

# AIRTRAQ® OPTICAL LARYNGOSCOPE FOR TRACHEAL INTUBATION IN A PATIENT WITH AN UNCOMMON GIANT LIPOMA ON THE POSTERIOR ASPECT OF NECK AND ADDITIONAL RISK FACTORS OF ANTICIPATED DIFFICULT AIRWAY: A CASE REPORT

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Patients with restricted neck movement present a difficult airway situation because of improper positioning and inadequate extension of the atlanto-occipital joint. The Airtraq optical laryngoscope is a new single use device that permits an indirect view of the glottis without the need to achieve a direct line of sight by conventional use of the 'sniffing position'. We present and discuss a case of uncommon giant lipoma (16x12X10 cm) in the posterior aspect of the neck in addition with other independent factors of anticipated difficult airway, intubated successfully in the semi-lateral position with the use of Airtraq®.

**Keywords:** Intubation, Difficult airway, Lipoma, Laryngoscopes.

## Introduction

The Airtraq® optical laryngoscope (AL) (Prodol Ltd. Vizcaya, Spain) is a relatively new disposable tracheal intubation device, developed to facilitate tracheal intubation in patients with normal or difficult airways<sup>1-5</sup>. It is designed to provide a view of the glottis without alignment of the oral, pharyngeal and tracheal axes. This is due to the exaggerated curvature of the blade and a series of lenses, prisms and mirrors that transfer the image from the illuminated tip to a proximal viewfinder. A guiding channel on the right side of the blade acts as a conduit holding and directing the tracheal tube through the glottis opening when the vocal cords are visualized. AL is commercially available in three sizes. The larger size 3 utilizing tube sizes 7.0-8.5 internal diameter (ID), the size 2 utilizing tube sizes 6.0-7.5 ID and the pediatric size utilizing sizes 4.0-5.5 ID according to the manufacturer. The width of the guiding channel in size 3 is 14 mm and in size 2 12 mm. The length of the guiding channel in size 3 and size 2 is 20 and 19 cm, respectively. The angle between the guiding channel and the blade is 93° in all AL sizes. The extreme curvature of the blade and the optical components help to visualize the glottis without the need for aligning the three airway axes, i.e. oral, pharyngeal and laryngeal. It also does not obstruct the endoscopic view

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of the vocal cord during laryngoscopy because of its inbuilt conduit for endotracheal tube.

Restricted head extension represents an important independent risk factor during laryngoscopy and tracheal intubation. We present and discuss a case of restricted head extension due to an uncommon giant lipoma located in the posterior aspect of the neck and anticipated difficult airway, intubated with the use of AL.

## Case Report

A female, 42 years old (height: 150cm, weight: 108 kg, BMI: 46 kg/m<sup>2</sup>), American Society of Anesthesiologists class II, presented to the surgical outpatient department with a history of gradually progressive swelling mass on the posterior aspect of neck for the last 12 years. On clinical examination and investigations the diagnosis of lipoma was made and the patient was planned for excision. Cervical spine CT showed a giant neck lipoma (16X12X10 cm) without bony or articular abnormality (Figure 1 and 2).

During preoperative airway assessment, the morbidly obese patient presented with severely restricted head extension (45°) due to the giant lipoma, leading to a very short thyromental distance (4.9 cm). Mouth opening was small (interincisor distance 3.5 cm) with protruding incisors, leading to Mallampati scale III. Additionally, the patient reported history of gastroesophageal regurgitation and obstructive sleep apnea, without previous history of surgical procedure under general anesthesia during the last 12 years. An anticipated difficult airway was confirmed.

Fig. 1

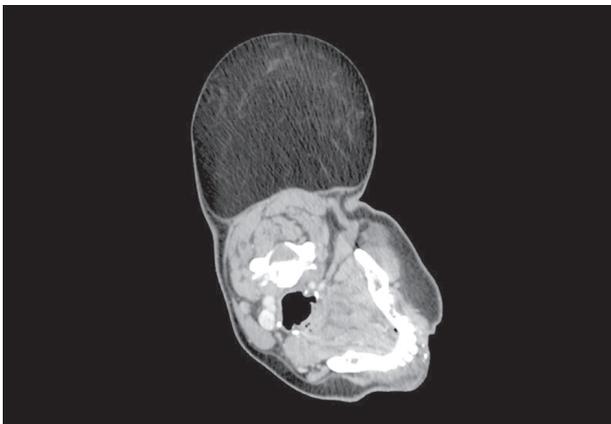


Fig. 2



Awake fibreoptic intubation was recommended for airway management of the anticipated difficult airway. However, the patient denied to give consent for awake intubation and so general anesthesia was planned. The night before the procedure the patient was given 40mg of esomeprazole and 2h before surgery metoclopramide 10mg orally. On the table, standard monitoring was applied and the patient was put to lie in a semi-lateral position with the back appropriately supported, in a way to achieve maximal neck extension and to avoid compression of the lipoma. After preoxygenation, anesthesia was induced with i.v. fentanyl 1µg.kg<sup>-1</sup> and propofol 2 mg.kg<sup>-1</sup>. After confirmation of adequate bag mask ventilation neuromuscular relaxation was achieved with 1.5 mg.kg<sup>-1</sup> of succinylcholine. Cricoid pressure was applied soon after loss of consciousness and during intubation, without distorting the laryngoscopy and view of glottis.

