Medical Science

pISSN 2321–7359; eISSN 2321–7367

Difficult airway management of 17 years old patient with Osteosarcoma of jaw

Nitin R Alaspurkar[1], **Vijay Chanadak**[2], **Aruna Chandak**[3], **Vivek Chakole**[4], **Jayashree Sen**[5], **Nikhil Bhalerao**[6], **Sanjot Ninave**[7]

To Cite:
Alaspurkar NR, Chanadak V, Chandak A, Chakole V, Sen J, Bhalerao N, Ninave S. Difficult airway management of 17 years old patient with Osteosarcoma of jaw. Medical Science 2022; 26:ms294e2178. doi: https://doi.org/10.54905/disssi/v26i125/ms294e2178

Authors' Affiliation:
[1]Junior resident 3rd year, Department of Anaesthesiology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Science, Maharashtra, India; nitin.alaspurkar@gmail.com
[2]Associate Professor, Department of Anaesthesiology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Science, Maharashtra, India; vijaychandak60@gmail.com
[3]Professor, Department of Anaesthesiology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Science, Maharashtra, India; doctorchandak@gmail.com
[4]Professor and Head, Department of Anaesthesiology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Science, Maharashtra, India; drvivekchakole@rediffmail.com
[5]Professor, Department of Anaesthesiology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Science, Maharashtra, India; Jayashree_sen@rediffmail.com
[6]Assistant Professor, Department of Anaesthesiology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Science, Maharashtra, India; docnics@gmail.com
[7]Professor, Department of Anaesthesiology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Science, Maharashtra, India; drsusann02@rediffmail.com

Peer-Review History
Received: 17 May 2022
Reviewed & Revised: 19/May/2022 to 15/July/2022
Accepted: 17 July 2022
Published: 20 July 2022

Peer-review Method
External peer-review was done through double-blind method.

URL: https://www.discoveryjournals.org/medicalscience

ABSTRACT

The management of a problematic airway is one of the most critical tasks for an anaesthesiologist. Airway issues are one of the most common causes of anaesthesia-related morbidity and mortality. Poor airway management has been recognised as a serious patient safety issue for nearly three decades, emphasising the significance of a comprehensive airway assessment before to anaesthesia induction.Mask ventilation and endotracheal intubation are considered challenging in patients with osteosarcoma of the jaw, where the mass protrudes from the mouth. Video laryngoscopic equipment, retrograde intubation, the laryngeal mask airway, Fibreoptic bronchoscope-guided intubation, and the pliable fibre optic stylet are among the procedures and equipment used to facilitate tracheal intubation in patients who are expected to have a difficult intubation. Anesthetists as well as surgeon prefer awake fibreoptic endotracheal intubation. Fiberoptic intubation with sedatives and local anaesthetics is a safe procedure for securing the airway in a difficult situation; even if the patient does not consent to an awake intubation. Here we report airway management of a 17 years old patient with osteosarcoma of jaw.

Keywords: Difficult airway, awake intubation, Fibreoptic bronchoscope, Osteosarcoma

1. INTRODUCTION

The managing of difficult airways is one of the most critical jobs for anaesthetists. One of the most common causes of morbidities is associated with airway problems. Poor airway management has been recognised as a serious patient safety issue for nearly three decades, underscoring the importance of a thorough airway examination before induction of anesthesia. A difficult airway can be defined as a clinical scenario in which a normally educated anaesthetist has difficulties with upper airway facemask ventilation, tracheal intubation, or both. Improvements in healthcare management, airway equipment, clinical guidelines, and training have all helped to lower the number of deaths.These alterations increase the chances of a difficult airway management (Cattano et al., 2013). In patients who are expected to have a difficult airway, a variety of treatments and equipment are employed to aid

tracheal intubation like video laryngoscopic equipment, retrograde intubation, the laryngeal mask airway, Fibreoptic bronchoscope-guided intubation, and the pliable fiberoptic stylet are among them. In a survey of problematic airways, all had severe functional difficulties and were unable to allow a smooth access for the FOB without the use of a professional helper and additional help such as tilting of head along with chin lift, jaw push forward, and teeth protrusion (Greenland & Irwin, 2004). Furthermore, only a few institutions have airways that are commercially available or various airway management devices.

