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Nasotracheal Intubation Over Gum-elastic Bougie Under General Anaesthesia: A Prospective, Randomized and Controlled Study

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Introduction: Nasotracheal intubation is favored in various intraoral surgical procedures as it permits excellent surgical access to intraoral structures while reducing the risks of inadvertent displacement of endotracheal tube (ETT). However, it is associated with higher incidence of nasal trauma, bleeding and sore throat. A number of case reports describe the use of gum-elastic bougie (GEB) in aiding nasotracheal intubation(1-3), however there is no prospective controlled study to assess its efficacy in larger patient population. We postulated that railroading the ETT over a nasotracheally placed GEB should provide easier nasotracheal intubation with reduced rate of nasal trauma, bleeding and other complications.

Methods: The study was approved by the institute’s Ethical Committee for Human Studies. Eighty patients of either gender, aged 20-60 years, ASA grade I-II, with airway of Mallampatti grade-I or II scheduled for various surgical procedures under general anaesthesia were included and randomly divided into two groups of forty each. The procedure was explained and written informed consent was obtained from each patient. Oxymetazoline (0.05%), 3-4 drops, were instilled into the marked patent nostril of the patient about 30 minutes before the expected nasotracheal intubation. In the operating room, induction of general anesthesia was achieved with intravenous midazolam (1mg), fentanyl (1-2g/kg) and propofol (1.5 to 2mg/kg). After ascertaining adequacy of facemask ventilation, vecuronium bromide (0.1mg/kg) was administered. In study group of patients, a well lubricated nasopharyngeal airway (6 mm for females and 7mm for males) was inserted into the designated nostril and face mask ventilation continued for three minutes. A well lubricated GEM was now inserted through the nasopharyngeal airway and its distal end was guided into the larynx and trachea under direct laryngoscopy using Magill’s forceps. The nasopharyngeal airway was removed and an ETT (7 mm in females and 8mm in males) was railroaded over the GEM into the trachea. In control group, nasotracheal intubation was performed directly without using nasopharyngeal airway and GEM under direct laryngoscopy and distal tip of the ETT was guided into the larynx and trachea using Magill’s forceps. The lungs were now ventilated through nasotracheal tube during intraoperative period. At the end of surgery anesthesia was terminated and nasotracheal tube was removed.

Incidence of nasal trauma, bleeding and difficulty in nasotracheal intubation was noted. Postoperatively, at 2 hours and 24 hours, all patients were assessed if they have soreness and/or nasal stuffiness/pain in their nasal passage and degree of soreness was graded into mild moderate and severe.
Results: In study group, 2 patients (5.0%) had mild nasal bleed (no frank blood but blood stained nasopharyngeal secretion on suctioning) during nasotracheal intubation and 3 patients (7.5%) had mild to moderate degree of sore nose on second postoperative day. All patients had easy nasotracheal intubation with no ETT cuff rupture. In Control group, 2 (5.0%) patients had moderate degree of nasal trauma with nasopharyngeal bleed (>10 ml frank blood on suctioning), 3 (7.5%) patients had mild bleeding, 7 (17.5%) patients had moderately sore nose and 3 (7.5%) mild sore nose on second postoperative day. In 1 (2.5%) patient there was ETT cuff tear during negotiation of distal end of ETT with Magillâ€™s forceps and needed change of ETT.

Conclusion: Nasotracheal intubation over Gum-elastic bougie is decreases the incidence of nasopharyngeal trauma, bleeding, nasal soreness and is associated with ease of intubation.

References: