

# TITLE: ANAESTHETIC AND PERIOPERATIVE CONSIDERATIONS IN ORAL AND MAXILLOFACIAL SURGERY

*Correspondance to: Dr. Chandhini Asokan<sup>1</sup>, post graduate in the department of oral and maxillofacial surgery, Sree balaji dental college and hospital, pallikaranai, chennai-100.*

*Email id: [chandhini.92@gmail.com](mailto:chandhini.92@gmail.com), Contact no: 9710349436*

*Names of the author(s):*

*Dr. Chandhini Asokan<sup>1</sup>*

*Post graduate in Department of oral and maxillofacial surgery ,Sree Balaji dental college and hospital , BIHER, Chennai-600100,Tamilnadu , India.*

*Dr. Vijay Ebenezer<sup>2</sup>*

*Professor Head of the department of oral and maxillofacial surgery, Sree Balaji dental college and hospital , BIHER, Chennai-600100, Tamilnadu , India.*

*Dr. Balakrishnan Ramalingam<sup>3</sup>*

*Professor, Department of oral maxillofacial surgery, Sree Balaji dental college and hospital, BIHER, Chennai-600100, Tamilnadu , India.*

## **ABSTRACT**

**Airway management is a significant worry in patients with maxillofacial injury, on the grounds that an undermined airway route may prompt demise. There are numerous alternatives accessible, every one has specific signs. As a rule, endotracheal intubation is normally not a feasible choice, but rather nasotracheal intubation and tracheotomies can be performed. These two techniques are known to have difficulties. Two options that can be picked are the submental and submandibular intubation procedures.**

**KEY WORDS: Intubation, maxillofacial injuries, oral surgery, tracheotomy**

## **1. INTRODUCTION**

Airway management is of premier worry in patients who have underwent horrible maxillofacial injuires. An undermined airway route in the early or later stages can cause hypoxia or obstacle, which is a hazardous condition.<sup>1</sup> Managing the airway route can be testing. There are numerous choices accessible. The strategy for intubation to utilize stays dubious. In the event of crisis, tracheal intubation must be performed when there is airway route deterrent or intellectual weakness. The greater part of the patients in these cases, may have hematomas or related c-spine wounds, which further entangle control of the airway.<sup>2</sup> Hence in the board of these cases, keeping up the airway route is the most significant issue in the beginning phases, while careful fix with sedation can be managed in the later stages.

## **INITIAL MANAGEMENT**

A speedy, starting assessment of the patient ought to include the Advanced Trauma Life Support convention following the arrangement (An airway route upkeep with cervical

spine security; B-breathing and ventilation; C-flow with drain control; D-neurological status; E-presentation/ecological control). To perform rising medical procedure, patients ought to be balanced out rapidly by controlling discharge, decompressing the body cavities, and keeping up admittance to airway routes and vessels.<sup>3</sup> Nasal and airway route sections are reviewed to survey any trade off due to broke bones, dying, free teeth, unfamiliar bodies, or laryngeal injuries.<sup>4</sup> Bleeding can be controlled utilizing nasal pressing or an imprudence catheter. On the off chance that it is extreme, embolization or ligation of the significant vessels might be needed.<sup>2</sup> The signs for intubation are as per the following: supreme signs (i)unrelieved airway route check, (ii)apnea,(iii) respiratory failure, (iv) extreme neurological deficits, and (v) discouraged awareness; earnest signs (1)penetrating neck injuries,(2) constant or hard-headed hypotension, (3)chest divider wounds with respiratory brokenness, and (4)altered mentation; relative sign (a)maxillofacial injury,(b) approaching respiratory failure,(c) danger of looming decay with indicative strategies, and (d)risk of respiratory disappointment after organization of sedation or analgesics. Difficulties with intubation are typically noted in patients with oropharyngeal masses, corpulence, and trauma.<sup>5</sup>

