Experience of General Anesthesia for Glossopexy in Infants With Robin Sequence

Chiaki Yoshikawa, DDS, PhD;[1] Chizuko Yokoe, DDS, PhD;[2] Hiroharu Maegawa, DDS, PhD;[2] and Hitoshi Niwa, DDS, PhD[2]

[1]Kobe Dental Association Kobe Dental Center, Kobe, Japan; [2]Department of Dental Anesthesiology, Osaka University Graduate School of Dentistry, Suita, Japan

We present a case of an infant patient with Robin sequence (Pierre Robin sequence; PRS) who underwent general anesthesia for a glossopexy procedure. Pediatric patients with PRS are prone to upper airway obstruction during general anesthesia induction and intubation difficulties due to micrognathia and glossoptosis. In this case, we facilitated mask ventilation by inserting a nasopharyngeal airway before induction and successfully intubated the patient using a 2-person technique that combined the use of a video laryngoscope and a flexible fiber-optic scope. This experience suggests that the use of appropriate devices can help ensure airway patency and enhance visualization and maneuverability during intubation.

Key Words: Robin sequence; Nasopharyngeal airway; Two-person technique; Fiberscope; Glidescope Cobalt; Pierre Robin sequence.

Pediatric patients with Robin sequence (Pierre Robin sequence; PRS) are prone to upper airway obstruction during induction of general anesthesia and difficulties with airway management and intubation due to micrognathia and glossoptosis. Careful attention should be paid during the induction of infants with a tendency toward airway obstruction, especially those with mask ventilation concerns. For airway management during general anesthesia in this case involving a young infant girl with PRS, we inserted a nasopharyngeal airway before induction, which facilitated adequate mask ventilation. In addition, we intubated the patient successfully using a 2-person technique with multiple video-assisting devices.

CASE PRESENTATION

The patient was a 45-day-old infant girl (height, 53 cm; weight, 3125 g; body mass index, 11.1 kg/m^2) with obvious micrognathia caused by PRS who was scheduled for a glossopexy to help improve upper airway obstruction (Figure). Prior to surgery, she had difficulty sleeping supine and instead slept in the lateral or prone position. Breathing while crying was effortful with desaturations down to 85% on room air.

Before surgery, scopolamine (0.05 mg) was injected intramuscularly, and after the intravenous (IV) line was secured in the operating room, midazolam (0.5 mg) was administered. Once sedation was achieved, an uncuffed, 3.0-mm ID oral endotracheal tube (ETT) was inserted to a depth of 8 cm through the right nostril for use as a nasopharyngeal airway (NPA). After improvement of upper airway obstruction in the supine position was achieved with the modified NPA, slow mask induction was performed with sevoflurane (5%) and oxygen (4 L/min). IV rocuronium (3 mg) was administered after it was confirmed that the patient could be mask ventilated without difficulty.

We attempted nasal endotracheal intubation with an uncuffed, 3.0 oral ETT using a GlideScope Cobalt (GS-C; Verathon Medical [Canada] ULC) video laryngoscope with a size 1 blade and a flexible fiber-optic scope (FFS; OD 2.2 mm) fed through the ETT. However, guiding the tip of the ETT into the glottis was difficult, so a 2-person technique[1] was used. One anesthesiologist performed laryngeal deployment (described below) using the GS-C, and the other anesthesiologist operated the FFS while viewing both the GS-C and FFS screens to guide the tip of the FFS into the trachea, which was then used to guide the advancement of the ETT. This resulted in successful intubation.

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Address correspondence to Dr Chiaki Yoshikawa, Kobe Dental Association Kobe Dental Center, 5-1-1-201, Futaba-Cho, Nagata-ku, Kobe, Japan; cy911227@gmail.com.

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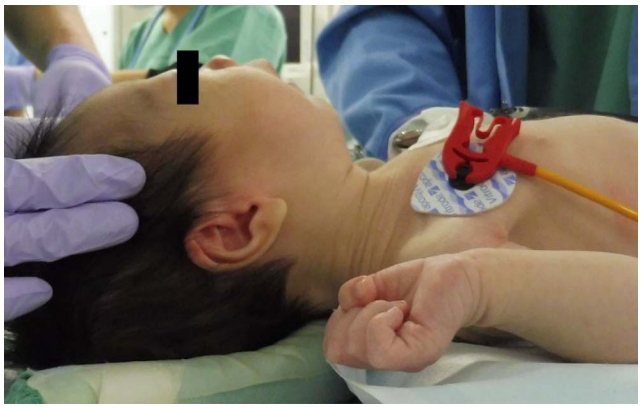
Figure. Lateral Facial View of the Patient With Micrognathia



This patient with PRS had upper airway obstruction due to micrognathia and glossoptosis and was emaciated due to physical exhaustion from respiratory efforts. Difficulty with mask ventilation and intubation was easily anticipated.

This 2-person technique used both a video laryngoscope and a FFS to facilitate successful FFS manipulation by lifting the root of the tongue with the video laryngoscope to broaden the laryngopharynx area (ie, laryngeal deployment). This technique may be applicable in cases in which there is difficulty guiding the FFS tip into the glottis using the FFS alone. In the present case, we used a GS-C instead of a traditional laryngoscope, which made positional awareness between the glottis and tip of the FFS easier for the FFS operator. The large elevation angle of the GS-C blade may also be advantageous for positioning the blade in the epiglottic valley of infants with small mandibles[2] and lifting the tongue more effectively.

In this case, intramuscular (IM) scopolamine was administered as a premedication to adequately suppress secretions. Scopolamine has a stronger inhibitory effect on airway secretions than atropine does,[3] and its use as an IM premedication is believed to have provided a sufficient effect by the time of entry into the operating room (~20 minutes). Airway secretions may cause noxious stimulation of airway reflexes (ie, laryngospasm) and aspiration, both of which can complicate anesthesia management and induction. Secretions can also make intubation more difficult because of obstructed vision during FFS operation. This is especially important when operating a thin FFS for pediatric cases because there is no suction port to help clear airway secretions. As a result, the use of scopolamine may be advantageous when FFS use is anticipated in neonates and infants.

In our experience, this patient with PRS in whom securing an airway was expected to be difficult was successfully intubated by using IM scopolamine and IV midazolam, mask ventilation with a modified nasopharyngeal airway, and a 2-person video laryngoscope and FFS technique to facilitate ETT placement.

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