

Tongue Edema and Difficult Intubation: A Report of Two Cases

DİL ÖDEMI VE ZOR İNTUBASYON: İKİ VAKA

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SUMMARY

Two children, two and four years old, were diagnosed as complete cleft palate. In both cases using a mouth gag and tongue plate were placed and surgical repair was performed with bilateral mucoperiosteal flab technique under general anaesthesia. At the end of operation lasting approximately four hours, cases were extubated. But, tongue edema developed within the first thirty minutes. In the first case, it was not possible to establish an oral airway, because the tongue was markedly swollen. Airway was provided with nasal blind intubation while keeping spontaneous respiration. In the second case, edema was diagnosed earlier and oral intubation could be performed. Cases which were considered to have resulted from prolonged tongue compression, were given anti-edema treatment. Edema decreased to enable extubation on the postoperative fifth day in case one and on the seventh day in case two.

Key Words: Cleft lip, Cleft palate, Difficult Intubation

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Intubation difficulties may be caused by various anatomic and pathologic factors. If difficult intubation is recognised preoperatively, the degree of difficulty must be determined and appropriate approach should be chosen. With these two cases, we aimed to determine the importance of early management in rapidly increasing airway obstruction following extubation.

Case No.1: A two year old boy was diagnosed as having complete cleft palate. On preoperative assess-

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ÖZET

İki ve 4 yaşında iki çocukta komplet damak yarığı tanısı kondu. Genel anestezi altında ağız açacağı ve dil basacağı yerleştirildi ve bilateral mukoperiosteal flab tekniği ile cerrahi tedavi sağlandı. 4 saatlik operasyon sonunda hasta ekstube edildi. Ancak ilk yarım saatte dil ödemi gelişti. İlk vakada dil çok büyüdüğü için ağız yolu sağlanamadı ve spontan solunum devam ederken nazal kör entübasyonla hava yolu sağlandı ve oral entübasyon yapılabildi. Uzun süreli dil kompresyonu sonucu dil ödemi geliştiği düşünülen vakalara antiödem tedavisi verildi. Ödem geriledi ve ilk vakada beşinci gün, ikinci vakada yedinci gün ekstübasyon yapıldı.

Anahtar Kelimeler: Yarık dudak, Yarık damak,
Zor entübasyon

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ment, his general status was good, he was active with no systemic problems. After monitorisation, anaesthesia was induced with succinylcholine (2 mg/kg) and halothane given with a mask and maintained by O₂+N₂O+Halothane. Intubation was straightforward and atraumatic. With sufficient depth of anaesthesia and stable vital signs a tongue plate was placed by the surgeon with the use of an automatic retractor. Complete cleft palate was repaired with bilateral mucoperiosteal flab method. Operation lasted four hours during which 200 cc blood was transfused and vital signs remained stable. The patient was extubated after ventilation with %100 O₂ for 4-5 minutes. After extubation, ventilation frequency and depth was sufficient and the patient was in comfort. Tongue edema was noticed within thirty minutes in the recovery room. Relating the tongue edema to prolonged compression by the

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Figure 1. First case.
OT: Orotracheal tube

tongue plate, the patient was taken under close inspection, but, within a short period, tongue edema increased and spread to adjacent tissues. With this development preparation was made for emergency intubation. Due to tongue edema direct laryngoscopy was not possible, therefore, while keeping spontaneous respiration nasal blind intubation was tried, and, it was successful only after the third attempt. The patient breathing spontaneously via the nasotracheal tube, was transferred to the intensive care unit. Widespread head and neck edema developed during the first six postoperative hours (Fig 1). With presumptive diagnoses edema due to prolonged tongue compression, anti-edema treatment was initiated. On the fifth postoperative day, head and neck edema decreased and tongue became smaller, patient was extubated and followed for a further 24 hours and he was transferred to the plastic surgery service with stable vital signs.

Case No.2: A four year old girl with complete cleft palate and with no other preoperative problems was taken to operating room. Anaesthesia was induced

