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Case Report Open Access

Airway Management in Post Chemo radiotherapy Head and Neck Cancer Patients Presenting for Dental Procedures in Ambulatory Setting-Case series

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Abstract

Dental complications of chemo radiation in head and neck cancer patients often require surgical treatment under general anaesthesia. Patients usually scheduled as day care basis that warrants early discharge. Most of these have very limited mouth opening or distorted anatomy of face as a result of previous surgery and radiation. Airway management remains central to perioperative care. The decision whether to manage a patient with anticipated difficult airways in ambulatory care requires a multidisciplinary approach. Many factors will influence this decision including the cause and severity of the airway problem, the type of procedure, the experience of the perioperative staff, and the availability of difficult airway management devices. Patients with head and neck cancer chemoradiation present airway management problems as difficult as any we confront. Our knowledge, skills, and judgment are routinely and rigorously tested in our care of these patients. Present case series highlights some important aspects regarding management of anticipated difficult airways in ambulatory setting.

Keywords: Airway management; Ambulatory care; Fiberoptic intubation; Lignocaine

Introduction

Head and neck cancers (HNC) represent the sixth most common malignancy worldwide and account for approximately 650,000 new cases and 350,000 deaths every year [1]. Pakistan falls into a high risk Head and Neck Cancer geographical zone with one-fifth (21%) of the cancers in males and about one-tenth (11%) in females [2]. Surgery is a standard treatment for HNC patients especially for early stage respectable malignancies with the concurrent administration of chemotherapy and radiotherapy, known as chemoradiotherapy [3]. However, a wide range of potentially debilitating dental complications may occur as a consequence of postoperative chemoradiotherapy such as oral mucositis, dental caries, trismus and osteoradionecrosis (ORN) of the mandible with the dead bone exposed and liable to infection or even pathological fracture [4]. Increasing number of these patients present to us for dental extractions and restorative procedures under general anaesthesia as day care procedures. Airway management remains central to perioperative care and securing the airway in a timely and effective manner is a priority in these patients.

We report a series of five cases with previous surgery and post chemoradiotherapy head and neck cancer patients for day care dental procedures. Patients have either distorted anatomy of the face and neck or reduced mouth opening resulting in anticipated difficult airway, and were successfully managed by nasotracheal fiberoptic intubation. The purpose of reporting is to address various aspects of management including a safe approach towards airway management in ambulatory setting.

Case Series

After obtaining written informed consent, five patients with dental complications as a consequence of postoperative chemoradiotherapy scheduled for dental procedures under general anesthesia were selected for this case series. The ambulatory care unit is part of the main hospital but at distant location in the campus. All the five patients selected were identified on preoperative assessment to be at an increased risk of difficult airway. All patients were explained about problems with their difficult airway, methods to deal with it and techniques of fiberoptic intubation (awake & asleep). The methods that may be used for regional anesthesia of the airway were also explained. No sedative premedication was prescribed. Two patients were selected for awake fiberoptic intubation due to grossly distorted anatomy and three were planned to be intubated after inducing general anesthesia (Figure 1).

Patients that require awake fiberoptic intubation were called 1.5 hours before the scheduled time for preparation (topicalization) of airway in a stepwise approach (Figure 2). After securing an intravenous line and application of standard monitoring in preoperative area, this starts with giving inj. Glycopyrrolate 0.2 mg to dry airway secretions. 15 minutes later, nasal mucosa was sprayed with vasoconstrictor xylometazoline and then, nebulization started with Lignocaine) 4% 2 cc (1 cc contains 40 mg). After finishing nebulization, Patients were then taken into operating room and nose/nasopharynx additionally sprayed with 1 cc Lignocaine 4% with mucosal atomizer device (MAD). Lignocaine 10% 4 puffs (1 puff contains 10 mg) were sprayed orally, 2 each side to posterior pharyngeal wall and tonsillar pillars. Patients were placed in supine position and standard monitors were applied. An epidural catheter 20

G was passed through working channel of fiberscope and 2 ml syringe with 1 ml 4% Lignocaine attached to the luer lock at the proximal end for "spray-as-you-go" technique. A reinforced endotracheal tube (ETT) size 7 was mounted on the fiberscope.

Figure 1: Patients with previous surgery & post chemoradiation and associated difficult airway.

The patients were explained that they may experience some force in their throat when tube was passed through vocal cords. When scope was passed thru nostril and reached larynx, 1 ml 4% Lignocaine was pushed to drop onto mucosa. When reached the glottic opening and true and false vocal cords visualized, 1 ml 4% Lignocaine was pushed here thru epidural catheter. At this moment, the catheter was pulled and fiberscope was advanced until reached the carina. The ETT was railroaded over the scope and its position confirmed under direct vision. The endtidal CO_2 confirmed and patients were given general anesthesia with propofol and atracurium.