## 2. METHODS OF INTUBATION

The most regularly utilized strategy for intubation is endotracheal intubation, yet this technique won't do the trick for cases with panfacial maxillofacial injury, it might likewise meddle with the utilization of maxillomandibular fixation (MMF). Nasotracheal intubation is an elective technique that can be utilized when orotracheal intubation is beyond the realm of imagination or contraindicated. Nasotracheal intubation can likewise be utilized in patients who are oblivious or have related cervical spine wounds. Dangers in utilizing this technique in patients with maxillofacial injury are intracranial injury, dying, and infection.<sup>6</sup> With the appearance of fiberoptic endoscopy, nasotracheal intubation is as yet a practical alternative in maxillofacial injury cases. At the point when both endotracheal and nasotracheal intubation are impractical, a tracheotomy can be performed. It is perhaps the most punctual mode conceived to set up a rising airway, and it is intended for patients with lost cognizance or panfacial fractures.<sup>7</sup> Signs for tracheotomy incorporate delayed intubation, different facial fractures, intense airway hindrance, and obliteration of the nasal region.<sup>2</sup> Its points of interest incorporate encouraging the position of MMF and freeing the nasal and oral sections from any tubes. The adverse impacts of tracheotomies are regular it incorporates (1)stomal contamination , (2)stomal drain, and (3)subcutaneous emphysema .<sup>10</sup> Few different intricacies are (i)hypotension,(ii) bronchorrhea, (iii)injury to the intermittent laryngeal nerve,(iv) atelectasis, (v)tracheoesophageal fistula, (vi)aerophagia, (vii) separation of tracheotomy tube, (viii) repetitive airway block, (ix)subglottic edema,(x) tracheal stenosis, (xi)pneumonia,(xii) dysphagia, (xiii) keloid arrangement, and (xiv)difficulty with decannulation. A percutaneous tracheostomy can be performed rather in light of the fact that it is a more secure and savvy technique requiring less working time.<sup>12</sup> A cricothyroidotomy can be performed rather than a tracheotomy when endotracheal intubation and nasotracheal intubation are unrealistic it can likewise be utilized when there is a difficulty in intubation due to ensnarement and serious burns.<sup>13</sup> A cut is made through the skin and cricothyroid layer for arrangement of a tube. This strategy is quicker than tracheotomy and can be acted in the prehospital setting; in any case, it is just a present moment option.<sup>13</sup> Cricothyroidotomy should likewise be possible when the vocal lines can't be seen during laryngoscopy or the pharynx is clouded by discharge. Some potential complexities are sub-glottic hindrance and stomal stenosis.<sup>14</sup> In the pediatric airway, it is more enthusiastically to decide the degree of injury, so an underlying evaluation with a figured tomographic sweep or endoscope is required. The essential choice is endotracheal

intubation with an endoscope. A cricothyroidotomy ought to never be acted in pediatric patients.<sup>15</sup> Two elective techniques for intubation for cases with midfacial and panfacial fractures are submental and submandibular intubation. A section is made through the mylohyoid with obtuse dismemberment utilizing a hemostat. The orotracheal tube is gotten extraorally through the opening and associated with the sedation unit to intubate the patient. The method can be acted in around 5 minutes.<sup>17</sup> At the point when long haul respiratory help isn't needed, the submandibular approach can be utilized. A cut is made in the submandibular area 1 inch beneath and a large portion of an inch front to the point of the mandible. Gruff analyzation was performed through the fat, platysma, profound cervical belt, and mylohyoid. Like the submental strategy, the patient is intubated through the submandibular opening.<sup>18,19</sup> Both techniques require cautious dismemberment to forestall harm to the nearby structures. These 2 techniques are beneficial in maxillofacial trauma since they evade the complexities saw with other intubation strategies and permit the utilization of MMF. Intraoperatively, one doesn't have to utilize both nasotracheal and orotracheal intubation to fix and decrease fractures if these 2 elective strategies are chosen.<sup>16</sup>

