

Bilateral temporomandibular joint dislocation following pulmonary function testing: a case report and review of closed reduction techniques

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ABSTRACT

Temporomandibular joint (TMJ) dislocation is not a common presentation to the emergency department (ED) but one that requires prompt diagnosis and reduction. This is the first reported case of spontaneous bilateral TMJ dislocation after routine pulmonary function testing. The management of the case is discussed and a review of closed reduction techniques commonly used in the ED is presented.

Acute non-traumatic anterior temporomandibular joint (TMJ) dislocations are an uncommon presentation to the emergency department (ED) but require rapid diagnosis and treatment.

We present the case of a 78-year-old man who was unable to close his mouth or enunciate clearly immediately after pulmonary function testing (PFT) using a standard sized mouth piece (18 mm maximum diameter). He was greatly distressed and complained of bilateral preauricular pain and was immediately transferred to the ED where the diagnosis of bilateral anterior TMJ dislocation was made on clinical examination. There was no history of TMJ problems and despite being edentulous he was wearing well-fitting dentures.

The patient was given supplemental oxygen via nasal cannula and intravenous access was achieved. The bilateral anterior TMJ dislocation was easily reduced using the Hippocratic bimanual intraoral technique under conscious sedation (midazolam 1 mg intravenously) with two medical personnel present. There were no immediate complications and the patient was discharged from the ED with follow-up arranged with a maxillofacial surgeon. Repeat PFT at 6 weeks using the same standard equipment was uneventful.

DISCUSSION

Spontaneous anterior TMJ dislocation is not a common condition, with a reported annual incidence of 5.3 per 100 000 patients presenting to an ED.¹

Anterior TMJ dislocation occurs when the condylar process of the mandible lies anterior to the articular eminence of the glenoid fossa where it normally resides (fig 1). Typical clinical features include prognathia, open mouth, bilateral masseter spasm, preauricular swelling and tenderness, with a palpable depression immediately posteriorly corresponding to anterior condylar dislocation. Unilateral dislocations present with the jaw deviated away from the affected side.

Most anterior TMJ dislocations present spontaneously after the jaw is opened wide during

yawning, coughing, vomiting, laughing, chewing or passionate kissing or occur following facial trauma.

Iatrogenic anterior TMJ dislocations have been reported after upper gastrointestinal endoscopy,² transoral fiberoptic bronchoscopy,³ airway manipulation (eg, endotracheal intubation,⁴ laryngeal mask airway insertion),⁵ anaesthetic induction,⁶ dental work⁷ and examinations requiring prolonged wide opening of the mouth. This case is unique in describing such an injury after routine PFT, in which excessive mouth opening is not required.

There are many methods for reducing anterior TMJ dislocations in the ED. The Hippocratic method (fig 2A) is the most frequently described and involves the examiner standing in front of the patient and placing a gloved thumb on the posterior lower molars bilaterally with fingers wrapped laterally around the mandible. A constant inferior force is then applied and the mandible is eased back into the glenoid fossa posteriorly.

The wrist pivot method¹ involves the examiner in front of the patient placing gloved thumbs at the apex of the mentum with fingers inside the mouth on the occlusive surface of the mandibular molars. A superior force is applied through the thumbs and inferior pressure with the fingers with a "pivoting" motion occurring at the wrists until the reduction is made (fig 2B).

The extra-oral method⁸ requires the examiner to apply a posteroinferior force to the coronoid process with the thumbs and has the advantage of reducing the risk of accidental human bite injury to the examiner (fig 2C).

The combined ipsilateral staggered technique⁹ involves the reduction of each TMJ separately. The examiner uses one thumb intraorally to exert inferior pressure to the occlusive surface of the lower molars while simultaneously applying further posteroinferior pressure to the ipsilateral coronoid process extraorally (fig 2D). The manoeuvre is repeated on the contralateral side to complete the reduction.

Conscious sedation can be used with all methods of TMJ reduction; however, propofol should be used with caution as it is associated with acute and recurrent TMJ dislocations due to forceful yawning.⁶ Death from aspiration has been reported from TMJ reduction under conscious sedation⁷ and it is recommended that two medical practitioners are present with one solely responsible for observing the patient during the sedation.¹⁰

CONCLUSION

Healthcare professionals who routinely examine, investigate and treat patients by the oral route

Figure 1 Anatomy of the temporomandibular joint.

