

## CASE REPORT

# Acute airway obstruction in the puerperium secondary to massive thyroid enlargement

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**SUMMARY.** Pregnancy is known to be thyrogenic and may exacerbate features of thyroid disease. We report the case of a patient whose pregnancy was complicated by respiratory symptoms following remarkable increase in size of a pre-existing goitre. She declined surgery during the pregnancy and it was rescheduled for after the puerperium. A week postpartum she developed acute airway obstruction which necessitated urgent thyroidectomy and management of tracheomalacia with a tracheostomy postoperatively. The effect of pregnancy on the course of her disease and the anaesthetic challenges in the face of limited airway equipment are highlighted.

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## INTRODUCTION

It is unusual for thyroid disorders to create life-threatening situations. Of these emergencies, acute airway obstruction due to compression from a multinodular goitre is the most alarming.<sup>1</sup> Pregnancy may exacerbate features of thyroid disease.<sup>2–6</sup> In the absence of life-threatening emergencies and malignancy, thyroid surgery is best delayed until after the puerperium.<sup>7</sup> We report the case of a 30-year-old multiparous patient with an enlarged goitre, who developed respiratory symptoms at 20 weeks' gestation. Surgery was scheduled for after the puerperium, but she presented barely a week after delivery with acute airway obstruction. She had an urgent thyroidectomy and a tracheostomy postoperatively for tracheomalacia. We also highlight the challenges of airway control in an environment with limited resources.

## CASE REPORT

A 30-year-old para 3 woman (height 152 cm; weight 50 kg; BMI 21.6 kg.m<sup>-2</sup>) who had had a spontaneous vaginal delivery one week earlier, developed acute respiratory obstruction secondary to a huge goitre. The neck swelling had been noticed about four years earlier after her second pregnancy, at which time it was asymptomatic. However, early in this pregnancy she noticed a considerable increase in size of the swelling. She initially attended antenatal clinics at a secondary health facility where the neck swelling was diagnosed to be a non-toxic multinodular goitre. She was referred to our hospital at 20 weeks, when in addition she developed a cough which was aggravated by meals and the supine position. After microbiological studies she was treated with amoxicillin 500 mg three times daily, and was seen fortnightly. Laboratory investigations confirmed she was euthyroid. Surgery was scheduled for the 28<sup>th</sup> week of gestation, but she declined, being concerned about possible deleterious effects of anaesthesia and surgery on her unborn child. Surgery was rescheduled for after her puerperium. Subsequently, she stopped attending antenatal clinics in our hospital only to present a week after delivery in acute respiratory distress.

She gave a one-day history of difficulty in breathing, worse in the supine position. On examination she was in obvious respiratory distress. Her respiratory rate was 40 breaths/min; she was sweating and had stridor. She had a

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pulse of 100 beats/min, her blood pressure was 155/89 mmHg and her SpO<sub>2</sub> 90% on room air.

An anterior neck mass measuring 14 cm by 18 cm and extending retrosternally was noted. There was right tracheal deviation, decreased air entry and bronchial breathing bilaterally. A diagnosis of acute respiratory obstruction secondary to massively enlarged goitre and complicated by pneumonia was entertained. She was given oxygen intranasally and immediately transferred to the intensive care unit (ICU).

In the ICU she was nursed with a 30° head-up tilt. Equipment available for securing the airway included Macintosh laryngoscope blades size 3 and 4, endotracheal tubes of assorted sizes, endotracheal tube guides (stylets and forceps), laryngeal mask airway and gum elastic bougie. An otolaryngologist was in attendance. We decided to attempt securing the airway using general anaesthesia. The patient was preoxygenated and induced with halothane. On confirmation of ability to ventilate by mask, suxamethonium chloride 100 mg was given to facilitate endotracheal intubation with a 6.5-mm cuffed Portex® tube. This was successfully achieved on first attempt. Tracheobronchial toileting yielded copious purulent aspirate. Respiratory distress was relieved and she was allowed to breathe spontaneously with the endotracheal tube in situ (Fig. 1). She was sedated with midazolam 2-mg i.v. 6-hourly and, following microbiological studies, given Augmentin 1.2 g i.v. 8-hourly, active chest physiotherapy and regular tracheobronchial toileting.

Results of investigations showed a packed cell volume of 32%, white cell count  $23 \times 10^9/L$ , with a neutrophil predominance of 67%. Plasma urea, electrolytes and creatinine were within normal limits. Thyroid function tests confirmed her to be euthyroid. A chest X-ray showed right tracheal deviation, pneumonic changes in both lung fields and right hydrothorax (Figs. 2 & 3). On the 4<sup>th</sup> day of admission, the endotracheal tube became blocked and was changed to a 7.5-mm tube.

A subtotal thyroidectomy was scheduled for the 5<sup>th</sup> day of admission. Preoperative assessment placed her at ASA III E, SRC III (John Hopkins Surgical Risk Category). In theatre, following attachment of routine monitors (non-invasive blood pressure, electrocardiogram, capnography and pulse oximetry using the Datex-Ohmeda Cardiocap 5) she was induced with fentanyl 50 µg, midazolam 5 mg and propofol 150 mg. Atracurium was used for muscle relaxation and she was mechanically ventilated with 50% oxygen in nitrous oxide and 0.5% isoflurane. Surgery involved subtotal thyroidectomy. The weight of the excised thyroid gland was 400 g (Fig. 4). Tracheomalacia was evident and the trachea was reinforced by stitching the anterior tracheal ring to the strap muscles. At the end of surgery, it was decided to leave the endotracheal tube in situ for 48 h; she was transferred back to the ICU.

Attempts at extubation on the 3<sup>rd</sup> and 5<sup>th</sup> postoperative days were unsuccessful resulting in restlessness, agitation and rapid desaturation on each occasion. She was reintubated after oxygenation with thiopentone



**Fig. 1** The patient pre-operatively, showing massive goitre and endotracheal tube in situ.

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