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Case Report

Anaesthesia Section

Awake Fibreoptic Intubation in a Patient with Oral Submucous Fibrosis with a Full Stomach Posted for Emergency Laparotomy: A Case Report

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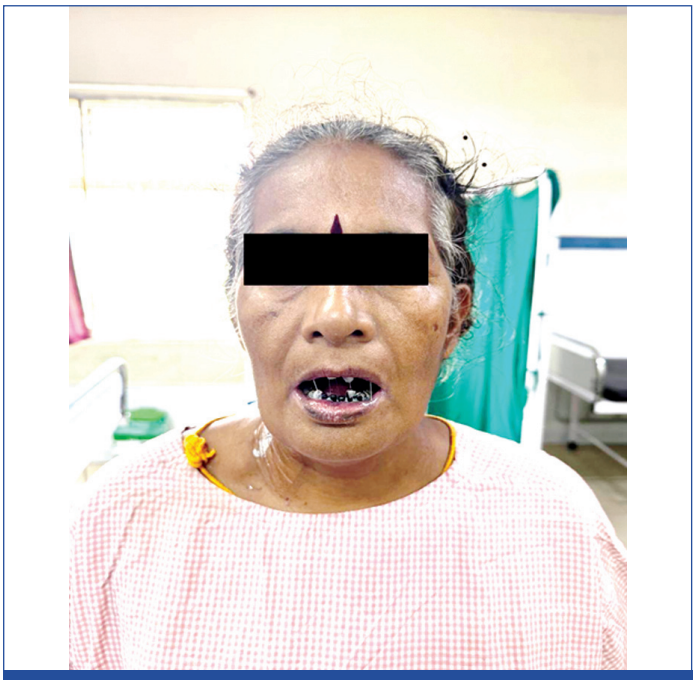
ABSTRACT

Oral Submucous Fibrosis (OSMF) with temporomandibular joint ankylosis presents significant challenges to airway management due to restricted mouth opening and fibrosis involving the oropharyngeal tissues. The situation becomes more critical in emergency surgeries with a full stomach, where the risk of aspiration further complicates airway planning. This was a case of a 56-year-old female with known OSMF and restricted mouth opening posted for emergency laparotomy due to a faecal fistula formation at the laparoscopic cholecystectomy port site. Given the anticipated difficult airway and full-stomach status, Awake Fibreoptic Intubation (AFOI) was planned and successfully executed. Awake fibreoptic intubation remains the gold standard in managing anticipated difficult airways, especially when complicated by additional risks like upper airway tumours or infections, cervical spine instability, congenital facial abnormalities, previous difficult intubation, and emergency conditions involving a full stomach where aspiration risk is high. This case reinforced its value in ensuring patient safety in emergency surgical scenarios.

Keywords: Difficult airway, Faecal fistula, Fibreoptic bronchoscope

CASE REPORT

A 56-year-old female, weighing 60 kg, presented to the Emergency department with complaints of pain at the suture site and faecal discharge from the right lower abdominal wall at the previous laparoscopic port site, two days after undergoing laparoscopic cholecystectomy under general anaesthesia. She was posted for emergency laparotomy with a diagnosis of faecal fistula. The patient had a documented history of grade 3 OSMF for six years, with a maximum inter-incisor distance of 1.5 cm, Mallampati Class IV airway, restricted tongue protrusion, and poor oral hygiene [Table/Fig-1]. She had no known co-morbidities such as diabetes, hypertension, or other systemic illnesses. Respiratory examination revealed no signs of distress. The patient had ingested a meal approximately four hours before presentation and was thus considered to have a full stomach. Baseline vital parameters were stable: heart rate 90/min, blood pressure 110/80 mmHg, and SpO_2 98% on room air. Electrocardiography showed a normal sinus rhythm, and echocardiography revealed normal cardiac function with a left ventricular ejection fraction of 64%. She was classified as American Society of Anesthesiologists (ASA) physical status III. Airway evaluation showed no restriction in neck extension, thyromental distance >6.5 cm, and no cervical spine abnormalities.



[Table/Fig-1]: Preoperative photograph showing mouth opening of 1.5 cm.

Given the anticipated difficult airway due to OSMF and the increased risk of aspiration associated with full-stomach status and the emergency nature of the procedure, awake fibreoptic intubation using a flexible bronchoscope was planned. This approach aimed to maintain spontaneous ventilation. Epidural anaesthesia was also planned for intraoperative management.

Before the procedure, the patient underwent a complete airway assessment, and informed consent was obtained after explaining the procedure. An 18-gauge IV cannula was secured, and standard monitors, including ECG, pulse oximeter, a blood pressure cuff, and capnography, were connected. Premedication was given with glycopyrrolate 0.2 mg IV to reduce secretions, ondansetron 4 mg IV for antiemesis, and midazolam 1 mg IV for anxiolysis. Supplemental oxygen (4 L/min) via facemask was started. In the sitting position, an epidural catheter was inserted at the L1-L2 interspace by the loss-of-resistance technique and fixed at 9 cm. A 3 mL test dose of 2% lignocaine with 1:200,000 adrenaline was administered. No significant haemodynamic changes were seen.

