

## Parapharyngeal abscess in an insulin dependant diabetic patient following an elective tonsillectomy

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### Abstract

**Objectives:** To demonstrate a potentially life-threatening complication following tonsillectomy in a diabetic patient and discuss the possible pathogenesis.

**Methods:** Case report and review of the world literature concerning parapharyngeal abscess post-tonsillectomy.

**Case report:** A 20-year-old female patient underwent an uneventful tonsillectomy following a history of recurrent tonsillitis. She re-presented 14 days post-surgery with a large erythematous tender right mid cervical neck swelling. Clinical and radiological evaluation confirmed a parapharyngeal abscess. She proceeded to have an incision and drainage of the abscess through a horizontal skin crease incision and subsequent intravenous antibiotic therapy. She was discharged home well three days post-surgery.

**Conclusion:** Diabetes mellitus is a well-recognised systemic disease that may leave an individual more susceptible to infection. We report the first case in a young healthy diabetic patient and highlight a potential serious complication following a routine tonsillectomy.

**Key words:** Parapharyngeal Abscess; Tonsillectomy; Insulin; Diabetes Mellitus

### Introduction

Tonsillectomy is one of the most frequent operations carried out by the otorhinolaryngologist. Post-operative complications such as nausea, vomiting, poor oral intake and haemorrhage have been extensively reported. Serious and potentially life-threatening infections such as a parapharyngeal abscess are extremely rare. Previously reported causes have been attributed to local anaesthetic infiltration into the tonsillar bed at the time of surgery<sup>1</sup> and also to embryological anomalies.<sup>2</sup> Insulin dependent diabetes is a well-recognised systemic condition that makes these patients susceptible to deep neck infection.<sup>3</sup> We report, to our knowledge, the first case of parapharyngeal abscess post-tonsillectomy, in a healthy young insulin dependent diabetic patient and review the possible aetiology and pathogenesis.

### Case report

A 20-year-old female with well-controlled insulin dependent diabetes underwent elective tonsillectomy following a history of recurrent acute tonsillitis. She had no past history of peritonsillar abscess formation. An uncomplicated blunt dissection tonsillectomy was performed under general anaesthesia. Haemostasis was achieved using bipolar

diathermy. The patient had no acute complications post-surgery and was discharged home one day later. Fourteen days later, the patient was readmitted with a painful swelling in the right side of the neck. Clinical examination revealed a diffusely swollen, tender, erythematous swelling in the right mid cervical area of the neck. The appearance of the pharynx was as expected post-tonsillectomy. Physical examination was otherwise normal apart from a pyrexia of 38°C. Laboratory tests demonstrated leucocytosis ( $16.3 \times 10^9/l$ ), random glucose 6.8 mmol/l, haemoglobin A<sub>1C</sub> 6.2 per cent. A provisional diagnosis of a parapharyngeal abscess was made and a computed tomography (CT) scan of the neck was performed (Figure 1). This revealed a 3 cm × 2 cm right sided parapharyngeal abscess with diffuse inflammation of the right sternocleidomastoid muscle.

The patient was brought to theatre and under general anaesthesia a horizontal mid cervical skin crease incision was made. The abscess cavity was opened and loculi divided. Frank pus was drained and sent to the laboratory for culture and sensitivity. A heavy growth of *Streptococcus milleri* was cultured, which was sensitive to erythromycin and benzyl penicillin. The patient's condition improved gradually on appropriate intravenous antibiotic therapy, and she was discharged home

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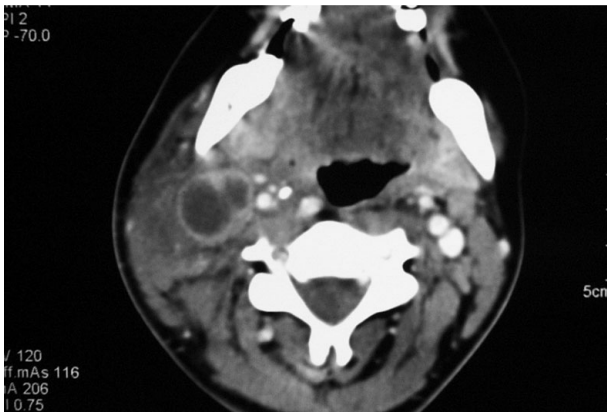


FIG. 1

Axial CT scan showing a right sided well circumscribed fluid filled abscess cavity with surrounding sternocleidomastoid oedema.

well three days later. She developed no further complications.

