



ELECTIVE AWAKE PERCUTANEOUS TRACHEOSTOMY: SECURING DEFINITIVE AIRWAY IN A PATIENT WITH NIL MOUTH OPENING AND BILATERAL NASAL OBSTRUCTION PREOPERATIVELY.

Anaesthesiology

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ABSTRACT

The recommended management of patients with difficult airway is to perform awake intubation in view of lower complication rates. Problems with airway management are among the most frequent causes of anaesthetic mishaps. Percutaneous tracheostomy, in well trained hands, is a procedure with excellent safety records in a variety of patients in a controlled environment. The objective of this report is to present a case of advanced Necrobiotic Xanthogranuloma causing nil mouth opening and extensive obstruction of both the nostrils and thereby making the conventional oral/nasal tracheal intubation impossible.

KEYWORDS

Difficult airway, Percutaneous tracheostomy

INTRODUCTION

American Society of Anaesthesiologists Practice guidelines (2022) define difficult airway as a clinical situation in which anticipated or unanticipated difficulty or failure is experienced by a physician trained in anaesthesia care, including but not limited to one or more of the following: face mask ventilation, laryngoscopy, ventilation using a supraglottic airway, tracheal intubation, extubating, or invasive airway.^[1] The recommended management of patients with difficult airway is to perform awake intubation in view of lower complication rates. Problems with airway management are among the most frequent causes of anaesthetic mishaps. The 4th National Audit Project of the Royal College of Anaesthetists and Difficult Airway Society provides important detailed information regarding major airway management complications during anaesthesia.

Percutaneous tracheostomy, in well trained hands, is a procedure with excellent safety records in a variety of patients in a controlled environment.

Necrobiotic Xanthogranuloma is a rare, chronic, progressive granulomatous disorder. It manifests as yellowish plaques and nodules.^[2] The periorbital area is the most common site of involvement. Extracutaneous involvement is also known. Associated features may include telangiectasias, ulceration, and scarring and new lesions frequently develop at sites of prior scarring.

The objective of this report is to present a case of advanced Necrobiotic Xanthogranuloma causing nil mouth opening and extensive obstruction of both the nostrils and thereby making the conventional oral/nasal tracheal intubation impossible.

Case Report

A 20-year old man presented with diffusely enhancing soft tissue mass on face with no mouth opening. Later he was diagnosed with Necrobiotic Xanthogranuloma of the face and was scheduled to undergo complete excision with grafting. On physical examination, he had diffusely infiltrating enhancing soft tissue lesion in right upper eyelid and corresponding infraorbital region, extending into right mid facial region involving right maxilla and right mandible; thereby deforming nose and upper & lower lips. He gave a history of gradual difficulty in opening his mouth over a period of one year. He also told us that he had to keep a spoon in his mouth to keep the airway patent (Fig. 1). Preoperative laboratory findings were within normal limits along with chest x-ray and electrocardiogram. Histopathological findings after the biopsy were suggestive of necrobiotic xanthogranuloma. A 3D CT scan of the face revealed the extensive growth of the mass involving the orbit, maxilla, mandible on the right side of the face; extending into the infratemporal fossa laterally. Medially, there was erosion of the right nasal bone and evidence of left antirachioanal polyp (Fig. 2).

Preoperative airway evaluation included multiple difficult airway predictors: No mouth opening, almost nil bilateral nasal patency and extensive soft tissue growth on face.

After a thorough preoperative assessment and preparation, concerns and challenges regarding airway management were discussed with the surgical team, the patient and his family. Then, written informed consent was obtained from the patient.

The plan was to perform an awake percutaneous tracheostomy to secure the airway. The patient was brought to the theatre and was put in a supine position. Standard ASA monitoring was attached and intravenous access was confirmed. He was premedicated with 0.2 mg of glycopyrrolate. All available necessary difficult airway management equipment was prepared. The operating surgeon was scrubbed and ready to do an emergency surgical tracheostomy if needed. Dexmedetomidine was given intravenously in a loading dose of 1 µg/kg over 10 minutes followed by 0.5 µg/kg/hour as maintenance. Oxygen was administered at a flow rate of 6L/min via nasal cannula positioned around the spoon in the patient's mouth. Landmarks on the front of the neck were marked and local infiltration with 0.5% Bupivacaine with adrenaline was administered. The trachea was cannulated with a 14G cannula on a syringe filled with 1% lignocaine with adrenaline. Thereafter, the percutaneous tracheostomy kit (Grigg's Forceps) was used, passing the guidewire through the cannula. The dilating forceps is designed to slide over the guidewire to result in a single step dilatation of tissues in the pretracheal and tracheal space by spreading the forceps. Following the dilatation, a tracheostomy tube of 8 mm ID was inserted over the guidewire into the trachea. The cuff was inflated, circuit attached and capnography and clinical confirmation of tracheal placement established. The tube was secured, the patient anaesthetized and surgery proceeded. The intraoperative period was uneventful and the patient was shifted to the Intensive Care Unit on T-Piece for further monitoring and recovery.