Tracheal intubation was performed by an experienced anesthetist (instructor in national and international airway courses) in the use of Airtraq. An Airtraq® size 2 blade was introduced into the oral cavity in the midline, over the base of the tongue. The view of glottis was optimized on the first attempt, which required vertical lift adjusting maneuver. A 7.5 mm ID conventional polyvinyl chloride (PVC) endotracheal tube the tracheal tube was passed through the vocal cords and the cuff inflated. The tube was then held in place while the AL was removed. Anesthesia was maintained with nitrous oxide (66%) and sevoflurane (1-2%) in oxygen. The intraoperative course was uneventful and lasted 70min. The lipoma removed weighted 1.3kg.

## Discussion

Airway management is fundamental for safe anesthetic practice and anesthetists need to be skilled in airway management techniques. We report a case of tracheal intubation with the Airtraq® laryngoscope in a patient with giant neck lipoma and anticipated difficult airway. The patient presented with a significant number of independent risk factors indicating anticipated difficult airway management. These included severely restricted head extension, decreased mouth opening, morbid obesity, history of gastroesophageal reflux and obstructive sleep apnea.

Management of the potential difficult airway still remains a major challenge. Awake fiberoptic intubation is considered to be the gold standard and the safest option in patients of anticipated difficult airway<sup>6</sup>. However, this is technically more difficult and requires adequate experience<sup>6</sup>. Alternatively, awake tracheal intubation using the Airtraq® could be an option<sup>7,8</sup>. However, even if there were no technical limitations like in our case, some patients remain apprehensive about the procedure and refuse to remain awake. Supraglottic airway devices (SAD) are of proven value in difficult airway situation. Nevertheless, the 4th National Audit Project (NAP4) from the United Kingdom, documented cases of inappropriate use of SAD to avoid tracheal intubation resulted in patient morbidity<sup>9</sup>. In our patient there were two important limitations for the SAD to be the primary airway management device. First, the history of morbid obesity combined with gastroesophageal reflux and the possible risk of aspiration and second the site of operation in close proximity with the airway, that possibly could lead to inadvertent SAD mis-positioning during anesthesia<sup>9</sup>.

Recent reports have demonstrated that the use of the AL is superior to the Macintosh laryngoscope in patients at low or increased risk for difficult intubation<sup>3-5</sup>. Additionally, the AL has been used successfully in a number of cases with difficult airway management, including patients with cervical spine immobilization<sup>10-12</sup>, morbid obesity<sup>13-14</sup>, following failed tracheal intubation<sup>15</sup> in anesthetized patients as well as in cases where AL was used successfully for awake tracheal intubation<sup>7,8</sup>.

Head extension is an important point during laryngoscopy and an adequate extension of the atlantooccipital joint is important to align the three axes i.e. oral, pharyngeal and laryngeal. Intubation in patients with restricted neck movements like ankylosing spondylitis or in patients with cervical spine immobilization, therefore present a difficult airway situation because of improper positioning and non-alignment of the three axes. The AL is a new single use device that permits an indirect view of the glottis without the need to achieve a direct line of sight by conventional use of the 'sniffing position'. Actually, in our case sniffing position was impossible due to the giant lipoma, restricting severely the head extension. For this reason the patient was put to lie in a left semi-lateral position on the table, in order to achieve the maximal head extension. Additionally, AL has been used successfully for tracheal intubation in the lateral position<sup>16</sup>. Another similar case has been reported recently with the patient in supine position<sup>17</sup>.

Following the induction of general anesthesia and before administering the neuromuscular blocking agent, adequate face mask ventilation was confirmed. Prior significant clinical experience with the use of Airtraq demonstrated that in cases when tracheal tube was not possible to be directed into the trachea, optimization maneuvers were attempted<sup>7,18</sup>. Optimization maneuvers included extension, rotation or vertical lift of the AL, with the latter to be used most commonly like in our case<sup>7,18</sup>.

The operation site was at the same level and in close proximity with the airway while the patients' head was covered. For these reasons, someone should argue that it should be reasonable to choose a reinforced tracheal tube. However, conventional PVC tracheal tube was used instead, taking into account the increased failure rate with reinforced tracheal tubes during tracheal intubation, when using Airtraq optical laryngoscope<sup>18</sup>.

In conclusion, this case of uncommon giant lipoma (16x12X10 cm) in the posterior aspect of the neck in addition with other independent factors of anticipated difficult airway, was intubated successfully in the semilateral position with the use of Airtraq®.

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