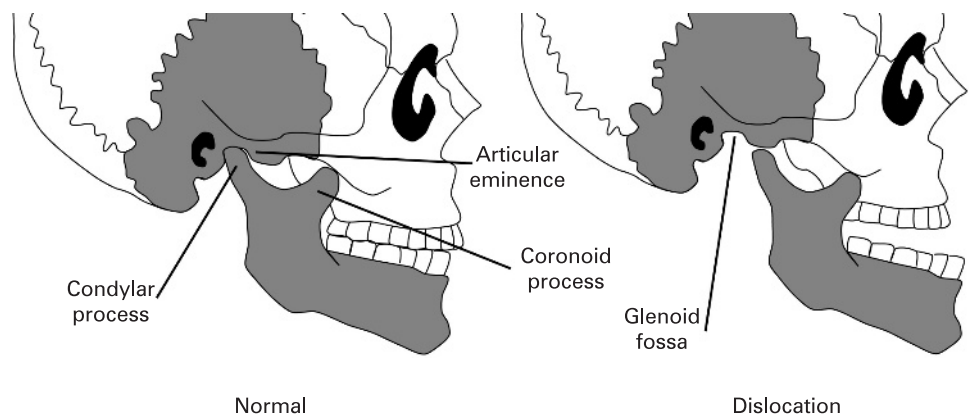
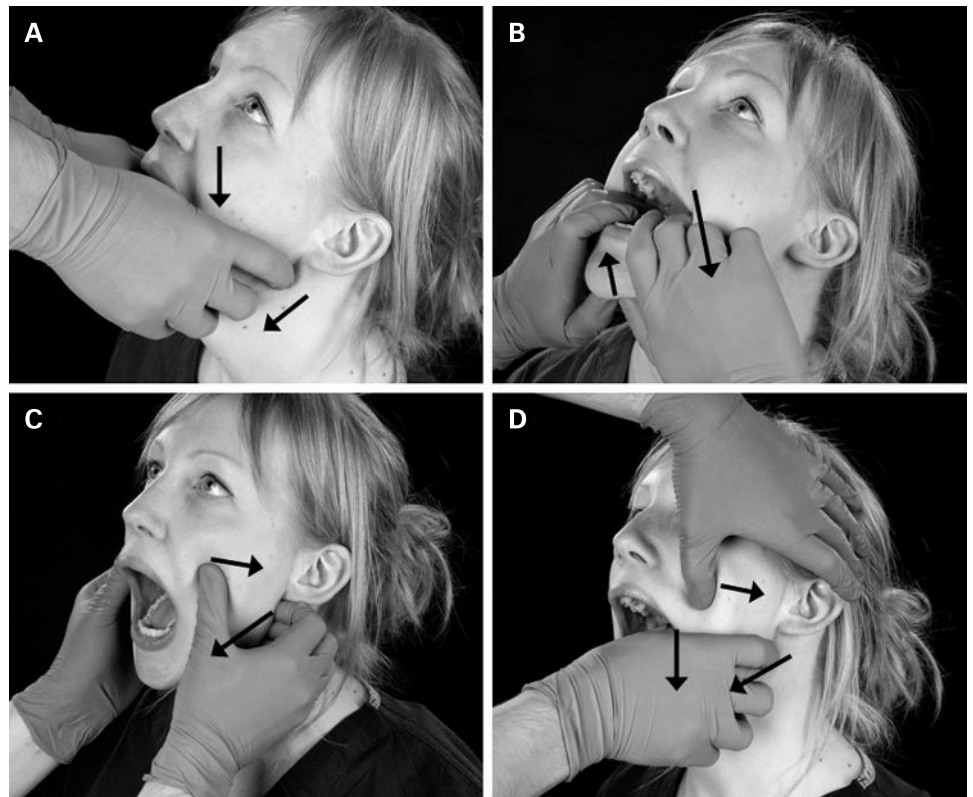


Figure 2 Closed reduction methods. (A) Hippocratic; (B) wrist pivot; (C) extra-oral; (D) combined.



must be aware of this uncommon but distressing complication so that prompt management and safe closed reduction can be facilitated. This case highlights the importance of displaying great care when investigating or treating elderly patients when any degree of mouth opening is required.

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REFERENCES

1. Lowery LE, Beeson MS, Lum KK. The wrist pivot method, a novel technique for temporomandibular joint reduction. *J Emerg Med* 2004;**27**:167–70.
2. Rosemore J, Nikoornanesh P, Lacy BE. Bilateral temporomandibular joint dislocation after PEG tube placement. *Gastrointest Endosc* 2004;**59**:146–7.
3. Kepron W. Bilateral dislocations of the temporomandibular joint complicating fiberoptic bronchoscopy. *Chest* 1986;**90**:465.
4. Schwartz AJ. Dislocation of the mandible: a case report. *ANA J* 2000;**68**:507–13.
5. Ting J. Temporomandibular joint dislocation after use of a laryngeal mask airway. *Anaesthesia* 2006;**61**:201.
6. Avidan A. Dislocation of the temporomandibular joint due to forceful yawning during induction with propofol. *J Clin Anesth* 2002;**14**:159–60.
7. Mariani PJ. Avoiding "death in the dental chair". *Am J Emerg Med* 1990;**8**:85.
8. Chen Y, Chen C, Lin C, et al. A safe and effective way for reduction of temporomandibular joint dislocation. *Ann Plast Surg* 2007;**58**:105–8.
9. Thomas ATS, Wong TW, Lau CC. A case series of closed reduction for acute temporomandibular joint dislocation by a new approach. *Eur J Emerg Med* 2006;**13**:72–5.
10. UK Academy of Medical Royal Colleges and their Faculties. *Implementing and ensuring safe sedation practice*. Report of an Intercollegiate Working Party chaired by the Royal College of Anaesthetists. London, 2000.