### **3. POSITIONING**

The patient ought to be situated to augment the specialist's admittance to the site of fix. The patient's head is put toward the finish of the table, and the table is normally turned 90 or 180 degrees to permit the specialist full admittance to the head. The whole face is arranged and kept in the field to permit the specialist to assess the decrease of fractures by analyzing their balance with contralateral structures. The neck is additionally prepared in the event that a tracheostomy is required, however it is normally secured with a towel during the system. In the event that the patient has a known cervical spine injury or an uncleared cervical spine, the neck is kept up in an in-line, unbiased position. This can generally be refined by keeping the back portion of the C-spine collar set up and putting towels, intravenous liquid packs, or blockades on either side. Despite the fact that these techniques don't totally immobilize the neck, they fill in as a suggestion to the specialist not to control the neck. The patient's eyes ought to be taped shut, or corneal watchmen with ophthalmic treatment ought to be utilized to forestall incidental corneal scraped spot. Tolerant with a troublesome airway is likewise at high danger for postoperative intricacies. Following medical procedure, the mucous films are edematous, the delicate tissues are swollen, and the airway might be packed. Neck expandability is moderately low and even a little drain in the area could bring about airway bargain. In intubated patients with maxillofacial trauma, extubation ought to be conceded until the edema dies down. During extubation the patient ought to be observed intently and the consideration suppliers ought to be ready for the chance of reintubation. It is essential to forestall sickness and heaving as a result of the danger of gastric substance goal, particularly in those patients with MMF, in light of the fact that pneumonic desire is conceivable. For those patients with a tracheotomy tube, the patient might be stirred and permitted to inhale immediately through the tracheostomy tube for a couple of days so as to guarantee a protected recuperation.

### **4. CONSIDERATIONS FOR DIFFERENT TYPES OF TRAUMA**

Facial fractures are the significant sort of maxillofacial trauma and that bring about airway compromise. One component is the back removal of midface structures into the oropharynx. Block may likewise be because of extreme discharge.

Facial fractures with malocclusion can be dealt with MMF. Maxillomandibular fixation represses the utilization of endotracheal intubation except if the patient has missing teeth in the molar district. Inflexible inner fixation should be possible rather than MMF to forestall such complications.<sup>18</sup> Fixation is recommended regardless of whether submandibular or submental intubation is used.<sup>19</sup> Airway bargain can be forestalled by keeping up dependability of the mandible and tongue just as setting the patient in an inclined or sitting position. When there is airway bargain in these cases, nasotracheal intubation is the essential alternative.

### Cervical Spine Injury

At the point when a patient with maxillofacial trauma gives cervical spine injury, the airway must be overseen appropriately without utilizing a cricothyroidotomy. At first, imaging studies ought to be performed to evaluate the degree of injury. Cervical foothold can balance out the injury before intubating.<sup>27</sup> In a study that was led, the favored strategies for patients with cervical spine injuries were as per the following: elective-nasotracheal intubation; critical nasotracheal and orotracheal intubation; and emanant orotracheal intubation. Orotracheal intubation must be performed cautiously on the grounds that it could disturb the cervical spine injury, and visually impaired intubation isn't suggested.<sup>13,27</sup>

### Ballistic Wounds

Ballistic wounds can typically be taken care of non-operatively. A significant concern is airway bargain. Rising airways are required in GSWs that entered the mandible or midface.<sup>20</sup> When the symphysis of the mandible is broken, the tongue can impede the airway. A registered tomographic check is the best imaging strategy to examine the fractures. Any facial draining ought to be made do with angiography and embolization.<sup>22</sup>

## 5. SUBMENTAL INTUBATION

Submental intubation was first depicted in 1986 for intense airway the board of maxillofacial trauma patients, in whom nasoendotracheal intubation was contraindicated and oral intubation was not ideal because of the craving to build up dental connections perioperatively. The strategy was a pleasant option in contrast to tracheostomy. The scope of signs for submental intubation has widened to incorporate numerous orthognathic and skull base surgeries.

### Technique

The strategy for submental intubation that starts with the standard oral intubation, trailed by a 2cm submental skin entry point corresponding to the mandible in a paramedian area around one finger expansiveness from the mandibular fringe. Next, a 2 cm oral cut in the horizontal sulcus is made. The last advance is the formation of a paramandibular, subperiosteal, sublingual pathway through the floor of the mouth to open into the oral hole. The geniohyoid and genioglossus muscles are not crossed, and addition of the foremost stomach of the digastric muscle is saved. The collapsed pneumatic sleeve is then brought poorly through the made opening, trailed by the endotracheal tube (ETT). Subsequent to switching the past two stages at the finish of the activity, free estimation of tissue with stitches is performed to consider moderate waste.

