

## BILATERAL PLEURAL EMPYEMA FOLLOWING PERICORONITIS

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Thoracic complications from dental procedures are reported in the literature only occasionally.<sup>1-4</sup> The majority of complications that have been cited are in association with the use of air-driven dental drills. Pneumatic complications range in severity from benign, limited dissection of air between fascial planes, to fatal hemodynamic compromise due to venous air embolism. The case we present here is mediastinitis and rapid development of bilateral pleural empyema following pericoronitis, with no history of dental surgical intervention.

### Case Report

A 14-year-old schoolgirl presented to the dentist with pericoronitis, and was admitted at the Prince Hashim Ibn Al-Hussein Hospital, a district general hospital, for parenteral antibiotics. Three days into her admission, the patient started to complain of retrosternal chest pain and shortness of breath at rest. Examination showed a temperature of 38.5°C and a heart rate of 130/min. with no other abnormal findings. Laboratory investigations, which included a chest x-ray, ECG, arterial blood gases, blood cultures and cardiac enzymes, were all normal. She had a white cell count of  $20 \times 10^9/L$  (neutrophilic leukocytosis). The patient was transferred to the intensive care unit, where she continued to be pyrexial and to deteriorate despite broad-spectrum antibiotics. Three days later, she was found to have bilateral pleural empyema. Chest drains were inserted, and culture of the fluid grew *P. aeruginosa* which was sensitive to piperacillin. Ten days later, the drains continued to drain pus despite adequate drainage and the use of appropriate antibiotics. She was sent for surgery, where thoracotomy was performed, and the patient was ventilated for a short duration. She was eventually weaned off the drains, and made a slow but progressive improvement and was discharged home six weeks after the initial admission.

### Discussion

Complications following oropharyngeal infections and dental procedures are rarely addressed in the medical literature. Some of these complications can be fairly obvious, e.g., aspiration of gastric contents or of foreign bodies such as teeth, crowns, dentures, dental instruments, or dental materials, and local upper airway obstruction due to edema, infection or hemorrhage. Bacterial endocarditis due to oropharyngeal flora is well known to both the dentist and the physician, and provides justification for the prophylactic antimicrobial therapy in patients predisposed to this disease by structural and cardiac or vascular disease. In all of these instances, the relationship to the dental procedure is usually clear to both the patient and the physician. In other circumstances, however, less common intrathoracic problems may follow more insidiously. Many follow the use of air-driven dental drills.

Thoracic infectious complications tend to be uniformly severe and potentially fatal. The most devastating of these are descending necrotizing mediastinitis and Lemierre syndrome (postanginal sepsis).<sup>5-7</sup> Subcutaneous emphysema and pneumomediastinum resulting from pressurized air release by dental hand pieces occur more commonly than is realized, and may often go undiagnosed and unreported.<sup>1,8,9</sup> Fortunately, such problems most often represent a benign condition with gradual but complete symptomatic recovery within several days. However, depending on the amount of air entrapped, its location, and its contents (i.e., contamination with pathogenic bacteria or fungi), further complications may be extensive and serious. Temporary auditory abnormalities, orbital emphysema with retinal artery collapse and optic nerve damage (resulting in permanent visual field deficits), tension pneumothorax, pneumoperitoneum, and even death<sup>4,8,10</sup> may occur. Unfamiliarity with this problem on the part of the dentist, dental surgeons and physicians may lead to erroneous initial diagnoses such as anaphylaxis, hematoma, esophageal rupture, angioneurotic edema, infection, or anesthetic-related complications. The patient may be subjected to inappropriate, invasive, inconclusive and costly diagnostic testing.<sup>11,12</sup> Not only may direct,

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contiguous spread of infection occur, but distant hematogenous spread can also develop.

Pleural empyema is a rare complication of pericoronitis, mainly following dental surgical procedures. It is usually the result of the development of mediastinitis, which may eventually spread to the pleural space to cause empyema. As a complication of pericoronitis, it is a devastating condition which can be life threatening.<sup>13</sup>

The clinical course of patients with the most common intrathoracic complication, pneumomediastinum, is usually benign, and generally can be managed at the outpatient level. Mediastinal air takes 2 to 7 days to resolve completely.<sup>1</sup> Once signs and symptoms of mediastinitis develop, antibiotics should be started promptly and directed at the bacteria most likely to cause descending necrotizing mediastinitis, which may be due to aerobic, anaerobic and commonly polymicrobial infection. The mortality associated with this complication can reach up to 40%.<sup>5,14</sup> The involvement of an experienced chest surgeon is invaluable, as the majority of cases end up with thoracotomies.

Complications following dental infection and dental workup are many, but the majority of these are benign. Descending necrotizing mediastinitis and pleural empyema constitute one of the most devastating complications, with a high mortality rate. Aggressive treatment with the use of antibiotics and the involvement of an experienced chest surgeon is mandatory.

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