Airway anaesthesia was critical for a comfortable and successful awake intubation. The nasal mucosa was prepared with 0.1% xylometazoline drops and 2% lignocaine jelly. Oxygen was delivered through a face mask at four litres per minute. The patient was nebulised with 4% lignocaine. The oropharynx was anaesthetised by the "Spray-As-You-Go" (SAYGO) technique to provide topical anaesthesia to the airway in a gradual, targeted manner as the

fibreoptic scope advanced. Airway block was avoided in this patient due to the risk of aspiration associated with a full stomach.

The patient was positioned in a semi-recumbent posture with the head in a neutral or slightly extended position. The bronchoscope, with the 6.5 mm endotracheal tube preloaded, was inserted through the nasal route. Once the bronchoscope was advanced through the nasopharynx, the vocal cords were visualised. The bronchoscope was then passed into the trachea until the carina was seen. The endotracheal tube was gently railroaded over the scope, and its correct position was confirmed by capnography and chest auscultation. Once the airway was secured, anaesthesia was induced with fentanyl 120 mcg IV, propofol 120 mg IV, and neuromuscular blockade was achieved with vecuronium 6 mg IV. Anaesthesia was maintained using oxygen and air, 2% sevoflurane, and vecuronium was administered for muscle relaxation. A 14 Fr nasogastric tube was placed, and an emergency exploratory laparotomy was performed. The epidural catheter was activated with 4 mL of 0.25% bupivacaine. A top-up of vecuronium 1 mg IV was given during the surgery. The 4-hour intraoperative period was uneventful, and neuromuscular blockade was reversed with 2.5 mg neostigmine IV and 0.5 mg glycopyrrolate IV. The patient was extubated when fully awake without complications such as laryngospasm, laryngeal oedema, or aspiration. Postoperative pain was managed with an epidural infusion of 0.125% bupivacaine and fentanyl 2 mcg/mL at 4-6 mL/hour.

DISCUSSION

The OSMF is a progressive, potentially malignant condition characterised by fibrosis of the oral mucosa, submucosa, and soft palate, leading to reduced mouth opening and limited oral cavity access [1]. Predominantly seen in South Asia due to chronic areca nut use, OSMF poses significant challenges in airway management, particularly during mask ventilation and direct laryngoscopy [1]. These difficulties are further amplified in emergency settings, such as an acute abdomen requiring immediate laparotomy, where patients often present with a full stomach and limited time for airway optimisation [1].

In such scenarios, AFOI is considered the gold standard for securing the airway [2]. It preserves spontaneous ventilation, allows continuous visualisation of the airway, and reduces the risk of aspiration and failed ventilation [2]. AFOI is especially advantageous in patients with difficult airways, full stomachs, or cervical spine instability [2].

Despite its advantages, AFOI may be associated with complications such as discomfort, gagging, coughing, nasal bleeding, failed intubation, aspiration, and laryngospasm [3]. These risks can be mitigated with adequate topical anaesthesia, patient cooperation, gentle handling, suction availability, and a well-structured airway management plan [4]. The success of AFOI depends on meticulous preparation, appropriate equipment, skilled assistance, and operator expertise [5]. Regular training and simulation-based practice are crucial for maintaining proficiency and ensuring safe execution in high-risk situations [6].

In this case, due to the anticipated difficult airway caused by severe OSMF and the high aspiration risk associated with a full stomach, AFOI via the nasal route was performed under spontaneous ventilation. Direct laryngoscopy was not feasible due to trismus, and rapid sequence induction carried an unacceptably high risk of aspiration and failed intubation. Airway preparation included nasal vasoconstriction, lignocaine nebulisation, and SAYGO topicalisation; airway blocks were avoided. A flexible bronchoscope with a preloaded 6.5 mm endotracheal tube was advanced to the trachea, and correct placement was confirmed by capnography. Anaesthesia was then induced and maintained with sevoflurane, oxygen/air, and vecuronium, and the surgery proceeded uneventfully. The patient was extubated fully awake without complications, and postoperative analgesia was provided via epidural infusion.

Frerk C et al., representing the Difficult Airway Society (DAS), strongly recommended AFOI for patients with a full stomach status and anticipated airway difficulty [7]. Their guidelines advocate thorough airway topicalisation, minimal sedation, and continuous oxygenation throughout the procedure [7]. Notably, they describe the SAYGO technique as an effective strategy for sequentially anaesthetising the airway to enhance patient tolerance and procedural safety [7].

Russell and Lucas documented successful use of AFOI combined with remifentanil sedation and SAYGO topicalisation using 4% lignocaine, which resulted in minimal discomfort, preserved airway reflexes, and significantly decreased the risk of regurgitation and aspiration in high-risk parturients with a full stomach [8].

Das et al., described a hybrid approach using retrograde intubation combined with fibreoptic bronchoscopy in a case of oral cancer with restricted mouth opening [9]. A guidewire was passed via the cricothyroid membrane and retrieved nasally to aid the fibreoptic scope. This method is particularly useful in cases where standard nasal Fiberoptic Bronchoscopy (FOB) advancement proves difficult [9].