Jaw bone tumours are one of the most infrequent forms of neoplasms. Osteosarcoma of the jaw bones is a different form of osteosarcoma than the prevalent type seen in long bones. The posterior section of antrum is the most usually affected areas in maxillary tumours. The most typical variety of primary malignant bone tumour, excluding plasma cell cancers, is osteosarcoma, also known as osteogenic sarcoma. The appendicular skeleton is frequently involved. It accounts for around 15% of all primary bone cancers that are confirmed by biopsy (Fortega et al., 1986). There are several varieties of osteosarcoma of the jaw bones, however they are divided into two categories: primary and secondary (Rajendran, 2006).

The cause of main type is uncertain; it could be a result of genetics or other environmental influences. Secondary craniofacial osteogenic sarcomas develop in patients with skeletal Paget's disease, (Brackenridge, 1979) bone fibrous dysplasia, and as a late complication of craniofacial irradiation (Huvos et al., 1985). Fast bone growth (Garrington et al., 1967) as the incidence rises during the adolescent growth spurt. Here we present a case scenario of the anticipated difficult airway of 17 years old patient with osteosarcoma of jaw.

2. CASE REPORT

17 years male patient presented with swelling since 1month which was sudden in onset, rapid in progression, continuous in growth and was initially small in size and gradually increased to present size of 10cmX4cm. With protrusion into the oral cavity, there was a restriction in mouth opening. Swelling was associated with pain which was sudden in onset, dull aching intermittent and radiating to the right side of the forehead and pain was aggrevating on mastication and relived on its own over time. Patients also complaints about difficulty in breathing which aggrevates on lying down due to pressure effect on trachea. There was no history of trauma and family history was non-significant. Histology showed the fibroblastic variant of osteosarcoma of the lower jaw.

On general examination, patient was moderately built with the weight of 54kg and the height of 155cm. His pulse rate was 112/min, blood pressure was 118/82mmhg, his respiratory rate was 22/min and the oxygen saturation was 97% on room air.He was conscious, cooperative and oriented to time, place and person. No pallor, edema, icterus, cyanosis, clubbing or enlarged lymph node. He was a febrile. On air way examination, the patient’s mouth opening could not beassessed due to mass, a thyromental distance of more than 6 cm, and acceptable neck motion on preoperative examination. MPC scale could not be assessed due to mass (Figure 1). Simple exercise (4 metabolic equivalents) was tolerated by the patient. There was continuous dribbling of the saliva from the patient’s mouth due to mass. Patient was complaining about the breathlessness on lying down position and the respiratory complaints were absent in standing or sitting position.

Figure 1 Pre intubation picture

On examination of respiratory system, he had normal vesicular breath sounds with equal air entry on both side of chest and no added sounds. No tracheal deviation was seen. No history of any recentinfections of upper and lower respiratory tract. His chest x-ray shows normal lung parenchyma. Patient was complaining about the breathlessness on lying down position and the respiratory complaints were absent in standing or sitting position. On cardiovascular systemic examination, no visible pulsations were seen. JVP was normal. On auscultation S1 S2 heard, no murmurs heard. 12 lead ECG was taken and found to be normal. His Central Nervous System examination showed full Glasgow Coma Scale i.e. E4V5M6 with no neurological abnormalities. He had no sensory or motor power impairments.

