

Our Experience With Retrograde Intubation in Ankylosis of the Temporomandibular Joint in a Child Of Six Years

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Abstract

Ankylosis of the temporomandibular joint is a serious pathology; it is a joint disease requiring bone reconstructive treatment. The etiology of ankylosis of the temporomandibular joint includes a trauma, a previous operation of this area, arthritis and a previous infection. It can be congenital, and in some cases idiopathic. In ankylosis of the temporomandibular joint, a child may experience the following problems: impaired airway maintenance, difficulty in feeding, impaired speech development. We present a case of a 6-year-old child with ankylosis of the left temporomandibular joint found in infancy. A 6-year-old male child weighing 16 kg, with a diagnosis of left-sided ankylosis of the temporomandibular joint, was placed in the maxillofacial department at the surgical clinic of the Azerbaijan Medical University to relieve ankylosis. Surgery of ankylosis of the temporomandibular joint belongs to the category of difficult intubation, since direct visualization of the vocal cords is difficult due to the inability to open the mouth. In ankylosis of the temporomandibular joint, blind nasal intubation is usually recommended. But, this technique can fail, and repeated attempts at intubation can damage the corresponding structures, which will lead to complications such as bleeding, edema, laryngospasm, aspiration. And ultimately, any compromise in the airways will be detrimental to the pediatric population. Currently, the use of a fiberoptic laryngoscope can be the treatment of choice for difficult airways. But in some clinics this may not be available. Therefore, in such situations, it is necessary to consider alternative options, one of which is retrograde intubation.

Key words: Retrograde intubation; Ankyloses

1. Introduction

Ankylosis of the temporomandibular joint is a serious pathology; it is a joint disease requiring bone reconstructive treatment [1-4]. The etiology of ankylosis of the temporomandibular joint includes a trauma, a previous operation of

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this area, arthritis and a previous infection. It can be congenital, and in some cases idiopathic. In ankylosis of the temporomandibular joint, a child may experience the following problems: impaired airway maintenance, difficulty in feeding, impaired speech development [5-10]. In addition, ankylosis of the temporomandibular joint in a child prevents the development of the facial skeleton and tooth of the alveolar process in a developing child. Severe disfigurement of the face can cause psychoemotional stress in a child. In children, unilateral ankylosis of the temporomandibular joint causes facial asymmetry due to the deviation of the chin towards the affected side. Therefore, timely diagnosis of ankylosis of the temporomandibular joint, especially in children, and early surgical intervention should be used to prevent changes in growth and psyche. Anesthesiological aid, including intubation of a patient with ankylosis of the temporomandibular joint, is always a big problem due to the impossibility of a full opening of the oral cavity. A number of methods are possible, which include blind nasal intubation, retrograde intubation using a guide conductor, intubation using a fiberoptic laryngoscope, and tracheostomy. Retrograde intubation is another alternative method of intubation of the complex airways for ankylosis of the temporomandibular joint. This technique is performed with a puncture of the cricothyroid membrane with a needle located at a large angle to pass the conductor through the larynx and then it is sent through the nose or mouth. The endotracheal tube then advances in direction using the Seldinger technique into the trachea.

2. Disease History

We present a case of a 6-year-old child with ankylosis of the left temporomandibular joint found in infancy. A 6-year-old male child weighing 16 kg, with a diagnosis of left-sided ankylosis of the temporomandibular joint, was placed in the maxillofacial department at the surgical clinic of the Azerbaijan Medical University to relieve ankylosis. No comorbidities were found in the child. When examining the child, it was found that the maximum opening of the oral cavity (interdental space) is 4 mm with hypoplasia of the lower jaw (Fig. 1).



Fig. 1. Child with ankylosis of the temporomandibular joint.

In terms of preoperative examination, expectation of difficult airways was noted. Intubation of the trachea with direct laryngoscopy and the use of the pharyngeal airway were excluded. The plan for anesthesia was retrograde tracheal intubation. The anesthesia plan was explained to the parents and their consent was obtained. Premedication in the operating room was carried out by intravenous administration of atropine 4 μg / kg and midazolam 1 mg followed by the minimum mandatory monitoring (pulse oximeter, capnograph, electrocardiography and non-invasive blood

pressure). Induction in anesthesia was carried out by intravenous administration of propofol 4 mg / kg. After the patient fell asleep in order to ensure airway patency in the complex of anesthesiological aid, we punctured the cricothyroid membrane with an 18 G Tuohy needle. The endotracheal location of the needle was identified by air aspiration. A catheter was placed in the lumen of the needle, which advanced in the cranial direction into the oral cavity. To perform retrograde intubation, we used a flexible guide wire with a J-tip. The endotracheal tube was then passed through the catheter in the caudal direction into the trachea. During the passage of the endotracheal tube through the glottis, a certain obstacle was felt, which, by lightly pressing on the cricoid cartilage, was able to level (Figs. 2 and 3). The endotracheal location of the tube was confirmed by capnography of carbon dioxide in exhaled air and was accompanied by characteristic breathing sounds during auscultation. Anesthesia was supported by oxygen, sevoflurane, esmeron, fentanyl with controlled ventilation. The operation lasted almost 3 hours. Before extubation, the operating surgeon confirmed the opening of the mouth. After a complete recovery of reflexes, independent breathing and consciousness, the patient was extubated on the operating table.



Fig. 2. Child after successful surgery.



Fig. 3. A child after successful surgery and extubation of the trachea.

3. Discussion

Surgery of ankylosis of the temporomandibular joint belongs to the category of difficult intubation, since direct visualization of the vocal cords is difficult due to the inability to open the mouth. In ankylosis of the temporomandibular joint, blind nasal intubation is usually recommended. But this technique can fail, and repeated attempts at intubation

can damage the corresponding structures, which will lead to complications such as bleeding, edema, laryngospasm, aspiration. And ultimately, any compromise in the airways will be detrimental to the pediatric population. Currently, the use of a fiberoptic laryngoscope can be the treatment of choice for difficult airways. But in some clinics, this may not be available. Therefore, in such situations, it is necessary to consider alternative options, one of which is retrograde intubation.

4. Conclusions

The difficult management of the airways in ankylosis of the temporomandibular joint in a pediatric patient is a difficult task that requires experience and good planning, ready to deal with any complications arising from frequent attempts at intubation, such as bleeding, trauma, laryngospasm and hypoxemia.

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