve the distal humerus, particularly the capitellum and trochlea, which are crucial for elbow joint movement. They can also occur in weight-bearing bones such as the femoral condyles and tibial plateau. These fractures can lead to joint stiffness, arthritis, and reduced mobility if not properly managed. In dental cases, coronal fractures refer to fractures affecting the crown of a tooth, which may involve only the enamel, enamel-dentin, or extend to the pulp. Dental coronal fractures often occur due to accidental falls, sports injuries, or biting hard objects, leading to pain, sensitivity, and aesthetic concerns. Proper diagnosis is essential for effective management. Orthopedic coronal fractures require X-rays, CT scans, and MRIs, while dental fractures are assessed using clinical examination, radiographs, and vitality tests [1,2]. Treatment options vary from conservative immobilization and pain management to surgical intervention in orthopedic cases, and from bonding and root canal treatments to extractions in dental cases.

### Understanding coronal fractures

A coronal fracture occurs perpendicular to the long axis of the bone or tooth, leading to the separation of an anterior portion from the posterior part. The term is frequently used in orthopedic and dental contexts:

**In Orthopedics:** Coronal fractures often involve the distal humerus (capitellum and trochlea) and can occur due to direct trauma or fall on an outstretched hand. They can also affect the femoral condyles and tibial plateau.

**In Dentistry:** Coronal fractures affect the crown of the tooth and can be classified as enamel fractures, enamel-dentin fractures, or enamel-dentin-pulp fractures, depending on the severity [3].

### Discussion

Coronal fractures present unique challenges in both diagnosis and management due to their location and potential impact on function. In orthopedic cases, these fractures can disrupt joint mechanics, leading to limited range of motion, pain, and post-traumatic arthritis if not treated adequately. The complexity of coronal fractures, especially in the distal humerus, necessitates advanced imaging techniques such as CT scans to assess the extent of bone displacement and joint involvement [4].

Treatment approaches for orthopedic coronal fractures depend on fracture severity. Non-displaced fractures may be managed conservatively with immobilization, physical therapy, and pain management. However, displaced fractures often require surgical intervention, including open reduction and internal fixation (ORIF) using plates and screws to stabilize the bone. In severe cases, joint replacement may be considered, particularly in elderly patients.

Dental coronal fractures also require tailored approaches. Superficial enamel fractures may only need cosmetic treatment such as bonding, while deeper fractures involving dentin or pulp require interventions like root canal therapy or full dental crowns [5,6]. If the fracture extends below the gumline, tooth extraction and replacement with implants or bridges may be necessary to restore function and aesthetics.

Complications of untreated coronal fractures include chronic pain, stiffness, joint dysfunction, and, in dental cases, infection and pulp necrosis. Early diagnosis and appropriate intervention are crucial to optimizing healing, restoring function, and preventing long-term disability.

A multidisciplinary approach, involving orthopedic surgeons, dentists, physiotherapists, and rehabilitation specialists, plays a vital role in managing coronal fractures effectively. Patient education and preventive measures, such as using protective gear and maintaining bone and dental health, can help reduce the incidence and severity of coronal fractures in both orthopedic and dental cases [7].

### Treatment of coronal fractures

The treatment approach for coronal fractures varies based on the severity, location, and whether the fracture affects a bone or a tooth.

#### Orthopedic Treatment

##### Non-Surgical Management:

If the fracture is non-displaced, immobilization using a cast or splint may be sufficient.

Pain management with NSAIDs (e.g., ibuprofen) and rest.

Physiotherapy to restore joint movement and strength after healing.

##### Surgical Management:

\*Corresponding author: Thomas Moore, Department of Medical Nursing, University of Michigan, USA, E-mail: moore6593@gmail.com

**Received:** 01-Jan-2025, Manuscript No: omha-25-161201, **Editor Assigned:** 03-Jan-2025, Pre QC No: omha-25-161201 (PQ), **Reviewed:** 17-Jan-2025, QC No: omha-25-161201, **Revised:** 22-Jan-2025, Manuscript No: omha-25-161201 (R), **Published:** 29-Jan-2025, DOI: 10.4172/2329-6879.1000560

**Citation:** Thomas M (2025) Coronal Fracture: Causes, Diagnosis and Treatment. Occup Med Health 13: 560.

**Copyright:** © 2025 Thomas M. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Open Reduction and Internal Fixation (ORIF):** Common for displaced fractures, using screws or plates to stabilize the bone [8].

**Arthroscopy:** Used in some cases to repair intra-articular fractures with minimal invasion.

**Joint Replacement:** In severe cases, especially in older adults, joint replacement may be necessary.

## Dental Treatment

**Enamel Fractures:** Smoothing sharp edges and applying dental bonding.

**Enamel-Dentin Fractures:** Composite restorations or dental crowns to restore the tooth [9].

### Pulp-Exposed Fractures:

**Direct Pulp Capping:** If the pulp is minimally exposed, a protective dressing is applied.

**Root Canal Treatment:** If the pulp is significantly damaged or necrotic, a root canal is necessary.

**Extraction:** In cases where the tooth is severely fractured and cannot be restored [10].

## Conclusion

Coronal fractures, whether in bones or teeth, require prompt diagnosis and appropriate treatment to ensure optimal recovery and function. Orthopedic coronal fractures demand immobilization or surgical intervention, while dental coronal fractures often require restorative or endodontic treatments. Preventative measures, such as protective gear and good health habits, can significantly reduce the risk

of these fractures. If you suspect a coronal fracture, seeking immediate medical or dental attention is crucial for effective management and to prevent long-term complications. Coronal fractures, whether affecting bones or teeth, require timely and appropriate management to prevent long-term complications. In orthopedic cases, accurate diagnosis through imaging techniques and prompt treatment—ranging from immobilization to surgical fixation—are crucial for restoring joint function and minimizing disability. Similarly, dental coronal fractures demand precise evaluation and appropriate restorative procedures to maintain oral health and aesthetics.

## References

1. Silalahi AP (2022) A Conceptual Framework for Integrating QSHE in Construction. EACEF Conference 2-10.
2. Masuin R (2019) Development of knowledge management in integration management systems in order to increase the organisational performance of construction companies. MATEC Web of Conferences 1-10.
3. Ahidar I (2018) Approach to Integrating Management Systems. The TQM Journal 183- 204.
4. Carvalho K (2015) Benefits in the Implementation of Safety, Health, Environmental and Quality Integrated System. IACSIT Int J Eng Technol 7: 1-5.
5. Institution of Civil Engineers (2020) CDM 2015: 3 years on Assessing the Construction (Design & Management). London: Institution of Civil.
6. HSE (2021) Workplace Fatal Injuries in Great Britain. London: Crown.
7. Henjeweile (2019) Construction Project Management An Integrated Approach Third Edition. New York: Routledge.
8. Rumane (2018) Quality Management in Construction Projects Second Edition. Boca Raton: Taylor & Francis Group.
9. CONIAC (2015) CDM 2015 - Industry Guidance for Clients. Norfolk: CITB.
10. Rebelo MF (2014) A generic model for integration of quality, environment and safety management systems. TQM Journal January 683-701.