

Coleman Sign: A Hallmark For Mandibular Fracture? A Rare Case Exception

Dr Premalatha Shetty(MDS)¹, Dr Aditya Nandan,² Dr Mahabalesh Shetty³, Dr Suraj Shetty⁴

¹Associate Dean, Professor, Oral and Maxillofacial department, Manipal College of Dental sciences, Mangalore, Manipal Academy of Higher Education, Manipal

²Postgraduate(BDS), Oral and Maxillofacial department, Manipal College of dental sciences, Mangalore, Manipal Academy of Higher Education, Manipal

³Professor& Head of Department, Department of Forensic Medicine & Toxicology
K S Hegde Medical Academy, NIITE (Deemed to be University)

⁴Associate Professor, Department of Forensic Medicine & Toxicology, K S Hegde Medical Academy, NIITE (Deemed to be University)

Email ID:Premalatha.shetty@manipal.edu¹, adityanandan1083@gmail.com²,
drmabs@yahoo.co.in³, Suraj.shetty@gmail.com⁴

Abstract: Mandibular fracture involving the parasymphysis region is one of the most common fractures of mandible. Majority of parasymphysis fractures are due to direct blow or injury to the chin region. Specific signs and symptoms for parasymphysis fracture are pain, swelling, tenderness in the chin region, deranged occlusion, soft tissue injury to chin and the lower lip and sublingual hematoma. Frank Coleman considered a sublingual hematoma as “almost pathognomonic of fracture of the mandible”. We present a case that fails to replicate this hallmark sign associated with a mandibular fracture, as the patient had all the signs and symptoms of parasymphysis fracture except sublingual hematoma which is very rare and unusual to observe. The final diagnosis was made on the basis of radiographic examination using CBCT scan. On surgical exposure the mandibular parasymphysis fracture in the region of right lateral incisor and canine was confirmed. Such clinical scenario is very rare and unusual to observe. This case emphasizes on the fact that though Coleman sign has a very high specificity for mandibular fracture but it may not have high sensitivity. The examining doctor who completely relies on this sign and thus miss the fracture would be committing a gruesome mistake. In addition, this can lead to a risk of undermining a grievous hurt as that of a simple one which can result in medicolegal implication.

Keyword: Coleman Sign, mandibular fracture, Sublingual Hematoma, negligence suit, medicolegal

1. INTRODUCTION

After trauma, certain clinical signs are suggestive of a fractured mandible, for example, a disturbance of occlusion, reduced mouth opening, and paresthesia of the lower lip. Other less specific conditions include pain, swelling, and facial bruising. These however can be caused by conditions other than fracture.¹ The most specific sign of mandibular fracture is sublingual hematoma, discovered by Frank Coleman (1910) almost 100 years ago. This is indeed very useful when the usual signs of fracture of a jaw are absent or difficult to detect clinically and radiographically as in case of hairline fracture. Coleman described the sublingual hematoma in association with trauma as an effusion of blood into the floor of the mouth with elevation of the mucous membrane and a “characteristic bluish, tense swelling under the tongue”.² He suggested that the presence of a sublingual hematoma alone could differentiate between an external bruise from one that was additionally associated with the disunion of jaw. He considered sublingual hematoma as “almost pathognomonic of fracture of the mandible”. Here is a case that fails to replicate this hallmark sign associated with a mandibular fracture, as the patient had all the signs and symptoms of parasymphysis fracture except sublingual hematoma, which is very rare and unusual to observe. This case emphasizes on the fact that though Coleman sign has a very high specificity for mandibular fracture, it may not have high sensitivity. The examining doctor who completely relies on this sign and thus miss the fracture would be committing a gruesome mistake. As a result, negligence suit can be filed against the doctor as he fails to carry out his medico legal duty in an accepted manner.³ In addition, this can lead to a risk of undermining a grievous hurt as that of a simple one which can result in medicolegal implication.