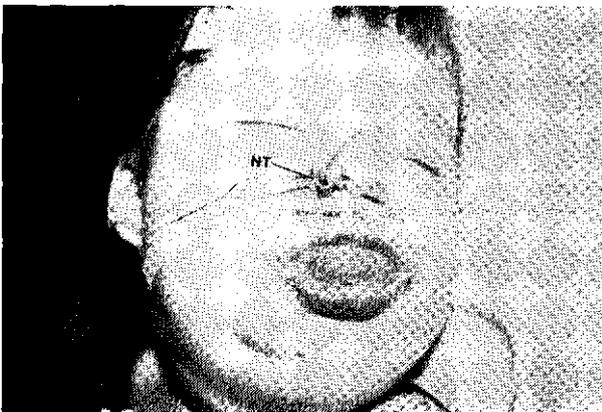


Figure 2. Second case.
NT: Nasotracheal tube

with thiopenthal (5 mg/kg) and succinyl choline (2 mg/kg) and maintained with O₂+N₂O+Halothane. No problem and soft tissue trauma occurred during intubation. With sufficient depth of anaesthesia a tongue plate was placed atraumatically by the surgeon; repair was performed by mucoperiosteal flab method. During a 3.5 hour long operation with no anaesthetic or surgical complications. At the end of the operation, patient was extubated, and, was brought to the recovery room. Tongue edema developed in the first 30 minutes. With the experience gained from the first case. It was thought that the same problem could occur in this second case, therefore early intervention was made while direct oral laryngoscopy was still possible. Orotracheal intubation was performed under sedation with respiration under control, and, was transferred to the intensive care unit. During the first four hours of the postoperative period, tongue edema increased and spread around and under the chin (Fig 2). With presumptive diagnoses edema due to prolonged tongue compression, anti-edema treatment was initiated. On the postoperative seventh day, tongue edema decreased to allow comfortable respiration, the patient was extubated and transferred to the plastic surgery service after further 24 hours of observation.

DISCUSSION

Difficulties in intubation can be met in identifying laryngeal structures, inserting the tube in the trachea or both. Degree of difficulty ranges from mild cases where a portion of the glottis can be seen, to severe situations in which epiglottis cannot be visualised at all. Problems may arise even in cases where the difficulty is predicted and precautions are taken (3). In both our cases, preparation and instrumentation were made predicting some difficulties. But, in both cases intubation was carried out without any difficulty. Cormach and Lehane (2) proposed a four grade classification depending on the laryngoscopy view and ranging from full visualisation of larynx to cases where even soft palate could not be seen. Mallampati et al (6) described a similar classification using the tongue/pharynx ratio. In both classifications, in the fourth grade even soft palate could not be seen. In such cases, since direct laryngoscopy cannot be performed, it is recommended to keep the patient's spontaneous respiration during manipulations to secure the airway. Our first case ranked fourth grade in both classifications. Direct laryngoscopy was not attempted and spontaneous respiration was protected during nasal intubation. Second case, ranked third grade in both classifications, but, with the onset of edema following extubation, progressed to grade four.

Congenital facial and upper respiratory tract determination, maxillofacial and airway traumas, airway tumours and abscesses, neck and face fibrosis resulting from burns or radiation: surgical deformities and some

systematic diseases may cause pathological intubation difficulties (1).

Difficulty in our cases is due traumatic edema causing upper airway obstruction and therefore can be classified as pathologic.

In difficult intubations, preoperative assessment, experience of the anaesthesiologist, assisting staff, repeated intubation attempts, oesophageal intubation, aspiration of the gastric contents, dark skinned patients and faulty anaesthetic technique are amongst factors affecting mortality and morbidity (4). In our first case, nasal blind intubation was successful only after the third attempt. No other factors to increase morbidity or mortality can be found in either of the cases.

Lees and Pigot published early postoperative complications in 133 cases of primary cleft lip and palate surgery, and listed three cases with early respiratory difficulty after extubation. But, no details on the cause of difficulty and its assessment been given (5). In both of our cases, intubation difficulty developed early after extubation and both patients were intubated to secure the airway.

Various methods can be used in intubation difficulties, these include simple methods like readjustment of the head and neck position, applying pressure on the cricoid cartilage, pulling out the tongue with a haemostatic clamp, using intubation forceps, inserting a guidewire through the tube, trying different laryngoscopes and blades, visual or blind nasal intubation, and special methods like optical guide, prism laryngoscope, fiberoptical intubation bronchoscope, fiberoptical guide and rigid bronchoscope, retrograde intubation, cricothyrotomy and awake intubation (3). In our first

case, of the simple methods, head and neck position adjustment and blind nasal intubation were performed. As they require an oral approach other techniques were not attempted. With the exception of fiberoptical intubation, all other special methods require oral approach as well. Suitable paediatric-sized fiberoptical intubation bronchoscope was not available. In the second case, adjustment of the head and neck position and direct laryngoscopy was sufficient for intubation.

In conclusion, anaesthesiologist should be aware that in all cases of cleft palate repaired with the use of tongue plate, edema resulting from either prolonged compression can rapidly progress and cause respiratory difficulties, and be prepared for difficult intubation.

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