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(CASE REPORT)

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Awake nasal fibreoptic intubation in a 25-year-old patient with cervical trauma in a neurosurgical context

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Abstract

Airway management in patients with cervical spine injury is high risk in anesthesia because of potential neurological worsening with cervical spine movement. Contemporary recommendations emphasize maximal reduction of cervical movement, multidisciplinary planning, and use of a technique mastered by the operator. Awake fibreoptic tracheal intubation (AFOI) retains an important role in this context because it allows airway securement while preserving spontaneous ventilation and minimizing cervical motion. We report the case of a 25-year-old male road-traffic accident victim with an unstable C5–C6 fracture-dislocation and incomplete neurological deficit, scheduled for urgent decompression and fusion. Awake nasal fibreoptic intubation was chosen. Preparation included gargling with 2% viscous lidocaine 5 mL (100 mg), bilateral superior laryngeal nerve blocks with 1% lidocaine 2 mL per side (40 mg), and 2% lidocaine gel applied to the endotracheal tube and in the selected nostril (2 mL, 40 mg). The total lidocaine dose was therefore 180 mg, well below the recommended ceiling of 9 mg/kg lean body weight. The procedure allowed atraumatic intubation without desaturation, without significant hemodynamic instability, and without immediate neurological deterioration. This observation highlights the value of meticulous topical anesthesia and awake fibreoptic intubation in anesthetic management of cervical spine trauma in neurosurgery.

Keywords: Awake Intubation; Fibreoptic Scope; Nasal Route; Cervical Trauma; Neurosurgery; Lidocaine

1. Introduction

Airway control in a cervical spine trauma patient is a critical step in perioperative management. Any excessive mobilization of the cervical spine can theoretically worsen an existing spinal cord lesion or precipitate secondary neurological deterioration. The 2024 guidelines from the Difficult Airway Society (DAS) and partner societies emphasize the need to minimize cervical movement during preoxygenation, ventilation and intubation, optimize human factors, and favor a technique known to the team. Although videolaryngoscopy is now strongly recommended for many patients with cervical immobilisation, awake intubation remains central when preserving spontaneous ventilation, avoiding induction prior to airway control, and documenting neurological status before and after the procedure are desired. DAS recommendations on awake tracheal intubation note that AFOI can be performed with or without minimal sedation provided topicalization is meticulous and total lidocaine dose is strictly accounted for.

2. Clinical case

A 25-year-old man with no significant medical history was admitted after a road-traffic accident. Initial clinical evaluation revealed severe neck pain with paresthesias in all four limbs and motor weakness predominantly of the upper limbs. Cervical CT showed an unstable C5–C6 fracture-dislocation with canal compromise, indicating decompression and cervical fusion by the neurosurgery team.

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Preanesthetic assessment found the patient conscious, anxious but cooperative, Glasgow Coma Scale 15/15, hemodynamically stable with blood pressure 128/76 mmHg, heart rate 92 bpm and peripheral oxygen saturation 98% on room air. The cervical spine was immobilized with a semi-rigid collar. Mouth opening was limited to approximately 3 cm, Mallampati II, and any active or passive cervical movement was contraindicated. Given the neurological risk of conventional laryngoscopy under general anesthesia, awake nasal fibreoptic tracheal intubation was planned.

In the operating room standard monitoring was applied (ECG, noninvasive blood pressure, pulse oximetry) and a good-sized peripheral IV line was secured. Careful preoxygenation was performed and continuous oxygenation at 3 L/min was maintained during the procedure. The patient was re-informed about the procedure and no intravenous sedation was given to preserve optimal cooperation and avoid respiratory depression.

Airway preparation was performed in several steps. The right nostril was chosen for intubation. The patient gargled with 5 mL of 2% viscous lidocaine held in the mouth for about 2 minutes before expectoration (100 mg). A bilateral superior laryngeal nerve block was then performed with 2 mL of 1% lidocaine on each side (40 mg total). The reinforced nasotracheal tube size 7.0 mounted on the fiberoscope was lubricated with 2 mL of 2% lidocaine gel (40 mg). Total lidocaine dose was thus 180 mg.

The flexible fiberscope was gently advanced through the right nostril. Progression allowed visualization of the nasopharynx, oropharynx, epiglottis, glottic aperture and tracheal rings. The tube was advanced over the scope without notable resistance to 26 cm at the nostril. Correct tracheal position was confirmed by capnography, bilateral auscultation and symmetric chest expansion. No major coughing, laryngospasm or significant nasal bleeding was observed.

After securing the airway, general anesthesia was induced with fentanyl 150 µg, propofol 200 mg and rocuronium 50 mg. Surgery proceeded under sevoflurane and mechanical ventilation without notable hemodynamic incident. At the end of the procedure the patient was transferred intubated and sedated to the intensive care unit for initial neurological monitoring, and was extubated later without complication. No immediate neurological deterioration was noted.

3. Discussion

This case illustrates the interest of an awake strategy in a young patient with unstable cervical trauma and neurological risk. DAS 2024 recommendations on cervical trauma emphasize minimizing cervical movement, the importance of multidisciplinary planning and regular training in intubation techniques with cervical immobilization. While videolaryngoscopy is recommended when expertise is available, awake fibreoptic intubation remains a particularly logical option when a very controlled progression and maintenance of spontaneous ventilation are sought.

The success of this technique relies primarily on the quality of topical anesthesia of the airway. DAS ATI recommendations indicate that success depends on effective topicalization, accounting for lidocaine dosing, and a “speak up, top up” approach focused on patient comfort. The commonly used general limit for topical lidocaine is 9 mg/kg lean body weight, a threshold cited in guidelines and lean-body-weight dosing aids. In our case the total dose of 180 mg was well below this limit, reinforcing procedural safety.

Combining a superior laryngeal nerve block with surface topicalization is supported by good quality data. A meta-analysis by Zheng et al. showed that airway nerve blocks for awake intubation reduced intubation time, improved conditions, decreased cough and gag reflex, and reduced overall complications. Several recent reviews also stress the importance of choosing a combination of topical techniques suited to the operator and route (oral or nasal).

In this case the nasal route was selected because it allowed a relatively natural fibreoptic trajectory with limited mouth opening and strict cervical immobilization. Preparation of the nostril, tube lubrication and gradual fiberoptic progression likely contributed to the absence of significant bleeding and good tolerance. This observation also reminds that awake intubation can be performed without deep sedation, even without IV sedation, when the patient is well informed and topicalization is effective.

4. Conclusion

Awake nasal fibreoptic intubation is a safe and relevant strategy for selected patients with unstable cervical trauma in a neurosurgical setting. Success depends on anticipation, patient cooperation, operator skill and meticulous topical anesthesia with rigorous accounting of total lidocaine dose. In this case, combining viscous lidocaine gargle, superior

laryngeal nerve block, lidocaine gel on the tube and spray-as-you-go enabled atraumatic intubation with satisfactory hemodynamic and respiratory conditions.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict-of-interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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