

## Letters to the editor

### **Postoperative necrosis of the anterior part of the cervical trachea following thyroidectomy**

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*To the editor:* A case of postoperative necrosis of the anterior part of the cervical trachea arising 8 days after uneventful total thyroidectomy is reported.

A 53-year-old American Society of Anesthesiologists (ASA) 1 woman underwent elective total thyroidectomy. Grave's disease had been diagnosed. Euthyroidism was preoperatively achieved. Clinical and biological preoperative assessments were unremarkable. An uneventful total thyroidectomy was performed by an experienced senior surgeon under standard general anesthesia. Tracheal intubation using a 7-mm tracheal tube was facilitated with atracurium and was easy. Tracheal cuff was inflated with air until no leak was detected. On the eighth postoperative day, the patient presented to the emergency department with a swollen neck and extended cervical and thoracic emphysema, which had appeared that morning. The body temperature was 37.5°C. A chest radiograph disclosed a pneumomediastinum. Computerized tomodensitometric examination of the neck showed a perforation of the anterior part of the trachea. The patient was reoperated upon. During surgery, the anterior part of the four first tracheal rings was necrotic, and the third tracheal ring was perforated. The lateral parts and the posterior membranous part of the trachea were intact. Circumferential tracheal excision with anastomosis was performed. After 3 months, the patient was healthy with no tracheal symptoms. Bacterial examination of the cervical tissue revealed rare strains of *Streptococcus mitis*. The histology of the excised tracheal tis-

sue showed an inflammatory change with no evidence of granuloma, acid-fast bacilli, or tumor infiltration.

Early tracheal perforations caused by single-lumen tracheal tubes have been recorded only on the posterior membranous part of the tracheobronchial tree [1–3]. Most early tracheal lesions are due to hyperinflation of the cuff and subsequent membranous part ischemia [1–3]. Tracheal tears were recorded at all tracheal levels, extending to the right main bronchus [1–3]. In fact, low perfusion pressure (25 mmHg) has been recorded in tracheal mucosal capillaries [4]. Also, diffusion of nitrous oxide into porous rubber cuffs has been demonstrated to increase intracuff pressure as early as the first hour and has been incriminated in postintubation tracheal injuries [5]. Inadequate tube size is a frequently reported risk factor [3]. In this respect, most injuries occurred in female patients of short stature [1–3]. Traumatic maneuvers during tube insertion or mobilization of a tracheal tube prior to sufficient tube cuff deflation (or both) may overstretch the posterior membranous part of the trachea [1–3].

In contrast, early anterior tracheal necrosis following thyroidectomy has been reported only twice [6,7]. Several factors believed to have caused anterior tracheal necrosis in the two previous reports are not satisfying explanations to account for the presently reported anterior tracheal necrosis [6,7]. Excessive localized electrocautery is unlikely to have been unnoticed in this unremarkable thyroidectomy performed by a skilled thyroid surgeon [6,7]. The possible postoperative development of a hematoma or an untoward intraoperative tracheal perforation might have created an environment for bacteria to seed, resulting in infection and necrosis [6,7]. However, no serious suppuration was disclosed and only a few bacterial strains were found when the patient was reoperated. Tracheomalacia would have been noted intraoperatively or sooner after surgery [8]. Tracheal mucosal vascularization is mainly supplied from vessels arising from the esophagus and from neighboring cervical muscles, which cannot have been altered by the anterior cervical approach [9]. A benign tumor was operated on [10].

In conclusion, previously published data on tracheal perforation associated with both tracheal intubation and neck surgery cannot provide a definitive global explanation for the present case, which was one of necrosis of the anterior part of

the trachea following easy tracheal intubation and an unremarkable thyroidectomy for benign disease.

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