Negative-pressure pulmonary edema due to post-thyroidectomy tracheomalacia: a case report

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Background

- Negative-pressure pulmonary edema (NPPE) is a rare and potentially serious complication of airway obstruction ⁽¹⁾.
- Following thyroid surgery, airway obstruction and NPPE can happen due to laryngeal nerve damage, laryngeal edema, cervical hematoma, pneumothorax and **tracheomalacia** ^(1,2).
- Predictive factors for the development of severe postoperative respiratory obstruction after thyroidectomy have been reported ⁽³⁾, mainly longstanding goiter ⁽¹⁾.
- Goiter-caused tracheomalacia** results from a loss of tracheal cartilage rigidity, resulting in poor support to the trachea ^(4,5).
- It is rare in endemic areas (1,9% - 5,8%) ^(5,6) and even questioned in the developed world ⁽⁷⁾.
- It can lead to airway collapse during inspiration and expiration ⁽²⁾ and can preclude a life-saving tracheotomy ^(4,5,6,8).
- Only **two** previous cases of NPPE due to goiter-caused tracheomalacia after thyroidectomy have been described in the literature ⁽²⁾.

Case Report

- 61-year old female.
- Retrosternal goiter after left hemithyroidectomy 30 years earlier.
- Uneventful surgery and reintubation in post-anesthetic care unit due to NPPE secondary to tracheomalacia. Extubated 7 hours later with no complications and discharged 4 days later.

Predictive risk factors for airway obstruction after thyroidectomy

> 5 year goiter*

Preoperative recurrent laryngeal nerve palsy

Significant tracheal narrowing and / or deviation

Retrosternal extension*

Difficult tracheal intubation

Thyroid cancer

Reoperation*

Retrotracheal extension of the tumor

* Known predictive factors for the given case report

Learning Points

- Although sufficient tracheal compression from thyroid enlargement to result in post-thyroidectomy tracheomalacia is rare, it is a life-threatening complication after extubation, leading to airway compromise, respiratory complications, and even death ⁽¹⁾.
- Identifying the described predictive factors for tracheomalacia after thyroidectomy ⁽³⁾ and using the appropriate airway management in these cases can avoid unnecessary adverse outcomes.

References

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