

# The Importance of Panoramic Radiography in Comprehensive Dental Evaluation: A Case Report of Mandibular Angle Fracture

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## ABSTRACT

Panoramic radiography plays a critical role in comprehensive dental diagnosis by providing a broad overview of the maxillofacial skeleton. In contrast, intraoral radiography, while essential for the diagnosis of dental caries and periapical pathology, offers a limited field of view and may fail to detect extra-alveolar or skeletal abnormalities [1–3]. This case report describes a 35-year-old male who presented with left mandibular pain and swelling. Panoramic imaging revealed a non-displaced mandibular angle fracture adjacent to tooth #17 that would not have been identified using intraoral radiography alone. Early recognition facilitated appropriate referral and surgical management, underscoring the importance of panoramic radiographs in improving patient safety and clinical outcomes [4–6].

**Keywords:** panoramic radiography; mandibular fracture; dental trauma; diagnostic imaging; oral surgery

## INTRODUCTION

Diagnostic imaging is fundamental to safe and effective dental care. Intraoral radiographs are widely used for evaluating dental caries, periodontal bone loss, and periapical disease; however, their confined anatomic coverage limits their ability to detect pathology beyond the dentoalveolar region [1,2]. Panoramic radiography provides a comprehensive visualization of the jaws, temporomandibular joints, and surrounding structures, making it particularly valuable in patients with facial trauma, swelling, or unexplained pain [3–5]. Failure to obtain appropriate imaging may result in missed diagnoses, delayed treatment, and potentially serious complications [6,7].

## Case Presentation

On October 1, 2025, a 35-year-old male presented with a chief complaint of left mandibular pain and facial swelling of one week's duration. The patient reported a history of blunt facial trauma from a soccer ball approximately one year prior. Medical history was significant for an allergy to diclofenac, manifested as a cutaneous rash. Clinical examination revealed localized tenderness over the left posterior mandible, mild facial asymmetry, and limited mouth opening. Intraoral examination demonstrated extensive carious involvement of tooth #17 with suspected pulpal involvement, a finding that alone could have explained the patient's symptoms if broader imaging had not been obtained.

## Imaging Findings

Given the patient's history of trauma, swelling, and functional limitation, panoramic radiography was obtained in addition to intraoral imaging. The panoramic radiograph demonstrated a non-displaced closed fracture of the left mandibular angle in close proximity to tooth #17 [3,5]. This finding was clearly visible on panoramic imaging but would not have been detected on intraoral periapical or bitewing radiographs, which are restricted to the dentoalveolar structures [1,2,6].

Figure 1. Clinical photograph demonstrating left-sided facial swelling and occlusal asymmetry.



Figure 2. Panoramic radiograph showing a non-displaced fracture of the left mandibular angle adjacent to tooth #17.



Figure 3. Magnified panoramic view highlighting the mandibular angle fracture.



## Management

The patient was referred to oral and maxillofacial surgery for definitive care. On October 3, 2025, he underwent closed reduction of the mandibular fracture and extraction of tooth #17 under general anesthesia. Due to limited mouth opening and a Mallampati class IV airway assessment, nasal fiberoptic intubation was performed [8]. The procedure and postoperative recovery were uneventful, with no complications or adverse events documented.

## DISCUSSION

Mandibular fractures may present with subtle clinical signs, particularly when non-displaced, and may be overlooked if diagnostic evaluation is limited to intraoral radiography [4,6,9]. In this case, intraoral imaging would have identified only the carious lesion associated with tooth #17, potentially leading to inappropriate dental intervention and delayed fracture management. Panoramic radiography enabled timely diagnosis, appropriate referral, and prevention of complications such as fracture displacement, infection, or malunion [3–5,10]. This case reinforces the importance of selecting imaging modalities that align with the patient's history and clinical presentation.

## CONCLUSION

This case demonstrates that reliance on intraoral radiography alone may result in missed diagnoses with significant clinical consequences. Panoramic radiography provides essential diagnostic information that supports comprehensive patient assessment, timely referral, and improved patient safety. Dentists should maintain a low threshold for obtaining panoramic imaging in patients presenting with facial trauma, swelling, or unexplained mandibular pain [1–7].

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