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Successful Use of High-Flow Nasal Oxygen Therapy in a Patient with Respiratory Distress Following Total Thyroidectomy

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Dyspnea due to bilateral vocal cord paralysis after total thyroidectomy is a life-threatening complication.Most of the time it is related with recurrent larengeal nerve (RLN) injuries.Postoperative RLN injuries can be transient or permanent.Moreover, vocal cord paresis can appear without clear intraoperative injury of the nerve (i.e., direct section), for example, just by intense stretching during retraction of the gland.Transient injuries are observed between 1% and 30% according to various studies. Literature shows that patients with transient vocal cord paralysis may show recovery as early as 3 days to 3 months.Here we presented a successful management of a patient with transient vocal cord paralysis after thyroid surgery by high flow nasal oxygen therapy (HFNO). A 39-years-old woman underwent total thyroidectomy for multinodular goiter. She was intubated using endotracheal tube size 7.0 mm via direct laryngoscopy which was successful in a single attempt. The surgery was uneventful. Intraoperatively, both superior laryngeal nerves and recurrent laryngeal nerves were identified and preserved. Postoperative extubation was uneventful, but ten minutes later, she developed acute stridor at the recovery room. Due to worsening symptoms, she was immediately transfered to general surgical ıntensive care unit (ICU). At admission she had serious stridor and accompanied with abdominal and intercostal retractions. Her vital signs were as follows: Respiratory rate 28 breath/minute, heart rate 110 beat/minute, tension arterial 139/76 mmHg, VI:36.7, SpO2:80%. Intravenous dexamethason 8 mg was given. Oxygen treament started with mask (10 L/minute).Arterial blood gas analysis revealed hypoxemia and hypocapnia (pH:7.38, PaCO2:29.2, PaO2:54.2, SpO2:%82).The fiberoptic laryngoscopic examination identified median adduction palsy of the vocal cords, with a glottal area of 8 mm.Non-invasive mechanical ventilation couldn't be initiated because of patient's panic attack disease and her clostrophobia. Intubation of patient was postponed and she was treated with HFNO by virtue of its continuous positive pressure (CPAP) effect on the upper airways. HFNO flow rate was kept high with 60 L/minute and FİO2 was 40% at first. After half an hour arterial blood gas analysis revealed the correction of hypoxemia (pH:7.38, PaCO2:33.2 mmHg, PaO2:127 mmHg, SpO2:94%) and patient's respiratory distress improved. Her glottal area increased to 16 mm during inspiration. She made a complete recovery without the need of intubation. She was discharge from ICU at postoperative day 4, with complete recovery of vocal cord function at four weeks after surgery. As our knowledge, this is the first case with transient vocal cord paralysis treated by HFNO. In previous reports transient vocal cord paralysis mostly treated with emergent intubation, tracheotomy or CPAP.

Keywords: Respiratory distress, stridor, transient vocal cord paralysis, high flow nasal oxygen therapy