Anesthetic Management by Laryngeal Mask Airway in a Patient With a History of Difficult Intubation Resulting in Dental Injuries

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Disabled patients may face respiratory problems during general anesthesia because of head and neck anomalies. We describe a case of dental treatment under general anesthesia using a laryngeal mask airway in a disabled patient who faced difficulty in endotracheal intubation on several occasions, 5 of which resulted in dental injuries.

Key Words: Laryngeal mask airway; General anesthesia; Difficult intubation; Dental injury.

Patients with disabilities may need to receive multiple dental treatments under general anesthesia. Furthermore, some of them need special care regarding respiratory management during the induction of anesthesia because of malformations of their head and neck.¹ Therefore, dental anesthesiologists should adopt a method of general anesthesia that is as minimally invasive and as safe as possible for these patients. Respiratory management using a laryngeal mask airway (LMA) has been reported to be easier than and as reliable as an endotracheal tube.² We report a case of dental treatment under general anesthesia using an LMA in a disabled patient who had previously experienced complications due to difficulty in endotracheal intubation on several occasions, approximately 5 of which resulted in dental injuries.

CASE HISTORY

Dental treatment under general anesthesia was scheduled for a 17-year-old girl with intellectual impairment, spina bifida, Arnold-Chiari malformation, and maxillofacial deformity.

She visited our hospital with her mother in 2009 with the chief complaint of checking her mouth. The dentist and dental hygienists in charge explained to her and her mother how to care for her mouth and continued checking it every 6 months. However, when her dental caries gradually worsened to a point that required treatment, her parents agreed to our proposal of dental treatment under general anesthesia.

The patient was unable to walk and used a wheelchair in daily life, but she could engage in simple communication with the dental staff. She was prohibited from flexing the neck because of Arnold-Chiari malformation. Her maxilla and upper incisors were protruding, but in contrast, the mandible and lower incisors were in a retrusive position. The overjet was 18 mm and her maximum mouth opening was 30 mm. She had undergone approximately 20 neurological surgeries under general anesthesia at other hospitals; endotracheal intubation had been difficult in every case because of the malformation of the jaws. In approximately 5 of the surgeries, dislocation of the upper incisors by a laryngoscope occurred during direct laryngoscopy.

We planned to use a flexible-type LMA (LMA Flexible; The Laryngeal Mask Airway Company) because, based on her past history, we expected that endotracheal intubation would be difficult and predicted that insertion

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of an LMA would be easy and sufficient to secure the airway during dental treatment.

On the day of the initial dental treatment, an LMA Flexible was inserted smoothly under general anesthesia after 50 mg of propofol, 0.3 mg of atropine sulfate, and continuous infusion of propofol at 8.3 mg/kg/h. We did not harm her teeth at all. Anesthesia was maintained with a continuous infusion of propofol at 8.3 mg/kg/h. After 70 minutes of dental treatment, including inlay cavity preparation and composite resin fillings, the LMA was removed without difficulty. Three months later, carious teeth were successfully treated under general anesthesia using the same procedure.

Consent for the publication of this case was provided by the patient and her mother, who is her legal guardian, and approved by the Hospital Ethics Committee.

DISCUSSION

The current report has shown that a dental anesthesiologist should consider using an LMA in dental treatment under general anesthesia wherein difficult endotracheal intubation may happen. An LMA has a higher success rate at securing the airway and does this more reliably than endotracheal intubation.¹ If a dental anesthesiologist persists in performing intubation maneuvers without success in difficult airway cases, dental injuries such as tooth avulsions and damage to crowns or bridges may ultimately occur.³ Mourão et al reported that minor oral trauma was significantly more frequent after endotracheal intubation than after the use of an LMA.⁴ Consistently, dental injury during the use of an LMA is rare.⁵

An LMA should not be used in cases where difficult LMA insertion or pulmonary aspiration is likely and where elevated positive pressure ventilation may be necessary. In the case reported here, the patient was able to open her mouth to an extent that was sufficient for the insertion of an LMA, and she had no other contraindications.

The degree of mouth opening and head and neck position may affect ventilation using an LMA⁶ because

the downward movement of the mandible causes reduction in the retroglossal airspace. In this case, we had predicted that the mouth opening would not exceed an optimal degree; however, the posterior displacement of the mandible may lead to ventilatory difficulty. We planned to perform nasal intubation using a fiber-optic scope if respiratory management using the LMA failed.

CONCLUSIONS

Although a reinforced LMA is reported to be effective during dental treatment under general anesthesia,⁷ its usage is not common in such cases in Japan. Dental anesthesiologists must realize that the use of an LMA for securing the airway during dental treatment under general anesthesia can decrease stress in both dental anesthesiologists and disabled patients.

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