On gastrointestinal system examination there was no tenderness or organomegaly. No history of trauma in the past. No history of any drug /food/particulate allergy. There was no previous history of surgery. There is no family history of chronic diseases or congenital anomalies. His routine blood tests revealed that he had a normal complete blood count, kidney, liver, and thyroid function. His coagulation profile and liver enzymes were likewise normal. After discussing the plan of management surgeons he was posted for an elective nasotracheal intubation. Before the patient was brought into the theatre, the flexible FOB was checked.
The patient shifted to operating room, on wheel chair.

Airway management

In a preoperative room patients NBM was confirmed, URTI/LRTI were ruled out and written informed consent was taken. After shifting to the operation theatre, patient was kept in propt up position of 30 degree as the patient was complaining of the respiratory discomfort in lying down position. In operation theatre, monitors like non invasive blood pressure monitoring, pulse oximeter, capnography were attached. 20 G canula was secured in right upper limb and oxygen was supplied by the nasal prongs at the rate of 4litres/min. Premedication like Inj Glycopyrrolate 0.2mg iv given. For local anaesthesia lignocaine spray 10% was splashed all over the tongue and oropharynxs. Transtracheal block and intertracheal block was given with 2% lignocaine and 4% lignocaine respectively. Lignocaine jelly 2% was applied to the cuff and end of the armoured tube and also to the end of the fibreoptic bronchoscope. Thereafter patient was administered Inj Midazolam 2mg, Inj Fentanyl 50mcg IV. Lignocaine jelly 2% applied over the right nostril, 7 number nasopharyngeal airways inserted into the right nostril. After five minutes nasopharyngeal airway removed and 7.0mm cuffed and lubricated endotracheal tube was subsequently put into the nasopharynx through the right nostril.

Figure 2 Awake FOB intubation

The lubricated end of the FOB was passed down the endotracheal tube to the nasopharynx with the light source turned on (Figure 2). For exposing vocal cords, the epiglottis was visualised and raised with the point of the FOB. Tip of the FOB was successfully pushed through the glottis opening into the trachea after a few attempts. The position of the FOB tip was validated by seeing the tracheal rings. With the help of an assistant, the endotracheal tube was railroaded into the trachea. The FOB was then removed, and a standard capnometer was used to connect the endotracheal tube to the ventilator circuit. The tracing of the capnograph and auscultation were used to establish proper tracheal positioning. The tube was sealed with adhesive tape after the cuff was inflated (Figure 3).

Figure 3 Post intubation

A tracheostomy is sometimes one of the few alternatives remaining after a failed FOB, especially in an emergency case. In our case, the operating surgeon was scrubbed and gowned in the case presented, and a tracheostomy set was made ready in the case of an emergency. 15 minutes after the procedure patient shifted to surgical intensive care unit with endotracheal tube in situ for further management which includes chemotherapy and radiotherapy. Five days after the intubation patient got tracheostomised and managed further. The Society for difficult airway suggest using a laryngoscope, supraglottic airway devices, mask ventilation, or knife cricothyroidectomy for unforeseen difficult intubation (Frerk et al., 2015). Our patient was categorised as difficult intubation with mask ventilation because of the mass protruding from mouth. We recommend that in patients with comparable histories, a comprehensive examination, preferably an awake FOB examination, should be undertaken preferably. Due to mass, we decided to intubate the patient nasotracheally.

3. DISCUSSION

Failure to establish an airway can be life-threatening. Advances in visualization techniques have helped in overcoming these situations. Difficult intubation can often be anticipated and prepared for. Here we reported a case of osteosarcoma of jaw in a 17 year old boy. The mouth opening and Mallampatti grading were not able to be assessed due to the large mass. In such a situation, the only option other than tracheostomy was FOB. The option for retrograde intubation was ruled out as; there was no room in the mouth for passing the ET tube. So the plan for awake FOB was made. Alongside alternate options were also made. A difficult airway cart was prepared which included nasopharyngeal airways and intratracheal devices (ET tubes and tracheostomy tubes). This was similar to the difficult airway managed by (Shaik et al., 2014), stated that awake fiberoptic intubation under local anaesthesia is a competent and less intrusive means of securing airway in patients with deep neck infection in a case report on anaesthetic therapy of Ludwig's angina.