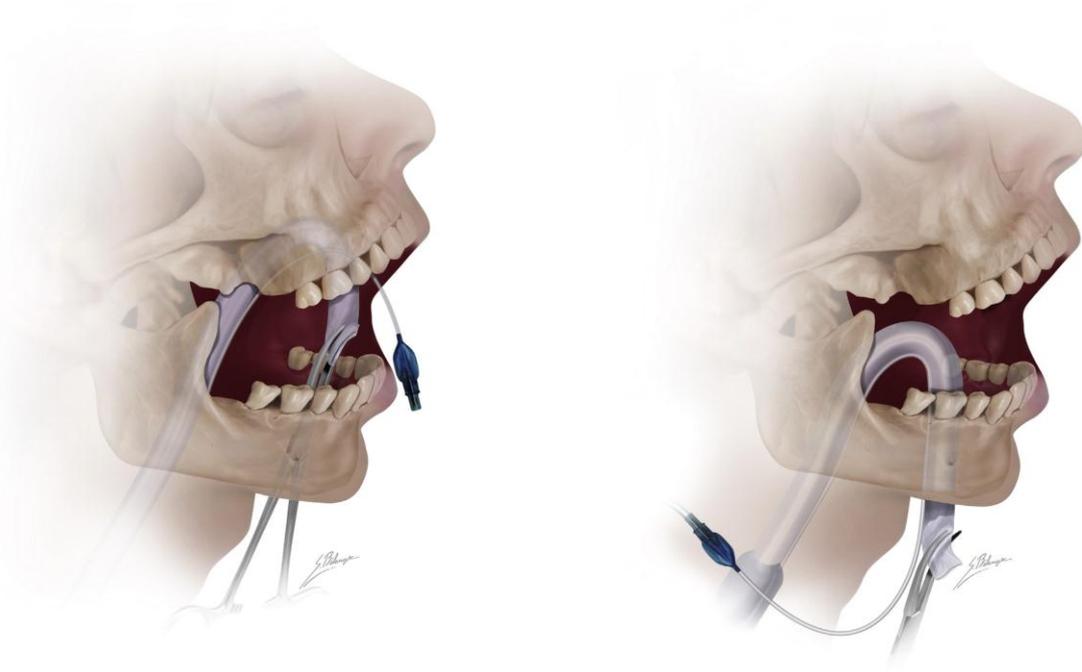


Diagram showing a hemostat bringing the oral endotracheal tube through the midline submental soft tissue

Diagram of the inflation tube of the cuff transitioned separately.

## 6. Indications

Maxillofacial trauma is the mind-boggling sign for usage of the submental intubation method. It hinders the situation of whether to endure the restriction of helpless presentation and failure to decide dental connections perioperatively utilizing an orotracheal tube. The method likewise disposes of the requirement for nasal tube position when potentially contraindicated because of skull base or other maxillofacial fractures, and dodges tracheostomy when it isn't needed long haul. The submental intubation method has gotten mainstream in numerous elective facial osteotomies, and various circumstances have emerged for its utilization. Customarily, in consolidated Le Fort III/Le Fort I methods, intraoperative transformation from an oral tube toward the fruition of Le Fort III osteotomy to a nasal tube toward the beginning of the Le Fort I osteotomy is important to set up occlusal connections. Submental intubation at the start of the system stays away from the requirement for oral-to-nasal tube transformation, a possibly perilous suggestion for the anesthesiologist (and patient) intraoperatively. Along these lines, our experience has indicated that the procedure is useful in orthognathic medical procedure with synchronous rhinoplasty. For this situation, a nasal-to-oral tube change is required after the maxillofacial osteotomies, preceding endeavor nasal medical procedure. The submental strategy is likewise of advantage in those patients going through orthognathic medical procedure, who have a pharyngeal fold or other anatomic peculiarity blocking nasal tube position. Certain base of skull surgeries, for example, the transmaxillary access with the utilization of Le Fort I osteotomy, is another sign for the submental procedure. This methodology takes into consideration improved presentation on the grounds that the maxilla is withdrawn a more prominent separation than if an oral tube were available. Cancrum oris is another conceivable sign for the strategy.

## 7. Contraindications

The submental method is contraindicated whenever delayed intubation is essential. Any patient with a critical head injury, as in numerous facial injuries, ought not be viewed as a contender for the submental procedure. In this circumstance, tracheostomy ought to be viewed as the treatment of decision.

## 8. Advantages

The essential favorable position of the submental intubation method is the capacity to evade a tracheostomy and the subsequent dismalness related with it.

