

## Supraglottic airway devices in airway management of obese patients

Supraglottic airway devices (SADs) have been used for routine airway management and maintenance during anesthesia in patients without increased risks for aspiration of gastric contents.<sup>[1]</sup> SADs offer an alternative airway to traditional tracheal intubation with potential benefits, including ease of fitness and less airway disturbance.<sup>[1]</sup> Airway of an obese individual is a major concern for an anesthesiologist while providing general anesthesia or securing the airway in the intensive care unit. The incidence of obesity is 11% of the global population according to world health organization and anesthesiologist will encounter obese patients quite often.<sup>[2]</sup> Endotracheal intubation is usually done in most surgeries but incidence of difficult intubation in an obese patient is much higher than normal weight patients.<sup>[3,4]</sup> National Audit Project 4 also stated that SADs were associated with lowering the major airway complications than all other devices in UK.<sup>[5]</sup>

SADs are used in difficult airway management, where they can be used for oxygenation and also as conduits for insertion of tracheal tubes in the scenarios of difficult or failed intubation. These also act as a rescue device in the cases of difficult oxygenation with the facemask.<sup>[6]</sup> With new, improved versions of these devices, some borderline indications for their use, such as laparoscopies or insertion in the obese patients have also appeared.

In United States, 60%–70% of the adult population is overweight and >30% of them obese. Western Europe, including the United Kingdom, has a prevalence of adult obesity over 20% with an increasing trend. Morbidly obese patients are at risk of difficult mask ventilation as well as intubation, and airway management is a major factor underlying morbidity and mortality related to anaesthesia in such patients.<sup>[3]</sup>

SAD can be used alone to maintain the airway during short surgical procedures or it can act as a conduit for passage of endotracheal tube during major surgical procedures or in the intensive care. Studies have shown that there need not be any fear of airway-related complications while using SAD in obesity.<sup>[7]</sup> Obese have a limited neck movement due to restriction of atlanto-axial joint and cervical spine by upper thoracic and lower cervical fat pads. Obese individuals usually have short thick neck.<sup>[7]</sup> The excessive tissue fold in mouth may

be missed during routine preanesthetic check-up. They also have suprasternal, presternal and posterior cervical fat and a very thick submental fat pad.<sup>[7]</sup> All these factors contribute to a difficulty in laryngoscopy and tracheal intubation. Many SADs can be used as valuable equipment for morbidly obese patients and it is now standard tool for airway management in clinical practices. Abdi *et al.* proved laryngeal mask airway (LMA) supreme as effective tool in obese patients.<sup>[8]</sup> Zoremba *et al.* concluded that using an LMA and avoidance of muscle relaxation reduced postoperative deterioration of lung function, compared with tracheal intubation. It is also important to note that LMA causes lesser incidence of laryngospasm, postoperative sore-throat and coughing.<sup>[9]</sup> SADs cause less atelectasis especially during induction of anaesthesia.<sup>[9]</sup>

Obese persons are also prone to several cardiovascular complications. SADs are better option as they help in reduction of pressor response and provide better hemodynamic stability compared to laryngoscopy and intubation.<sup>[10,11]</sup> Many intubating SAD devices like Ambu Aura gain, Intubating Laryngeal tube Suction device, Block buster airway, etc., are the advanced airways that usually care for all the issues that are raised in other SADs. Role of SADs have not been observed in different surgeries in detail. In ophthalmic surgeries, there is increased intraocular and intracranial tension caused due to SAD is lesser than in endotracheal tube (ETT). Thus, it remains ideal for eye surgeries.<sup>[12]</sup> SAD can be used in Emergency surgeries as rescue device mostly and in obese patients' elective surgeries. Time spent is also lesser and securing the airway with SADs is an art and skill. Since the advent of SAD, there has been the fear of aspiration associated with its use. A meta-analysis involving 12,901 patients with LMA usage showed that clinical evidence of pulmonary aspiration using the LMA was comparable to anesthesia administered with an endotracheal tube (ETT) (2.3 per 10,000).<sup>[13]</sup> The 2011, NAP4 project done in United Kingdom shows only a 4% chance of aspiration associated with second-generation airway devices, compared with 35% chance seen with tracheal tube. Rati *et al.* in 2018 compared i-gel in obese and nonobese patients and they concluded that i-gel is as effective in obese patients as in nonobese patients when used for securing the airway for surgical procedures.<sup>[14]</sup> This makes SAD a superior choice.<sup>[5]</sup>

Difficult laryngoscopy and difficulty in intubation are the common problems that an anesthesiologist will face when an obese patient comes to the emergency department, ICU or for surgery.<sup>[15]</sup> In such situations, supraglottic airway device should be made available. These devices gained importance

with concept of oropharyngeal leak pressures (OLP). More the OLP better is the SAD. With maintenance of OLP and the intracuff pressures throughout procedure, longer duration surgeries can be performed under SADs. Obese patients gained advantages over the years with the concept of OLP. SADs are now key to successful airway management. Practicing different SADs on normal or obese patients is a skill and this has been a revolution in the field of airway management in modern anesthesia practice. SADs also gained a firm place in obese and nonobese patients, probably because of its ease of placement and efficacy, and are being used in patients undergoing diagnostic and therapeutic procedures where tracheal intubation is not necessary.

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