Figure 1: Patient trying to keep airway patent by keeping spoon in his mouth

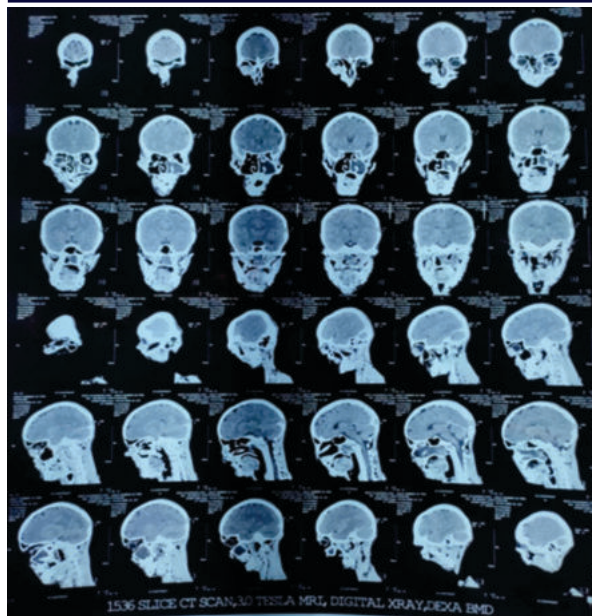


Figure 2: 3D CT Scan of the face

DISCUSSION

Data from the 4th National Audit Project of the Royal College of Anaesthetists and Difficult Airway Society (UK) suggests anaesthesia events led to sixteen deaths and three episodes of persistent brain damage of the total 184 reports meeting the inclusion criteria. The review of airway management indicates that there is 'room for improvement' in the majority of cases.^[3]

Conventionally, a tracheostomy is performed as an open surgical procedure, however development of safe and reliable percutaneous tracheostomy techniques have allowed for the bedside placement of a tracheostomy in many patients.

A systematic review and meta-analysis of seventeen RCTs done by Anthony Delaney has demonstrated that the technique of PDT has a number of important advantages over performing a ST in critically ill patients who require an elective tracheostomy such as reduction in the incidence of clinically important wound infections, reduction in bleeding and overall mortality along with decreased duration of translaryngeal intubation prior to tracheostomy.^[4] When compared to STs, PTs significantly reduce the rate of wound infection/stomatitis and the rate of unfavourable scarring. In terms of mortality and the rate of serious adverse events, there was low quality evidence that non significant positive effects exist for PTs. In terms of the rate of major bleeding, there was very low quality evidence that non significant positive effects exist for PTs.^[5]

Cricothyroidotomy is usually indicated in emergency, life-threatening situations when there is no time to perform a tracheostomy.

It is imperative for an anaesthesiologist to be skilled in both technical and non-technical tasks related to airway management as major complications of airway management perioperatively are rare but life threatening. Airway patency is protected by pharyngeal muscle tone during wakefulness. All anaesthetic agents increase the propensity of the airway to collapse to some degree. So, the primary goal is to keep the patient awake and breathing spontaneously. We used mild analgesia in the form of conscious sedation to relieve anxiety and reduce pain & discomfort during the procedure. A similar dilemma was faced by the anaesthesiologists where a patient was admitted with extensive head and neck swelling which was severe enough to make bag-mask ventilation, direct laryngoscopy and rescue with a supraglottic airway impossible. The patient was successfully managed with an awake percutaneous tracheostomy. However, they had to use an ultrasound because of the distorted anatomy and loss of landmarks to conduct the procedure^[6]. The literature concerning awake tracheostomies is scarce. So, we had to rely on our knowledge and experience gained over the years. This particular case demonstrates the challenges of securing an airway in a patient where bag and mask ventilation, laryngoscopy, and supraglottic rescue were impossible.

Conflicts of Interest:

There are no conflicts of interest for this publication.

Consent:

Written informed consent was obtained from the patient for publication of his photograph in a scientific journal.

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