

AN UNUSUAL FRACTURE OF THE MANDIBLE

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SUMMARY

A rare case of horizontal fracture of mandibular symphysis caused by a sharp matchet cut is presented. Under local anaesthesia with sedation, the fracture site was exposed through the sutured laceration on the left submandibular region. The fracture was adequately reduced and fixed with two circum-mandibular wires. Healing was uneventful, but postoperative radiograph after six weeks revealed a bony defect in the anterior part of the lower border of the mandible, resulting from shifting of the fractured segment posteriorly during healing. Complete recovery of left lower lip sensation was found 4 months postoperatively.

INTRODUCTION

The mandible constitutes the bony structure of the lower third of the face. Although it is a strong, dense bone; it is frequently fractured because of its prominence and presence of several areas of inherent weakness.¹ It is the most frequently fractured facial bone.^{2,3} The mandible has a few mechanically weak portions, including the angle, condylar process, and both sides of the mentum.^{1,4} These areas are frequently fractured when an external force which exceeds the ultimate strength of the bone in those regions is applied to the mandible.

An isolated horizontal fracture of the mandibular parasymphyseal region is rare. Only one case of fracture of mandibular symphysis resembling horizontal osteotomy for genioplasty was found during our extensive search in the literature.⁴ A case of case of horizontal fracture of mandibular symphysis caused by a sharp matchet cut and the possible mechanism of the fracture is reported.

CASE REPORT

A 22-year-old Nigerian male reported in our clinic with a left mandibular fracture resulting from an assault (matchet cut) during a fight involving rival groups. He was referred to our hospital to treat the mandibular fracture after the soft tissue wound was treated at another hospital. He gave a history of loss of consciousness immediately after the in-

cident; he however, regained consciousness 24 hours later. On examination, he had a sutured laceration on the left submandibular region (Figure 1).



Figure 1 The patient at presentation with sutured submandibular laceration

He also had an abrasion wound on his left temporal area. Intraorally there was limited mouth opening, but there was no occlusal derangement. Paraesthesia of the left lower lip was also present. Plane radiograph revealed a displaced horizontal fracture line along the inferior border of the mandible across the mandibular symphysis towards the left body of the mandible (Figure 2). No other facial fractures were seen on the radiographs.



Figure 2 Preoperative radiographs showing horizontal fracture through mandibular symphysis

Under local anaesthesia with sedation, the fracture site was exposed through the sutured laceration on the left submandibular region. The fracture line passed through the inferior dental canal and the mental nerve was also exposed. The fracture was adequately reduced and two circum-mandibular wires were placed to fix the segments. Thorough debridement of the submandibular wound was done to exclude foreign bodies, after which the wound was closed in layers. The wires were left in place for 6 weeks.

Healing was uneventful, but postoperative radiograph after six weeks revealed a bony defect in the anterior part of the lower border of the mandible, resulting from shifting of the fractured segment posteriorly during healing (Figure 3). Complete recovery of left lower lip sensation was found 4 months postoperatively.



Figure 3 Postoperative radiograph 6 weeks after surgery (note shifting of the fractured segment posteriorly)

DISCUSSION

The mandible has a few mechanically weak portions, including the angle, condylar process, and both sides of the mentum.^{1,4} The locations and directions of mandibular fractures are nearly constant, although the impacts and directions of the external forces are variable.¹ Generally, the lower part of the condylar process is likely to be fractured by a horizontal external force applied to the mentum. The lateral and median portions of the mentum and the lower part of the condylar process are easily fractured by a vertical force.⁵⁻⁷ Halazonetis⁸ also concluded that the 'weakest' region of the mandible to fracture is the angle, because of its natural weakness and the presence of unerupted third molars.

An isolated horizontal fracture of the lower border of the mandible is rare. What could have been responsible for this unconventional horizontal fracture? Bone fractures occur when the local stresses exceed the ultimate strength of the bone in that region.⁹ Only an object approaching at high speed could produce enough of an impact force to fracture the bone in a "non-biomechanical" pattern. The object would have to have a horizontal orientation with a sharp edge when striking the mandible and such an acute loading would act like a high-powered osteotome.⁹

A similar nonconventional horizontal fracture of mandibular symphysis was recently reported by Mitsukawa *et al.*⁴ The fracture was caused by a flying object resulting from an explosion and resembled a horizontal osteotomy for genioplasty.

The use of non-rigid wire fixation must have been responsible for the shifting of the fractured segment posteriorly during healing despite adequate reduction intraoperatively in our case. The use of titanium miniplates should have provided stronger fixation, but this form of rigid fixation is not routinely employed in our centre due to financial constraint.

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