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Emergency airway management of a pancytopenia patient with carcinoma of the tongue with multiple radiation therapy presenting with acute respiratory failure.

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Introduction

We present a case of extremely difficult airway management where we performed an awake fiberoptic intubation in a pancytopenia patient with an increased risk of bleeding. The difficulty was due to extremely limited mouth opening and severely restricted neck mobility due to multiple radiation therapies to the mouth and neck for management of carcinoma of the tongue with cervical lymph node involvement. The goal is to have patient cooperation, rapid topicalization of airway ("topical administration of lidocaine 4% to oropharyngeal and tracheal mucosa") and quickly securing the airway with fiberoptic intubation as this patient with acute respiratory failure. The other aim is to perform fiberoptic intubation with minimal trauma to reduce the risk of bleeding in this severe pancytopenia patient.

Case Description

A 60-year-old male with carcinoma of the tongue with history of multiple radiation therapies and very limited mouth opening and neck extension presented for emergency airway management with acute respiratory failure. He was given 1 mcg/kg of dexmedetomidine for sedation and airway was topicalized with 4% lidocaine. A size 7.0 nasal RAE was passed with awake fiberoptic intubation technique with patient breathing spontaneously. Dexmedetomidine was continued for post-intubation sedation.

Airway management goals in our patient

- ✓ Patient cooperation
- ✓ Rapid topicalization
- ✓ Prevention of gag and cough reflexes while securing the airway
- ✓ Minimize trauma to reduce the risk of bleeding
- ✓ Maintain spontaneous ventilation
- ✓ Strategy to maintain adequate oxygenation while securing the airway.
- ✓ Rapidly securing the airway to prevent impending hypoxia and respiratory arrest

Reasons for difficult airway management in our patient

- ✓ Anxious patient
- ✓ Minimal mouth opening
- ✓ Restricted neck movement
- ✓ Pancytopenia & thrombocytopenia
- ✓ Frail tissues in the airway
- ✓ Acute respiratory failure

Sensory supply of airway:

Nasopharynx, soft and hard palate	Maxillary division of the trigeminal nerve
Anterior 2/3 of the tongue	Mandibular division of the trigeminal nerve
Posterior 1/3 of the tongue, pharynx and superior surface of the epiglottis	Glossopharyngeal nerve
Inferior surface of the epiglottis, and the larynx up to the vocal cords	Superior laryngeal nerve
Larynx inferior to the vocal cords	Recurrent laryngeal nerve

Airway reflexes: Cough and gag reflex

Gag reflex	Glossopharyngeal nerve (afferent)
Gag reflex	Vagus (efferent)
Cough reflex	Superior and recurrent laryngeal nerve

Nerve Blocks

Superior laryngeal nerve	Greater cornu of the hyoid bone, Piriform fossa
Recurrent laryngeal nerve	Transtracheal injection
Glossopharyngeal nerve	Injection into the tonsillar fossa

References

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- 2.Liu HH, Zhou T, Wei JQ, Ma WH : Comparison between remifentanil and dexmedetomidine for sedation during modified awake fiberoptic intubation. Exp Ther Med. 2015; 9:1259-64.
- 3.Tsai CJ, Chu KS, Chen TI, Lu DV, Wang HM, Lu IC.: A comparison of the effectiveness of dexmedetomidine versus propofol target-controlled infusion for sedation during fiberoptic nasotracheal intubation. Anaesthesia.2010; 65:254-9.

Technique of rapid fiberoptic intubation in a difficult airway with impending respiratory failure

1. Dexmedetomidine for sedation ¹	8. Topicalization "as you go" with epidural catheter
2. Avoid respiratory depressants such as propofol, fentanyl and midazolam	9. Topicalization of recurrent laryngeal nerve with 4% lidocaine by spraying as one passes below the vocal cords.
3. Nasopharyngeal and oral topicalization with 4% lidocaine with atomizer	10. Providing high flow oxygen through suction port of the bronchoscope.
4. Nebulization with 4% lidocaine is time-consuming, not effective and topicalizes distal airways and not indicated	11. Additional continuous oxygen supply through nasal cannula.
5. Gargling and then swallowing of viscous lidocaine	12. Confirm the presence of end tidal CO ₂ .
6. Lidocaine gel on a tongue blade and asking patient to chew it	13. Anesthetize the patient with propofol or sevoflurane.
7. Insertion of an epidural catheter through fiberoptic bronchoscope for topicalization	

Sedatives for awake fiberoptic intubation

- 1) Dexmedetomidine¹. 2) Low dose remifentanil infusion². 3) Ketamine.

Comparison between sedatives for awake fiberoptic intubation

- ✓ Dexmedetomidine is superior in terms of maintaining spontaneous ventilation and patient cooperation compared to propofol³.
- ✓ Low dose remifentanil and dexmedetomidine are equally efficacious².

CONCLUSION

We successfully and rapidly intubated this patient with above-described topicalization and oxygenation technique with dexmedetomidine sedation for satisfactory patient cooperation.