The other three patients were selected for asleep fiberoptic intubation based on the fact that they have no anatomical distortion which create problems with bag mask ventilation and no signs of airway obstruction by carefully reviewing past CT scans. These patients have only problem of reduced mouth opening which does not allow us to do direct laryngoscopy. In operating room, xylometazoline was sprayed to both nostrils, intravenous line secured and standard monitoring applied. Inhalational induction with sevoflurane 8% in 100% oxygen was started while patient was spontaneously breathing. When sufficient anesthetic depth achieved, a nasal airway size 7.5 was inserted thru a nostril and it is connected with breathing circuit. The same fiberscope described above was passed thru other nostril, and then reached nasopharynx, further proceed to see glottic opening and crossed thru vocal cords till carina seen. At this point, Inj. Propofol 20-40 mg was given to reduce coughing and bucking. ETT size 7.0 was railroaded over the scope into trachea.

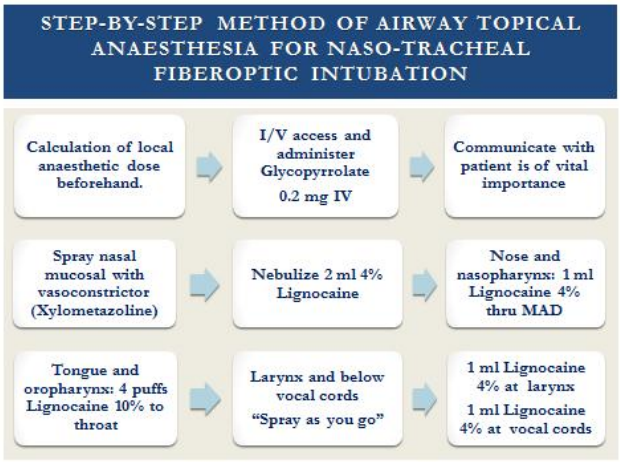

Figure 2: Stepwise approach of topical anesthesia for fiberoptic intubation.

In one patient, the ETT was not advanced thru vocal cords due to impingement at right arytenoid cartilage. The ETT withdraw 1-2 cm and its direction changed 90° anticlockwise which enables its advancement.

All patients underwent 30-45 minutes dental procedures. Patients were extubated and discharged after 1 hour from recovery room and 3 hours after day care ward. No postoperative problems related to airway management were encountered.

Discussion

Ambulatory anesthesia is becoming increasingly more common worldwide as the result of advancing surgical technology, improved peri-operative care, and rising financial pressure. It is associated with improved patient quality of life [5]. In the ambulatory surgery setting, patient "turn-over" is paramount. The airway management of a patient undergoing ambulatory anesthesia necessitates a balance between the requirements of the surgery, safety of the patient throughout anesthesia, an efficient awakening process as well as being cost-effective.

This case series highlights the importance of safe and structured approach of airway management in ambulatory setting. When managing such patients with anticipated difficult airway in a remote location, some questions need to be answered. Should we anaesthetize these patients in ambulatory setting on a day care basis? The answer is complex and must start with systematic airway assessment [6], followed by an analysis of how the surgical procedure will impact on the condition and whether the resources are able to cope. Another common question: "What airway equipment should be on hand in an ambulatory operation theaters or do I need a fiberoptic scope for intubation?" It is essential that a well-equipped difficult airway cart that reflects the regional guidelines be maintained in ambulatory care theaters. A standardized layout for difficult airway carts, familiar to even occasional visiting anesthesiologists, should be used in all ambulatory surgical centers (ASC). The role of the fiberoptic

bronchoscope is well proven in the elective management of difficult airways. We know that videolaryngoscopy really has revolutionized about difficult airway management and fits perfectly in the ambulatory anesthesiologist armamentarium but still fiberoptic bronchoscope is required for patients with limited mouth opening (like in this case series) and I don't think we've come to the point yet where videolaryngoscopes have replaced awake fiberoptic intubation [7]. The airway experience of the anesthesiologist is often the limiting factor in any situation involving a difficult airway. As a result, it is important to re-emphasize the importance of self-education and self-preparation for the management of the anticipated or unanticipated difficult airway. The patient with the difficult airway is a fact of life for all anesthetic staff, and as a result preparation is key.

In conclusion, airway management is evolving rapidly with ambulatory anesthesiologist on the cutting edge. Debate continues over the suitability of an ASC for patients with known difficult airways. The establishment of clinical guidelines, which cover all possible combinations of difficult airways and ASC facilities, is impossible. The onus is, therefore, on the establishment of a sound selection process that prioritizes patient safety. Whether or not you agree that elective difficult airways should be managed in an ambulatory care setting, they must have difficult airway carts to deal with such problems.

Conflict of Interest

This is to certify that the manuscript has been read and approved by all the authors, the requirements for authorship have been met, and each author believes that the manuscript represents honest work. All the authors declare that there is no conflict of interest.

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