UNUSUAL COMPLICATION IN THYROID SURGERY. CASE REPORT AND LITERATURE REVIEW

NICOLA TARTAGLIA*, ROBERTA IADAROLA, ALESSANDRA DI LASCIA, ALBERTO FERSINI, ANTONIO AMBROSI
Department of Medical and Surgical Sciences, University of Foggia, Luigi Pinto Street, No. 1, 71122 Foggia, Italy

ABSTRACT

Background and Objective: Complication rates from total thyroidectomy are low, at present mortality for this procedure is around 0% and overall complication rate is less than 3%. Major complication includes wound infection, hematoma, recurrent laryngeal nerve palsy, hypoparathyroidism. Tracheal injury associated with thyroidectomy is rare, but when it occurs it can be very dangerous. Tracheal perforation is generally not considered a complication as such, but rather a technical occurrence during surgery that requires expeditious attention. Tracheal perforation, if encountered, needs to be managed appropriately in centers of expertise for high volume of thyroidectomy.

Keywords: Total thyroidectomy, Tracheal injury, Tracheal surgery, Tracheal lesion-Tracheostomy-Tracheal laceration.

DOI: 10.19193/0393-6384_2018_2_66

Received November 30, 2017; Accepted January 20, 2018

Introduction

Thyroidectomy is one of the commonest surgical operations performed in endocrine surgery for benign and malignant thyroid disease. Complication rates from total thyroidectomy are low, at present mortality for this procedure is around 0% and overall complication rate is less than 3%[1]. These most commonly include vocal fold paresis or paralysis, hypoparathyroidism, hypocalcemia, hematoma, and wound infection[1, 2]. Tracheal injury associated with thyroidectomy is rare (less then 1%)[3]. The trachea may be perforated or lacerated intraoperatively, which is often recognized and repaired immediately with little patient morbidity. However, unrecognized injury, or delayed rupture secondary to tracheal necrosis, can present up to 2 weeks postoperatively. Cause of for most thyroid surgeons this complication is less than one patient, it is unlikely that any individual will gather sufficient data to report the management of a series. There are no published reports describing the management of inadvertent tracheal perforation during thyroid surgery but only cases report[2-6]. Nevertheless, tracheal perforation, if encountered, needs to be managed appropriately.

Case report

From 2006 to 2017 about 2150 total thyroidectomy were carried out in University Surgical Department of Ospedali Riuniti of Foggia. We report a single case of tracheal injury. A Romanian 44-year-old woman underwent elective total thyroidectomy in our department for Grave’s disease. Euthyroidism was preoperatively achieved with Methimazole and Lugol’s solution. At the time of the surgical procedure, due to Grave’s disease,
fibrotic and vascular thyroid gland was found. Total thyroidectomy was performed with use of a combination of electrocautery and shears. During mobilization of the thyroid gland, all 4 parathyroid glands and both recurrent laryngeal nerves were identified and carefully preserved. Because of the fibrotic nature of the gland, the use of bipolar device (Enseal) was necessary for right Gruber ligament. Immediately after a thermal damage to the anterior-lateral surface of the trachea (I/II tracheal ring) was found (1.5 cm) (Figure 1).

![Figure 1: anterior-lateral surface of the trachea damage.](image)

That was repaired primarily using non-absorbable sutures (Prolene 3/0). A muscle flap was used for reinforcement, and a suction drains were left at the surgical site. The patient was subsequently transferred to intensive care for delayed extubation that happens in V day post operative (PO). In the same day for the his respiratory condition the patient underwent to bronchoscopy and subsequent tracheostomy because the wound was still open. In VII day PO she was readmitted to our department with tracheostomy in spontaneously breathing and with good cardio-circulatory parameters. Due to gallbladder stones, she developed in intensive care department pancreatitis, so for some days, she was in fasting state under medical treatment for this reason.

Ear Nose and Throat consulting diagnosed adduction vocal cord paralysis for which she starts phonation and swallowing training. The patients was released on day XXVI PO in euthyroidism in substitution treatment. At follow up, 6 months later, she had not vocal cord paralysis but she had still the tracheostomy.

After this, the patients, for personal reason, came back to her country, so we lost her at follow up.

**Discussion**

Complication rates from total thyroidectomy are low, at present mortality for this procedure is around 0% and overall complication rate is less than 3%\(^\text{1, 34-38}.\) Major complication includes wound infection (0.02-0.5%), hematoma (0.3%-4.3%), transient recurrent laryngeal nerve palsy (1-2%), permanent recurrent laryngeal nerve palsy (<1%), transient hypoparathyroidism (1.6-50%), permanent hypoparathyroidism (0-13%)\(^\text{41}.\) During the period between 1997 and 2016, we performed 2150 thyroidectomy with theses percentage of complications: wound infection (0.002%), hematoma (1.3%), transient recurrent laryngeal nerve palsy (1.5%), permanent recurrent laryngeal nerve palsy (0.2%), transient hypoparathyroidism (5.9%), permanent hypoparathyroidism (0.3%).

We report a single experience with tracheal injury (0.046 %) in line with literature data\(^\text{3}.\) Is possible to identify several preoperative, intraoperative and postoperative risk factors. Female gender and thyrotoxic goiter are commonly considered risk factors\(^\text{2}.\) Golger et al.\(^\text{44}.\) and Di Conzo et al.\(^\text{5}\) suggest that long-term tracheal compression by a large goitre may cause local tracheal wall weakening and subsequent tracheomalacia. Intraoperative risk factors include prolonged intubation and elevated cuff pressure cause of reduction of blood supply to the trachea with subsequent damage\(^\text{2}.\)

Gosnell et al.\(^\text{3}\) reports frequently exceedingly difficult to define the plane of dissection in patients with multi nodular goiter, which is characterized by repeated cycles of hyperplasia, degeneration and fibrosis and often contains dense fibrotic thyroid tissue that is contiguous with surrounding fibrous tissues such as the trachea. This condition is associated, as in our case, with major use of device\(^\text{17, 39-46}.\) The use of device like diathermy can be dangerous for tracheal lesion. When dissecting around the trachea, the lateral pedicles should be carefully preserved to maintain the blood supply to the upper segments and thyroid branches should be ligated close to the capsule. Furthermore, extended operating time always increases the risk of complications\(^\text{3}.\)
Otherwise Lugol’s solution may in turn reduce the amount of intraoperative cautery required for control of hemorrhage. In the postoperative time, persistent uncontrolled cough can be another risk factor\[^{47-52}\]. There are 2 distinct settings for tracheal injury associated with thyroid surgery\[^{43-63}\]. In the first setting, trachea may be perforated or lacerated intra operatively\[^{66-67}\]. In the second one unrecognized injury, or delayed rupture secondary to tracheal necrosis, can present up to 2 weeks postoperatively\[^{66-70}\].

**Conclusion**

Tracheal injury associated with thyroidectomy is very rare but when it occurs it can be dangerous. Tracheal perforation is generally not considered a complication as such, but rather a technical occurrence during surgery that requires expeditious attention. Literature review shows very few cases treated in differently but it would be good to standardize the treatments. Tracheal perforation, if encountered, needs to be managed appropriately in centers of expertise for high volume of thyroidectomy.

**References**


42) Pompea M, Iadarola et Al
Unusual complication in thyroid surgery. Case report and literature review


Corresponding Author:
NICOLA TARTAGLIA
Department of Medical and Surgical Sciences
University of Foggia,
nicola.tartaglia@unifg.it
(Italy)