The significant intricacies of a tracheostomy incorporate, however are not restricted to, contamination, discharge, intermittent laryngeal nerve harm, tracheal stenosis, pneumothorax, pneumomediastinum, subcutaneous emphysema, and tracheoesophageal fistula. These confusions are dodged with submental intubation.

Moreover, the more minor dangers and difficulties from submental intubation are less often present than those from tracheostomy. The time needed to finish submental intubation is not exactly the time required for tracheostomy, and the subsequent scar is all the more tastefully adequate.

Negligible postoperative consideration and simplicity of reversibility additionally uphold the advantages of the submental strategy over tracheostomy, when proper.

In those careful cases wherein submental intubation might be of advantage, there are three essential favorable circumstances that aid the usable strategy.

1. The capacity to guarantee dental impediment all through the strategy has just been examined yet is of extraordinary importance. Maxillofacial trauma frequently brings about harm that modifies the dental occlusal connections. Having the option to address this perioperatively is of incredible advantage. Any oral tube would forestall any investigation of whether preinjury impediment has been reestablished.

2. Removal of the ETT from the direct careful field is additionally a significant advantage. As opposed to working around and control the tube, the submental intubation method takes into account a bigger and unhampered usable field.

3. Third, the submental way to deal with intubation takes into consideration expanded withdrawal in skull base systems. Looking to access the skull base utilizing a transmaxillary approach, after the osteotomy is finished, the maxilla is withdrawn poorly to open up the field of vision.

## POSTOPERATIVE CARE

In the event that the airway is considered to be satisfactory, the patient can be extubated immediately. If gentle to direct airway edema is suspected, at that point treating with steroids for 12 to 24 hours before extubation may improve the opportunity of fruitful extubation.<sup>8</sup> If the patient requires a tracheostomy, it is our training to change the tracheostomy tube unexpectedly at 3 to 7 days after medical procedure to guarantee that the parcel is mending. Patients who are kept in IMF ought to be dealt with forcefully to forestall sickness. Liquor

misuse is basic among CMF trauma patients and along these lines fitting observing and treatment of liquor withdrawal is basic in the perioperative setting.

## COMPLICATIONS

Airway fires are consistently a danger when utilizing electrocautery within the sight of oxygen and a fuel source. Each of the three are frequently in nearness during CMF medical procedure. In the event that a fire begins in the ETT, the patient ought to be promptly extubated, the oral depression overwhelmed with water, the airway immediately suctioned, and direct laryngoscopy and bronchoscopy performed to assess the degree of injury and to restore the airway. There is an expanded danger of losing the airway intraoperatively in view of CMF injuries themselves and the need to control the airway to increase careful access. It is along these lines astute to prepare the neck on the off chance that the requirement for a careful airway emerges. Airway edema and resulting check can happen in the prompt postoperative period or in a postponed manner. On the off chance that indications of hindrance create, the airway must be quickly assessed and secured. IMF expands the danger of desire, and accordingly all IMF patients ought to be forcefully treated for queasiness and have wire cutters at the bedside and at home. Weight rot of the nose can happen with nasotracheal tubes (and nasogastric tubes), particularly in the event that they are left set up for an all-inclusive period. Airway the executives of patients with maxillofacial trauma is testing. The clinical status and highlights of the trauma direct the methodology for making sure about the airway, and a progression of steps are to be arranged before airway the executives is started. Information on the particular credits of the troublesome airway, aptitude in the suitable strategies for dealing with the troublesome airway, knowledge of the different airway gadgets, and brief acknowledgment of a bombed airway are essential for ideal patient consideration.

## 9. CONCLUSION

Airway is the A in the ABCs of trauma, the board and is consistently the most elevated need for any patient. Despite preparing foundation (otolaryngology, plastic medical procedure, oral and maxillofacial medical procedure), all CMF specialists ought to be alright with airway assessment and situation of a crisis careful airway. The specialist ought to work together with the sedation group. This incorporates framing a preoperative arrangement, setting up and making sure about the airway, situating, safe extubation, and different contemplations. The patient's different injuries and clinical comorbidities ought to be viewed as while detailing the airway and careful arrangement. Prior to starting any airway or CMF system, guarantee that the patient is accurately situated and that all vital supplies are accessible (counting suction). A solid regard for the airway should consistently be kept up, never disparaging the quickness with which airway status can break down.

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