CASE STUDY

A STUDY ON PARAMEDIAN SUBMENTAL INTUBATION IN MAXILLOFACIAL TRAUMA PATIENTS

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INTRODUCTION

Management of the airways in the presence of panfacial injuries or midface fractures with mandibular involvement requires special consideration. Various methods of intubation and surgical airways are described in the literature (Meyer, 2003), but no consensus exists to date as to the best way of controlling the airway when orotracheal or nasotracheal intubations are contraindicated (Caron, 2000). However, under certain circumstances such as persistent cerebrospinal fluid leakage, hyperopic turbinate, stenosis of the nasal airway by deviated nasal septum and nasal polyps the nasotracheal intubation in patients with jaw fracture is not recommended (Uma, 2009; Gibbons, 2003 and Schütz, 2008). In some cases, extraction of a mandibular third molar tooth will create sufficient space for the passage of the armored tube with its flexible metallic reinforcement. The Submental intubation is a surgical method of obtaining oral intubation in cases in which the surgeon needs to evaluate dental occlusion during surgery (MacInnis, 1999).

MATERIAL AND METHODS

In this study, 20 patients were treated with submental intubation (Table 1). All the patients were males and ages ranged from 18 to 34 years. All patients were victims of facial trauma. Most of the facial injuries were a combination of fractures affecting the dental occlusion.

RESULTS

We performed submental intubation in all 20 patients with maxillofacial trauma. The Submental orotracheal intubation was completed successfully in all 20 patients.
The patients ranged in age from 18 to 34 years. The mean duration of the procedure ranged from 5 to 7 minutes (Table 1). In all patients submental intubation permitted simultaneous reduction and fixation of all fractures and intraoperative control of the dental occlusion without interference from the tube during the operation. No bleeding or infection in the area was reported. The salivary duct was preserved and a normal level of saliva fluids was maintained. The scar has normally been well accepted by the patients. There were no complications due to submental intubation, such as infection, hematoma, bleeding, hypertrophic scarring, lingual nerve injury, ranula formation, or orocutaneous fistula.

**DISCUSSION**

The technique of submental intubation was introduced by Altemir in 1986 (Altemir, 1986). The Submental intubation is an alternative route for nasal or oral intubation, especially in...
cases of major panfacial trauma (Gordon, 1955). The Submental intubation combines the advantages of orotracheal intubation, which allows access to frontal nasal fractures and those of nasotracheal intubation, which allows the mobilization of the dental occlusion. It also avoids the risks of iatrogenic meningitis or trauma of the anterior skull base after nasotracheal intubation, as well as complications, such as injury to cervical vessels or the thyroid gland, tracheal stenosis related to tracheotomy (MacInnis, 1999). There have been several attempts to achieve short-term airway management, including retromolar intubation and nasal tube switch technique. According to literature, retromolar intubation has been reported to have disadvantages like obtrusive, being more traumatic, costly and requiring more operating time (Martinez-Lage, 1998). Another alternative nasal tube switch technique was not performed due to problems associated with the intraoperative re-intubation, risk of aspiration due to posterior nasal bleeding, potential airway compromise with need for emergency tracheostomy/cricothyroidotomy, excessive stress on fixations with possible loosening of plates and screws, unfavourable manipulation of an unstable cervical spine (Werter, 1994). Since its first description the submental intubation technique has undergone various modifications and found new indications (Green, 1996). It could be safely used in patients with midfacial or panfacial fractures with possible base of skull fractures (Biglioli, 2003 and Chandu, 2000). In our present study, the submental intubations were possible in all the patients without any major complications thus allowing unimpeded manipulation of the fractured fragments, establishment of maxillomandibular fixation and complete assessment of facial symmetry, satisfactory achievement of occlusion, as well as easy access to endotracheal tube for the anaesthesiologist. Moreover, extubation was found to be simple and the cosmetic results were acceptable with no long-term morbidity.

In present study there were no complications related to submental tube placement. These results are in line with comprehensive literature review in 812 patients by Jundt, on complications of submental intubation which reported a 100% success rate with submental intubation and only minor complications (Jundt, 2012). Nowadays with the availability of modern craniomaxillofacial fixation techniques, the maxillomandibular fixation is usually not required in the postoperative period (Davis, 2000), and even if required, Postoperative maxillomandibular fixation could be achieved by simple elastics after extubation. In modern maxillofacial trauma care, elastics are routinely used for achieving maxillomandibular fixation instead of traditional wires. So if mechanical ventilation or intubation is required postoperatively, the submental intubation could be switched over back to standard orotracheal intubation. However, if mechanical ventilation is expected to be required for prolonged period because of severe head injury, tracheostomy remains the preferred technique for airway management (Caron, 2000). Many authors have recommended the technique of lateral incision through the body of mandible (Gordon, 1995 and Honig, 1993). However, for two reasons midline approach is used as described by MacInnis: 1. Only few anatomic structures are present and there is minimum risk of neurovascular damage. 2. The midline incision heals almost imperceptibly and therefore is cosmetically superior (MacInnis, 1999). This method of intubation is contraindicated for patients who require a long period of assisted ventilation, i.e. multitrauma patients with severe neurological damage or major thoracic trauma. The Paramidline approach is preferable as there is less risk of damage to the submandibular and sublingual ducts and lingual nerves. The scar is in a more favourable position, and the region is usually relatively avascular hence submental intubation should be chosen in selected cases of maxillofacial fractures (Caubì, 2008).

Conclusion

Submental intubation is a very useful technique in the management of maxillofacial trauma patients with low complications. It can be used as a good alternative to short term tracheostomy in selected maxillofacial trauma patients when tracheal intubation through both the oral and nasal routes is contraindicated.

REFERENCES


