Deep cervicofacial emphysema and pneumomediastinum due to penetrant oral trauma

Hande Ezerarslan, Gökçe Kaan Ataç, Tefik Kaplan, Güçlü Kaan Beriat

ABSTRACT

Introduction: Pneumomediastinum following deep cervicofacial emphysema due to oral trauma is rare. We present a case with an unusual oral trauma and diagnosis and management of complications of injury.

Case Report: A 26-year-old female presented with difficulty in breathing and painful swallowing after an unusual oropharyngeal trauma. Computed tomography scans revealed deep cervical emphysema and pneumomediastinum. The laceration in oropharynx repaired and board spectrum antibiotherapy started and the patient had an uneventful recovery.

Conclusion: Our case is unusual because of the rarity of these complications after oropharyngeal trauma and if pneumomediastinum is misdiagnosed, life-threatening complications may occur. Also conservative treatment in deep cervical emphysema and pneumomediastinum without any life-threatening complication is favorable.

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CASE REPORT

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Introduction: Pneumomediastinum following deep cervicofacial emphysema due to oral trauma is rare. We present a case with an unusual oral trauma and diagnosis and management of complications of injury. **Case Report:** A 26-year-old female presented with difficulty in breathing and painful swallowing after an unusual oropharyngeal trauma. Computed tomography scans revealed deep cervical emphysema and pneumomediastinum. The laceration in oropharynx repaired and board spectrum antibiotherapy started and the patient had an uneventful recovery. **Conclusion:** Our case is unusual because of the rarity of these complications after oropharyngeal trauma and if pneumomediastinum is misdiagnosed, life-threatening complications may occur. Also conservative treatment in deep cervical emphysema and pneumomediastinum without any life-threatening complication is favorable.

Keywords: Oropharynx, Subcutaneous emphysema, Pneumomediastinum, Trauma

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INTRODUCTION

Pneumomediastinum following deep cervicofacial emphysema is rare. Air can pass from oral, nasal or pharyngeal cavity walls into neck and mediastinum after head and neck surgery, craniofacial trauma or dental extractions [1–3]. In this report, we presented an unusual penetrating trauma to oral cavity and its results which are rarely seen.

CASE REPORT

A 26-years-old female was injured by her friend while trying to open her mouth with a spoon since she lost her consciousness and her respiration arrested due to lingual swelling and retraction after taking narcotics.

The patient was initially evaluated at emergency service where she was stabilized and consulted with ENT (Ear Nose Throat) specialist for difficulty in breathing, lingual enlargement due to edema and painful swallowing. Upon first presentation, vital signs were normal. Otolaryngological examination showed an approximately 10 cm of laceration at soft palate mucosa which fronts to retromolar trigone, tonsil and behind the posterior tonsillar plica to hypopharynx on the left. The mucosal flap was elevated at the conjugation of hard and soft palate and also at hypopharynx (Figure 1). Uvula and right tonsil was also injured. There was subcutaneous emphysema in right submandibular region reaching to the neck.

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Laboratory examinations of the patient revealed the following:

Hemoglobin 14.9 g/dL, white blood cells count $2.37 \times 10^4/\mu\text{L}$, C-reactive protein 171.90 mg/L. The other laboratory studies were within normal limits.

Axial computed tomography (CT) scan without intravenous contrast material and multi formatted sagittal and coronal reconstructions of head, neck and chest revealed tissue defect on pharyngeal wall soft tissue next to the soft palate and air densities dissecting down around peritracheal tissue planes starting from the injury and air bubbles located particularly around the right sternocleidomastoid muscle, supraclavicular fossa, peritracheal area even left main bronchus (Figures 2 and 3).

The result of the esophagogram after drinking approximately 100 mL of diluted iodinated contrast with tap water in fluoroscopic observation ruled out any communication with airways or mediastinum to alimentary tract.

Broad-spectrum antibiotherapy (initially intravenous ceftriaxone 1 g b.i.d. combined with metronidazole 0.5 g/100 mL t.i.d. for one week and followed by orally for two weeks) was administered to prevent life-threatening complications such as mediastinitis.

Otolaryngologic examination which included laryngoscopy under general anesthesia repeated later in a short-period showed no further harm besides the laceration. Nasogastric tube was placed after soft palate and hypopharynx were sutured primarily with interruptive ties in one layer. Uvula and left tonsillar plica was also repaired. We were oneness with anesthesiologists about positive air pressure would not be applied during the procedure to prevent advanced deep cervical and mediastinal emphysema and according as cardiovascular collapse.

Parenteral nutrition and feeding by nasogastric tube were started after stopping her oral intake. Patient was rested in Trendelenburg position for supplying drainage of hypopharyngeal secretions during the postoperative period. Her laboratory examinations results were within normal levels in postoperatively second day. She started oral fluid intake in postoperative third day and nasogastric tube was removed at postoperative fifth day. She had an uneventful recovery with almost total resolution of the cervical emphysema and pneumomediastinum which investigated with a second CT scan and discharged home postoperative seventh day.

DISCUSSION

Deep cervical emphysema and pneumomediastinum caused by penetrating oral mucosal trauma is very rare. Air probably passes from parapharyngeal space to visceral plane and from retropharyngeal space through mediastinum. Signs and symptoms are subcutaneous emphysema, crepitation and swelling of neck, shortness of breath, sore throat, dysphagia and chest pain [4].

Figure 1: Laceration at soft palate which fronts to retromolar trigone (white arrow), tonsil and behind of posterior tonsillar plica to hypopharynx (black arrow) on the left approximately 10 cm (star showing root of the tongue).

Figure 2: Sagittal reconstruction view through midline produced from axial images showing tissue defect on pharynx soft tissue next to the soft palate (white arrow) and air densities dissecting down around peritracheal tissue planes starting from the injury.

Figure 3: Coronal reconstruction view of the neck and chest including distal trachea and main bronchi reveals the air bubbles located particularly around the right sternocleidomastoid muscle, supraclavicular fossa, and peritracheal area even left main bronchus (black arrow). There is no other harm besides the neck and mediastinum.

It may cause life-threatening complications if pneumomediastinum is missed and have not been evaluated by CT scan. Some of these complications of deep cervical emphysema and pneumomediastinum are retropharyngeal abscess, mediastinitis, sepsis and collapse of great vessels and heart [5–7].

Management of these types of injuries must be conservative [8]. Each patient must be followed closely and elective neck operation must be undertaken when a vascular injury is evident or sepsis is suspected [9].

In this case, spoon dissected the soft palate mucosa and likely air passed from deep cervical fascia plane and parapharyngeal space through mediastinum consequently. Amount of air in the mediastinum was little and did not cause any problem evident with vital signs. In medical management, we repaired oropharyngeal mucosa and no further surgical treatment done. While she was followed closely for next one month but there were no more complications.

CONCLUSION

Conservative treatment in deep cervical emphysema and pneumomediastinum without any life-threatening complication is favorable. The success and safety of

this treatment depends on early diagnosis, immediately starting to antibiotherapy and closely following vital signs of patient.

Author Contributions

Hande Ezerarslan – Substantial contributions to conception and design, Acquisition of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Gökçe Kaan Ataç – Substantial contributions to conception and design, Acquisition of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published.

Tevfik Kaplan – Substantial contributions to conception and design, Drafting the article, Final approval of the version to be published

Güçlü Kaan Beriat – Substantial contributions to conception and design, Drafting the article, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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