4. CONCLUSION

Opting for an acceptable strategy for a difficult airway management is expected to be wisely executed. In such situations ideal airway devices should be used.Here we discussed successful management of the airway in a 17 year old boy with osteosarcoma of jaw.

Acknowledgement

We are thankful to the Department of OMFS at AVBRH, Jawaharlal Nehru Medical College, Sawangi (M), Wardha, Maharashtra.

Author contributions

Dr.Nitin R Alaspurkar: Primary and corresponding author, Data collection and analysis, compilation, case management in the OT
Dr.Vijay Chandak: Data interpretation, final review of the case report to be published
Dr.Aruna Chandak: Data collection and analysis, compilation, case management in the OT
Dr.Vivek Chakole: Head of the team supervising the case
Dr.Jayashri Sen: Data collection, analysis and interpretation
Dr.Nikhil Bhalerao: Data analysis and interpretation, Conception of or Design of the case report
Dr Sanjot Ninave: Data collection, analysis and interpretation

Informed consent

Written& Oral informed consent was obtained from the patient and patient's parents.

Funding

This study has not received any external funding.

Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Brackenridge CJ. A statistical study of sarcoma complicating Paget's disease of bone in three countries. Br J Cancer 1979; 40:194–200 DOI: 10.1038/bjc.1979.166
2. Cattano D, Killoran PV, Iannucci D, Maddukuri V, Altamirano AV, Sridhar S. Anticipation of the difficult airway: Preoperative airway assessment, an educational and quality improvement tool. Br J Anaesth 2013; 111:276-85 DOI: 10.1093/bja/aet029
3. Forteza G, Colmenero B, Lopez-Barea F. Osteogenic sarcoma of maxilla and mandible. Oral Surg Oral Med Oral Pathol 1986; 62:179–84. DOI: 10.1016/0030-4220(86)90042-3
4. Frerk C, Mitchell VS, McNarry AF, C Mendonka, RBhargrat, A Patel, E P O Sullivan, N M Woodall, I Ahmad. Difficult Airway Society 2015 guidelines for management of unanticipated difficult intubation in adults. Br J Anaesth 2015; 115: 827-48 DOI: 10.1093/bja/aev371
5. Garrington GE, Scofield HH, Cornyn J, Hooker SP. Osteosarcoma of jaws, analysis of 56 cases. Cancer 1967; 20:377–91 DOI: 10.1002/1097-0142(1967)20:3<377::aid-cncr2820200306>3.0.co;2-t
6. Greenland KB, Irwin MG. The Williams airway intubator, the Ovassapian airway and the Berman airway as upper airway conduits for fibreoptic bronchoscopy in patients with difficult airways. Curr Opin Anaesthesiol 2004; 17: 505-10. DOI: 10.1097/00001503-200412000-00010
7. Huvos AG, Woodard HQ, Cahan WG, Higinbotham NL, Stewart FW, Butler A, Sara S. Bredsky PHD. Postradiation osteogenic sarcoma of bone and soft tissues. A pathological study of 66 patients. Cancer 1985; 55:1244–55 DOI: 10.1002/1097-0142(19850315)55:6<1244::aid-cncr2820550617>3.0.co;2-1
8. Rajendran R. Benign and Malignant tumors of the oral cavity. In: Rajendran R, Sivapathasundharam B, editors. Shafer's textbook of Oral Pathology. India: Elsevier, a Division of Reed Elsevier India Private Limited; 2006. pp. 113–308.
9. Shaikh SI, Sarala BM, Bhosale R. Anaesthetic management of case of Ludwig's angina: Forewarned is forearmed. Int J Biomed Adv Res 2014; 5:123-5. DOI: 10.4103/0974-5009.190547