2. CASE REPORT

A 20-year-old young adolescent reported to the department of Maxillofacial Surgery with a chief complaint of severe pain in the chin region with slight difficulty in opening the jaw due to trauma from a road traffic accident the same day. On examination, a diffuse extraoral swelling, laceration over the lower lip and step deformity were present in the chin region. The swelling was tender on palpation. Intraoral findings included a deranged occlusion, step deformity in the region of right lateral incisor and canine and no sign of hematoma in the floor of the mouth. The patient had no other associated injuries elsewhere in the body. Based on the history and clinical features, a provisional diagnosis of mandibular fracture involving the parasymphysis was established.

For confirmation of the provisional diagnosis, CONE BEAM COMPUTED TOMOGRAPHY was advised. Following a clinical and radiographic assessment that confirmed the presence of mandibular parasymphysis fracture, the patient was scheduled for open reduction and internal fixation. Satisfactory anatomic reduction of fracture and restoration of the occlusion was achieved. The patient returned for follow up after 2 weeks and the fracture healing was observed to be uneventful.

3. DISCUSSION

Maxillofacial fractures are one of the most frequent due to the prominent position in the body. These mandible injuries are of great importance as they lead to varying degree of physical, functional and cosmetic disfigurement. Fractures of mandible can lead to

morbidities at high level. According to various studies, they account for 15.5 to 59% of all facial fractures^[4-7]. Mandibular fracture often breaches the periosteum and blood diffuses into the soft tissue of the floor of the mouth displaying the Coleman sign. In many mandibular fracture cases it becomes difficult to palpate the step or many times, the clinician misses the step. But on intraoral examination, the presence of sublingual hematoma is a good indication of a fracture and the clinician can go ahead with radiographic evaluation to confirm the diagnosis. The medullary blood vessel and the vicinity of the muscle prompt the clinician to look for this sign. The absence of Coleman sign in our case, despite the clinical and radiographic confirmation of fracture, necessitates the need to highlight the case.

A reasonable postulation for the absence of this sign could be the intact periosteum due to the resiliency of the bone in this young adolescent. Based on the reviews and experience, any mandibular parasymphysis fracture will have sublingual hematoma. Presence of sublingual hematoma is a definitive sign of a mandibular parasymphysis fracture. Absence of sublingual hematoma despite the presence of all the other feature of a mandibular fracture is a rare thing to observe. This being said, importance of Coleman sign lies more in the diagnosis of mandibular fracture than the exclusion of the fracture of the mandible, as most fractures of jaws are easy to detect.

Mandibular trauma is of medicolegal importance because it is often associated with varying degree of physical, functional and psychological damages. The long run complication of these fractures may raise medicolegal claims in the court proceeding.⁸ Most of the mandibular fracture occurs in the group of young people mainly due to road traffic accident and assault. Coleman Sign being the pathognomonic sign of mandibular fracture the examining doctor often relies on this sign and absence of this sign may prompt the examining doctor to not proceed with radiographic examination and other treatment especially in case of undisplaced or hairline fracture which can easily be missed even by an experienced surgeon. However, a doctor relying only on Coleman Sign and forgoing appropriate tests needed to diagnose mandible fracture may be considered negligent. Diagnostic errors generally indicate inadequate patient care, and the doctor might find himself being entangled in a negligence suit. The duties which a doctor owes to his patient are of care in deciding whether to undertake the case, a duty of care in deciding what treatment to give, and a duty of care in the administration of that treatment.⁹ Moreover, if a grievous hurt is reported as a simple hurt, the patient may be deprived of appropriate compensation, and the treating doctor may have unpleasant medico-legal issues. Patients sue because of a feeling that they were not heard, their needs were not attended to, and that nobody seemed to care, and as a result, a bad outcome resulted due to a mistake or negligence.¹⁰ Even though the primary duty of doctor is patient care, the medicolegal aspect associated with all cases of trauma should get adequate care before the execution of the treatment.

