Bilateral Temporomandibular Joint Dislocations during Induction of Anesthesia and Orotracheal Intubation

Maliwan Oofuvong, MD*

** Department of Anesthesiology, Faculty of Medicine, Prince of Songkla University, Songkhla*

This is a reported case of bilateral temporomandibular joint dislocations during induction of general anesthesia and orotracheal intubation. The possible causes, diagnosis and treatment of such dislocations are described.

Keywords: *Temporomandibular joint dislocations, General anesthesia, Orotracheal intubation*

J Med Assoc Thai 2005; 88(5): 695-7
Full text. e-Journal: *http://www.medassocthai.org/journal*

General orotracheal anesthesia requires the forced opening of an unconscious patient's mouth by an anesthesiologist to allow access for laryngoscopy and endotracheal intubation. While this is usually a benign procedure, this case illustrates that dislocation of the temporomandibular joint could happen.

Case Report

A 30-yr-old Asian woman, height 160 cm, weight 64 kg, gravida 3, parity 1, abortion 1, was admitted at 8 weeks gestation with left lower quadrant pain and abnormal vaginal bleeding for a week. Ectopic pregnancy was diagnosed and the patient was scheduled for exploratory laparotomy under general anesthesia. Preanesthetic evaluation revealed an ASA physical status II from anemia, but she was healthy otherwise. The patient had had a previous right salpingectomy under general anesthesia 8 months previously without surgical or anesthetic complications. Her dentition was normal as was the ability to open the mouth and flex and extend the neck. After pre-oxygenation, anesthesia was induced with propofol 140 mg; during the slow injection of propofol the patient yawned forcefully 3 times. After establishing an adequate airway, cisatracurium 5 mg was administered. The chin lift technique was performed to control the patient's ventilation with halothane through a facemask for 5 minutes. There were no problems during laryngoscopy and intubation. It was noted that the patient's mouth was persistently open about 1 cm after the endotracheal tube had been put in place. At the end of the surgery she was fully awakened and complained of abdominal as well as jaw pain. Upon her recovery, morphine 2 mg was injected for pain control so she could rest. No one noticed that her mouth remained slightly open (approximately 1 cm).

Over the next 60 minutes, she was sent to the ward and began to develop swelling and pain over the bilateral temporomandibular joints and lost the ability to open and close her mouth. On palpation, the condyles of the mandible could be felt below the zygomatic arch. A film to examine the bilateral temporomandibular joints in closed- and open- mouth positions was immediately taken. The film showed bilateral anterior dislocations of the mandibular head (Fig. 1), which were easily reduced by pushing the mandible inferiorly and posteriorly by a surgeon, using intravenous fentanyl for sedation. The swelling and pain settled quickly, but after she regained full jaw mobility, the locked jaw developed again. The jaw was again reduced, and this time her mouth opening was good with stable closure, and both temporomandibular joints were moving freely. However, the surgeon instructed her not to open her mouth widely for the next 6 weeks and to eat a soft diet only.

Discussion

This brief case report, although associated with no serious sequelae, should serve to remind anesthesiologists of this possibility in patients with-

Correspondence to : Oofuvong M, Department of Anesthesiology, Faculty of Medicine, Prince of Songkla University, Songkhla 90110, Thailand. Phone & Fax: 0-7442-9621, E-mail: malewan@yahoo.com