Apfelbaum et al., in the updated ASA Difficult Airway Algorithm, emphasised that awake intubation, particularly via fibreoptic bronchoscopy, is the preferred method in patients with both an anticipated difficult airway and a full stomach [10]. Their recommendations highlight the value of maintaining spontaneous ventilation and protective airway reflexes, which significantly reduce the risk of aspiration during airway instrumentation. They also cautioned against the risks associated with rapid-sequence induction in such scenarios, especially when airway difficulty is predicted [10].

Ovassapian et al., evaluated 129 awake oral and nasal fibreoptic intubations performed in 123 patients identified as having a high risk of aspiration of gastric contents. Topical anaesthesia was achieved predominantly using the SAYGO technique (85 cases) or transtracheal injection (29 cases), with intravenous sedation administered in most patients. Only one case required conversion to rigid laryngoscopy following a failed fibreoptic attempt in a patient with a bleeding peptic ulcer, and no instances of regurgitation or aspiration were reported. This study demonstrates that, when combined with meticulous topicalisation and cautious sedation, AFOI is a safe and effective airway management strategy even in patients at significant risk of aspiration [11].

Priya HB et al., conducted a randomised controlled trial comparing 2% versus 4% lignocaine administered via the SAYGO technique during awake fibre-optic nasotracheal intubation in adult oral carcinoma patients with anticipated difficult airways. Their findings demonstrated that 4% lignocaine provided superior intubating conditions, greater patient comfort, and shorter procedural times compared with 2%, without compromising haemodynamic stability or causing signs of local anaesthetic toxicity. These results reinforce the importance of optimal topicalisation in awake fibre-optic intubation, particularly in high-risk cases [12].

El-Boghdadly K et al., prospectively analysed 600 AFOIs at a tertiary centre, representing 1.71% of general anaesthetics. The main indications were reduced mouth opening (26.8%), previous airway surgery, and prior radiotherapy (each ~22.5%). Sedation, most commonly with a remifentanil-propofol infusion, was used in nearly all cases, with oxygenation maintained via standard or high-flow nasal methods. Trainees performed 78.6% of procedures under supervision, and most operators had prior experience with over 20 AFOIs. The overall failure rate was 1.0%, with complications in 11% of cases, predominantly multiple attempts, oversedation, and desaturation. Greater operator experience was significantly associated with fewer complications [13].

In this case report, the decision to perform AFOI in a patient with advanced OSMF and full stomach status aligns closely with the recommendations and findings of multiple published studies. The Digital Subtraction Angiography (DSA) guidelines (Frerk C et al.,) advocate AFOI as the preferred technique in patients with both anticipated airway difficulty and high aspiration risk, emphasising thorough topicalisation, minimal sedation, and continuous oxygenation, all of which were followed in our patient [7].

The use of the SAYGO technique in our case is consistent with both the DAS recommendations and the report by Russell R and Lucas DN, where SAYGO with 4% lignocaine and remifentanil sedation provided excellent patient comfort and preserved protective airway reflexes in high-risk full-stomach parturients [8].

The safety profile in this approach also reflects the findings of Ovassapian A et al., who demonstrated no aspiration events in 129 AFOIs for high aspiration-risk patients when meticulous topicalisation and cautious sedation were applied [11]. Similarly, this patient tolerated the procedure well without regurgitation, aspiration, or desaturation. The concentration of topical anaesthetic is another important parallel: although this case did not directly compare concentrations, Priya HB et al., showed that 4% lignocaine via SAYGO optimised comfort, intubating conditions, and procedural speed in difficult airways—outcomes mirrored in this patient, where efficient, well-tolerated intubation was achieved [12].

From a technical and training perspective, this procedure was carried out by an experienced anaesthesiologist, in line with the evidence from El-Boghdadly K et al., whose large cohort study showed that greater operator experience significantly reduces complication rates. The main indication in their series-reduced mouth opening- also matches this patient's presentation, reinforcing that AFOI is the most rational and evidence-supported choice in such scenarios [13]. Finally, while this case did not require alternative approaches, the hybrid retrograde-fibreoptic method described by Das A et al., remains a relevant contingency for situations where standard nasal advancement proves challenging, highlighting the importance of having backup strategies available in difficult airway management [9].

This correlation across multiple studies confirms that the chosen strategy in this case was not only evidence-based but also optimally tailored to the patient's anatomical limitations and perioperative risk profile. The cited literature supports and justifies the clinical management approach used in this patient's care. They also highlight the importance of operator expertise, preparation, and patient cooperation, without which even fibreoptic techniques may fail.

CONCLUSION(S)

Awake intubation allows for real-time assessment and communication with the patient, providing a safety margin in case of complications. This case illustrates that AFOI, supported by thorough airway preparation and meticulous perioperative planning, is a safe and effective strategy for airway management in patients with advanced OSMF and an anticipated difficult airway. In the setting of a full stomach and emergency surgery, this approach facilitated maintenance of spontaneous ventilation, reduced the risk of aspiration, and prevented airway trauma, resulting in successful intubation and an uneventful perioperative course. The anaesthesiologist's expertise and preparedness were key to the safe conduct of this emergency procedure.

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