### Discussion

Up to 10 per cent of post-tonsillectomy patients will have neck complaints in the form of stiffness and pain between the fourth and seventh post-operative days.<sup>4</sup> Post-tonsillectomy infections can range from local cellulitis to life-threatening deep neck abscess.<sup>5</sup> The term deep neck infection refers to infection in the potential spaces and fascial planes of the neck, which may be either abscess formation or cellulitis. Despite the widespread use of antibiotics, these infections may result in life-threatening complications, such as upper airway obstruction, descending mediastinitis, thrombosis of the jugular vein, venous septic emboli, rupture of the carotid artery, adult respiratory distress syndrome, pericarditis, septic shock and disseminated intravascular coagulopathy.<sup>6,7</sup> Patients with underlying diseases are apt to develop complicated deep neck infection.<sup>8</sup> Diabetes mellitus is recognised as the most common associated systemic disease in deep neck infections.<sup>9</sup>

A parapharyngeal abscess appears to arise from direct extension of infection from the pharynx through the pharyngeal wall which in normal health would provide a mucosal barrier. It occasionally complicates peritonsillar abscess<sup>10</sup> and less frequently acute tonsillitis.<sup>11</sup> Local trauma is a well-recognised antecedent to parapharyngeal abscess, presumably as it leads to a breach in the mucosal barrier. In one study, ingestion of a foreign body was considered to be the cause of retropharyngeal abscesses in 59 per cent of cases.<sup>12</sup> The condition has also been reported following infiltration of local anaesthetic into the tonsillar bed.<sup>1</sup> The authors speculate that needle puncture during infiltration of local anaesthetic may lead to bacterial spread. In our patient, local anaesthetic infiltration was not used and surgery involved uncomplicated dissection of the tonsil from the underlying constrictor muscle.

The presumed pathogenesis of parapharyngeal abscess may be considered in terms of alteration of

the balance between host defences and microbes. Host defences may be disturbed by disruption to the normal anatomy and physiology. Diabetes mellitus is a well-recognised disease that may cause such impairment. Several aspects of immunity are altered in patients with short- or long-term hyperglycaemia, polymorphonuclear leukocyte function is depressed particularly when acidosis is present.<sup>13</sup> Leukocyte adherence, chemotaxis, and phagocytosis may be affected.<sup>14,15</sup> Antioxidant systems involved in bactericidal activity may also be impaired.<sup>16</sup> The pharyngeal mucosa rich in lymphoid tissue, is enveloped by the three pharyngeal constrictor muscles which overlap each other posteriorly. If this barrier is breached, infection may rapidly spread along the fascial planes of the neck or extend to the posterior mediastinum.<sup>17</sup>

Parapharyngeal abscess very rarely occurs in association with a second pharyngeal pouch anomaly.<sup>18</sup> An internal fistula may provide a route for spread of infection from the tonsil or peritonsillar space. In our case, there was no evidence of such a congenital anomaly at the time of tonsillectomy, subsequent surgery to drain the abscess or on computed tomographic images of the neck.

We report a case of parapharyngeal abscess complicating an elective tonsillectomy in a healthy insulin dependent diabetic patient. This is a rare complication of tonsillectomy but must be kept in mind in patients with potential immune deficiency. Aggressive management including prompt incision and drainage, intravenous hydration and appropriate antibiotic therapy must be instituted in order to prevent life-threatening mediastinitis. We would like to highlight that tonsillectomy should never be regarded as a routine operation.

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