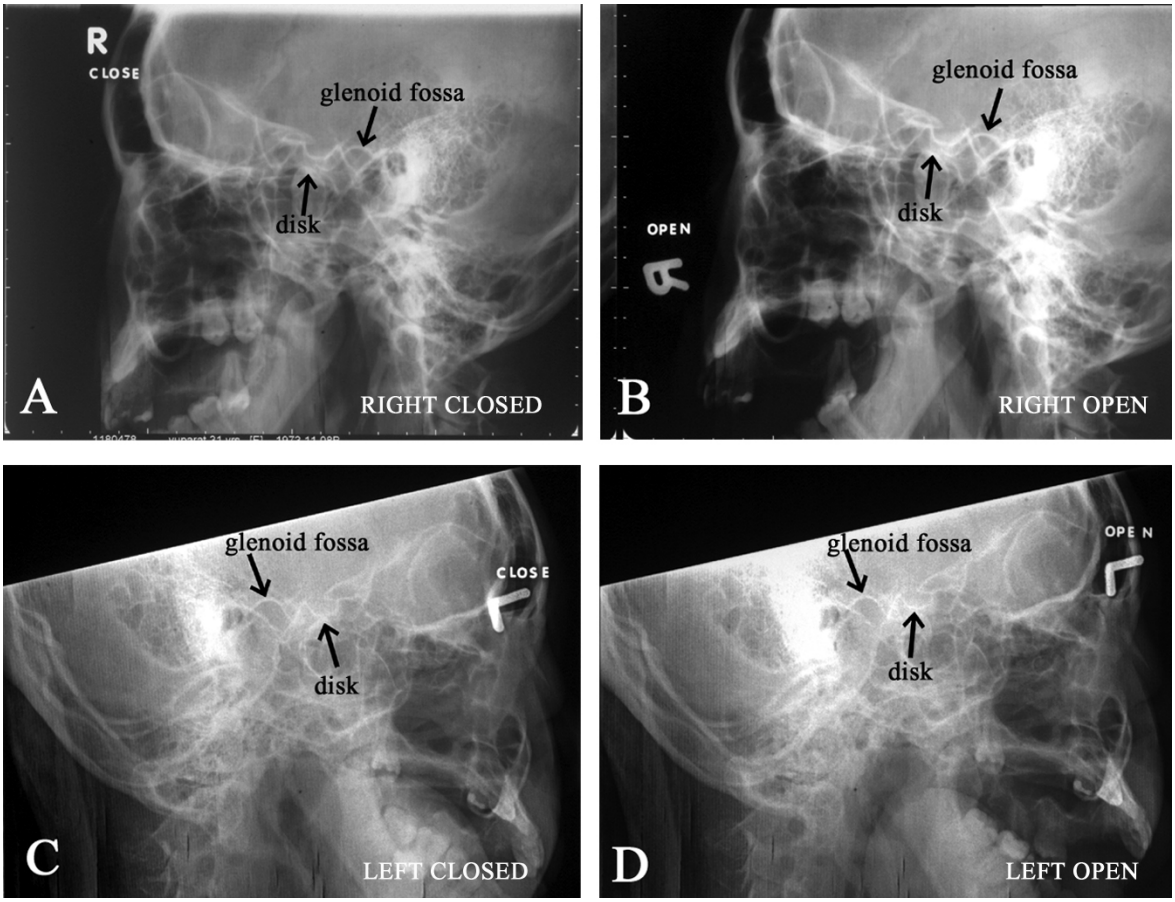

Fig. 1 Plain film right -closed (A), right -open (B) and left -closed (C), left -open (D) temporomandibular joint. The disc is moved anteriorly and inferiorly out of the glenoid fossa

out previous temporomandibular joint disease. Preoperative screening of mandibular function is recommended in identifying patients as either normal or having potential temporomandibular joint dysfunction. Domino KB[1] reported that the incidence of temporomandibular joint dislocations in intubated patients was 0.6% of all complications in the ASA closed claims project database, most often occurred in ASA I-II females younger than 60 years of age, and was associated with routine endotracheal intubation. Pre-existing temporomandibular joint disease was low (17% of the claims). The current case also fits this profile, as the presented patient was 30 years old, ASA status II, no previous history of temporomandibular joint dysfunction and no problems during intubation except for wide opening of the mouth.

Dislocation of the temporomandibular joints can occur either in awake patients that experience forced voluntary opening of the mouth during yawning, laughing or even bronchoscopy[2], or patients under general anesthesia[3,4]. However, several studies[3-6] have reported that yawning after induction with thiopental or propofol can lead to dislocation of the temporomandibular joints, particularly in association with muscle relaxation. Thus, it can occur after complete full paralysis with neuromuscular blocking agents either before intubation, leading to being unable to intubate because of locked jaws[7], or after intubation[8], even on placement of an oral airway and nasogastric tube[9]. This case was unusual, though, in that the dislocation might have occurred either following the 3 yawns after the intravenous propofol, from the chin lift 5 minutes after the intravenous cisatracurium, or during intubation. The dislocation of the temporomandibular joint was caused by displacement of the mandibular head out of the gleniod fossa. Anterior dislocation is the most common presentation, as was seen in the present case (Fig 1).

