



Case Report

# Difficult airway management in a patient with post-burn contracture neck posted for live donor laparoscopic nephrectomy: A case report

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## Abstract

**Background:** Patients presenting with post-burn contractures involving head and neck presents significant challenge to anesthesiologists to secure airway which forms a critical part in management. Securing the airway in a timely and effective manner is essential in these cases. We report a case of a 64-year-old female with long-standing post-burn contractures involving the face and neck, in whom we have anticipated difficult airway. Though the options are limited, certain newer airway devices are presently available to facilitate intubation in difficult cases. Awake fiberoptic guided intubation remains gold standard and was successfully performed in our case.

**Key words:** Anesthesiologist; Fiberoptic

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## 1. Introduction

The incidence of unanticipated difficult airway is reportedly 5.8% and cannot intubate 0.3 % followed by cannot intubate and cannot ventilate is 0.003% all of these are causes of anesthesia related mortality and morbidity. Post-burn contractures of the head and neck frequently result in difficult airway scenarios [\[1\]](#). Judicious preoperative evaluation is mandatory in all these patients. Extreme contracture is more likely to develop in patients who had contractures involving the thorax, neck and mandibular region. These challenges arise due to cicatricial changes leading to microstomia, restricted mouth opening, decreased oropharyngeal space, restricted cervical mobility, and fixed flexion deformity of the neck [\[2,3\]](#). Endotracheal intubation becomes difficult when cervical hyperextension and elevation of the mandible are impeded. Fiberoptic-guided intubation remains the gold standard technique in such cases.

## 2. Case Presentation

A 64-year-old female with a history of thermal burns sustained 30 years prior, weighing 54kg, ASA physical status I presented for lap nephrectomy under general anesthesia. She had no significant comorbidities. On physical examination, the patient exhibited a fixed flexion deformity of the neck with severely restricted cervical mobility, including

inability to rotate the neck. Anterior neck landmarks such as thyroid cartilage, cricoid cartilage, and cricothyroid membrane were not clearly palpable. The thyromental distance and sternomental distance were difficult to assess because of contracture around the neck.



**Fig(1):** Post-Burn contractures involving mandible and the neck



**Fig(2):** Post burn contractures involving the neck showing restricted extension

### **3. Preoperative Planning**

In view of anticipated difficult intubation, difficult intubation cart was kept ready. An awake fiberoptic-guided nasal intubation was planned as the primary airway management strategy<sup>[4]</sup>. Backup plan included surgical airway if fiberoptic intubation fails. The patient was counseled preoperatively about the intubation procedure in detail, and informed consent was obtained along with approval to use her images for this case report.

### **4. Airway Management Procedure**

The patient was pre-medicated with intravenous glycopyrrolate (0.2 mg), ondansetron 4mg and nebulization with 4% lignocaine to anesthetize the upper airway. In the operating room, standard ASA monitoring was instituted. Airway topicalization was also achieved using 10% lignocaine spray and xylometazoline nasal drops instilled in each nostril. Local nerve blocks could not be given due to the distorted anatomy of the neck due to post burning contracture. The patient was preoxygenated for 5 minutes with 6 liters of oxygen flow per minute with face mask. When difficult airway is anticipated the initial steps are to optimize patient positioning, neck extension, and chin lift maneuver. In this case due to reduced neck mobility, chin lift and jaw thrust maneuver were not

possible and maintaining a patent airway was difficult but it's not a can't ventilate scenario.

Sedation was administered using dexmedetomidine with loading dose 1 µg/kg over 10 minutes, followed by infusion at 0.5 µg/kg/min [5]. Oxygen supplementation was maintained via nasal prongs. Awake fiberoptic intubation was attempted via nasal approach after removing the nasal airway. The fiberoptic bronchoscope was advanced through the nasopharynx, oropharynx, and larynx. The "spray-as-you-go" (SAYGO) technique was employed during fiberoptic advancement [6]. After visualization of the vocal cords, a 7.0 mm flexometallic endotracheal tube (FMT) was railroaded over the scope into the trachea. Tube position was again confirmed with capnography. Anesthetizing the airway the patient was induced with 1mg midazolam, 2 mcg/kg of fentanyl and 1mg/kg of propofol followed by inj rocuronium 1mg/kg intravenously. The plane of anesthesia was deepened with oxygen, air and isoflurane. The patient was positioned for lap nephrectomy.

### 5. Outcome and Follow-Up

The surgical procedure was completed uneventfully. The patient was extubated in the operating room once fully awake and responsive. She was monitored in the intensive care unit overnight and remained stable. Follow-up until postoperative day 2 was uneventful.

### 6. Discussion

Airway management in post-burn contracture patients is challenging due to extensive fibrosis which results in both external and internal anatomical alteration. Severe neck scars may result in difficult mask ventilation and difficult intubation. The underlying thick contractures can deform the larynx and mandible. The range of cervical mobility is restricted in all directions, making sniffing position infeasible [4]. Patients with burns contracture involving the face and neck can have micrognathia and posterior displacement of the mandible making conventional direct laryngoscopy unsuccessful. The epiglottis and vocal cords might be pulled over the direction of the scar and positioned anteriorly. When the maxilla pharyngeal angle is less than 90 degrees, the difficulty of direct laryngoscopy is equivalent to Cormack-Lehane classification grade 3 and 4.

Awake fiberoptic intubation remains the preferred technique, as it allows maintenance of spontaneous ventilation and continuous visualization. If the airway anatomy is too distorted due to retraction caused by soft tissue, then even bronchoscopy becomes difficult. Repeated attempts can result in bleeding and visualization becomes difficult. Difficulty in maintaining a patent airway led to hypoxia and hypercarbia which increases mortality and morbidity. The basic principle in the airway control of these patients is the preservation of spontaneous ventilation till the airway is properly secured.

### 7. Conclusion

This case underscores the importance of anticipating external and internal airway abnormalities in patients with post-burn contractures. The keys to success in managing these patients are awareness, vigilance and meticulous planning by the team. Preoperative judicious evaluation of the scar and airway is mandatory. Adequate patient preparation, sedation, and topical anesthesia are critical for success.

Despite advancements in airway adjuncts awake, fiberoptic-guided intubation remains the cornerstone of difficult airway management.

## References

- [1] Kumar P, et al. A prospective observational study on the incidence and predictors of difficult airway in patients undergoing elective surgeries under general anesthesia. *Int Clin Res J* [Internet]. 2025 Jul 4;2(7):45-52.
- [2] Sahoo M, Vig S. Managing difficult airway in a post burn neck contracture: a case report. *J Clin Images Med Case Rep* [Internet]. 2023 Nov 1;4(11):2669.651858.CD009798.pub2.
- [3] Mishra D, et al. Difficult airway management in a patient with post-burn contracture neck. *Cureus* [Internet]. 2022 Oct 6;14(10):e30003.
- [4] Wang Y, Chen L. A comprehensive review of difficult airway management strategies and evidence-based practices for improved patient safety. *J Clin Med* [Internet]. 2024 Oct 10 ;13(19):5600.
- [5] Kaka N, Dahiya S, Singh S. Comparative efficacy of different doses of dexmedetomidine in sedation during awake fiberoptic nasotracheal intubation: a systematic review and meta-analysis. *Indian J Anaesth* [Internet]. 2025 Jul. 69(7).
- [6] Vora J, Leslie D, Stacey M. Awake tracheal intubation. *BJA Educ*. 2022 Aug;22(8):298-305. doi: 10.1016/j.bjae.2022.03.006. Epub 2022 Jun 15. PMID: 36097573; PMCID: PMC9463628