4. CONCLUSION

This case emphasizes on the fact that though Coleman sign has a very high specificity for mandibular fracture, it may not have high sensitivity. Although it is a pathognomonic sign for mandibular fracture the doctor should not rely on it completely or else, he would be committing negligence on his part and may end up with medico legal consequences.

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- **Informed Consent:** Informed Consent was obtained from the individual participant included in the study.

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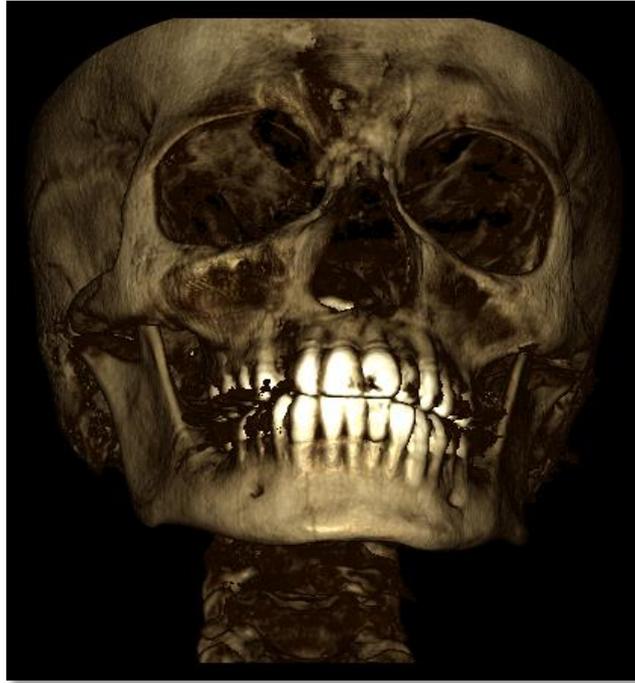
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1. Clinical picture along with Deranged Occlusion



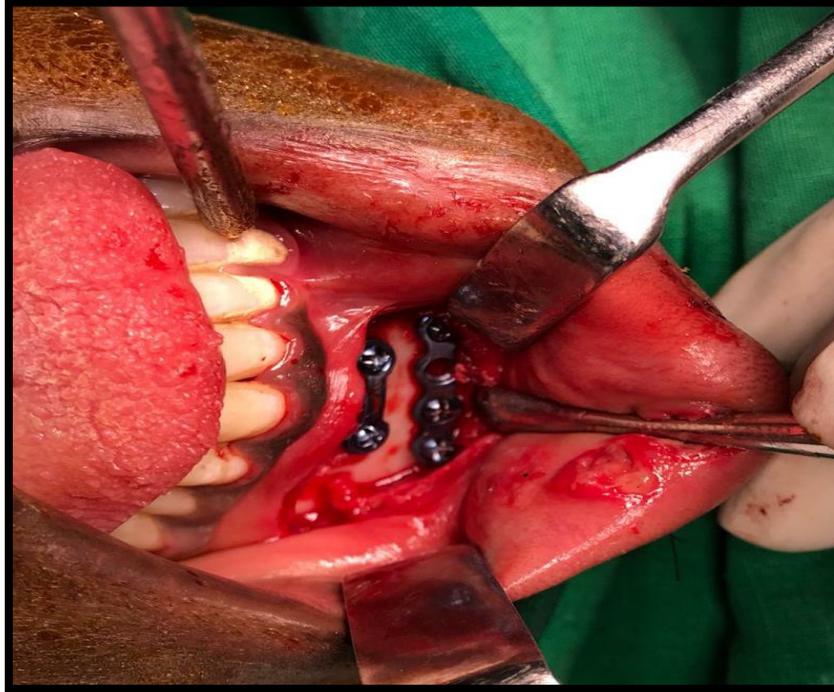
2. Intraoral pictures showing absence of Sublingual hematoma (Coleman sign).



3. 3D reconstruction of CBCT revealing parasymphysis fracture



4. Surgical exposure of fractured site revealing fracture line between right mandibular lateral incisor and canine



5. Open reduction and internal fixation using 2 mm miniplates and 10 mm screws