The diagnosis is usually based on the clinical observation of the characteristically widely open

mouth with inability to close it. Pain in the area of the temporomandibular joint and palpation of the condyle (below the zygomatic arch) confirms its absence from the glenoid fossa. Panoramic radiographic examination is used to confirm the diagnosis[10]. The degree of displacement or damage of articular soft tissue can be determined by MRI[11]. The closed reduction technique is required immediately after acute mandibular dislocation. The goal is to bring the condylar head down and around the articular eminence of the temporomandibular joint, which can be achieved by pushing the mandible inferiorly and posteriorly while standing in front of or behind the patient. Gould DB, et al[8] reported two cases of permanent injury to the right temporomandibular joints during orotracheal intubation without immediate closed reduction, leading to chronic mandibular dislocation.

Conclusion

An awareness of the potential for temporomandibular joint dislocation during routine anesthesia is important. The informed anesthesiologist is in an ideal position to diagnose and treat most of these dislocations at an early stage. Anesthesiologists should be reminded of this possibility in patients without previous temporomandibular joint dysfunction and that it can be associated with routine induction of general anesthesia.

Acknowledgement

The author wishes to thank Dr. Sasikaan Nimmaanrat for reviewing the case and the manuscript.

References

1. Domino KB. Closed malpractice claims for airway trauma during anesthesia. ASA newsletter 1998; 62: 1-5.
2. Kim SK, Kim K. Subluxation of the TM joint. Unusual complications of transoral bronchoscopy. Chest 1983; 83: 288-9.
3. Bellman MH, Babu KVR. Jaw dislocation during anesthesia. Anesthesia 1978; 33: 844.
4. Patel A. Jaw dislocation during anesthesia. Anesthesia 1979; 34: 376.
5. Gambling DR, Ross PLE. Temporomandibular joint subluxation on induction of anesthesia [Letter]. Anesth Analg 1988; 67: 91-2.
6. Avidan A. Dislocation of temporomandibular joint due to forceful yawning during induction with propofol. J Clin Anesth 2002; 14: 159-60.
7. Redick LF. The temporomandibular joint and tracheal intubation. Anesth Analg 1987; 66: 675-6.
8. Gould DB, Banes CH. Iatrogenic disruptions of right temporomandibular joints during orotracheal intubation causing permanent closed lock of the jaw. Anesth Analg 1995; 81: 191-4.
9. Sosis M, Lazar S. Jaw dislocation during general anesthesia. Can J Anesth 1987; 34: 407-8.
10. Epstein JB, Caldwell J, Black G. The utility of panoramic imaging of the temporomandibular joint in patients with temporomandibular disorders. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2001; 92: 236-9.
11. Shiratori K, Wakat JP, Umstadt HE, Bien S. Preoperative MR-imaging of the temporomandibular joint in patients with traumatic fracture of the mandible. Neuroradiology 1998; 40(Suppl 1)[abstract]: 18.

การหลุดเลื่อนของข้อต่อกรามเท็มโพโรแมนดิบูลาร์ทั้ง 2 ข้างขณะนำสลบและใส่ท่อช่วยหายใจ

มลิวัลย์ ออฟูวงศ์

รายงานผู้ป่วยที่มีการหลุดเลื่อนของข้อต่อกรามเท็มโพโรแมนดิบูลาร์ทั้ง 2 ข้างขณะนำสลบ และใส่ท่อช่วยหายใจ พร้อมทั้งได้อธิบายถึงสาเหตุที่เป็นไปได้ การวินิจฉัย และการรักษาภาวะการหลุดเลื่อนของข้อต่อกรามดังกล่าว
