

CASE REPORT

*Dilek Durak,¹ M.D.; Recep Fedakar,¹ M.D.; Bülent Eren,¹ M.D.; Esra Saka,² M.D.;
and V. Aslıhan Durak,³ M.S.*

Fatal Blunt Trauma of the Larynx in a Child

ABSTRACT: We report an autopsy case of an 11-year-old girl who suffered mechanical asphyxia from falling off the metal bars in the playground. This autopsy case is interesting because of the atypical trauma and lesions. To our knowledge there has been no similar published case reports in the forensic literature. The young age of the victim, the setting and the pattern of the injuries are rare in a fall at playground by a child.

KEYWORDS: forensic science, larynx, laryngeal injury, forensic autopsy

An 11-year-old girl, who was injured from falling off the metal bars in a playground (Fig. 1), was taken to a local hospital. The fall was witnessed by the people present at the scene, who reported a direct blow of her neck to the metal bar and she crashed to the ground. The girl was then stood up and walked for a short distance before she collapsed on to the ground. The time frame was approximately 20 min from fall to hospital.

Physical examination findings were unconsciousness, dyspnea and hemoptysis. Radiological examination of the neck and chest were performed. A CT scan showed subcutaneous emphysema and the appearance of gas bubbles in the paralaryngeal space. She was never intubated or had a cricothyrotomy. She expired an hour after her arrival before any surgical procedure could be done. To clarify the exact cause of death, she was sent to the Council of Forensic Medicine.

The victim was a girl of height 153 cm. We found a violet bruise of 7 cm × 1.5 cm on the right side of the anterior neck and a mild bruise of 7 cm × 5 cm on the left side of the anterior neck. In the internal observation, symmetrical anterolateral under-mucous haematomas of 2 cm × 0.3 cm (Fig. 2) were seen on the infraglottic cavity of the larynx accompanied by a laryngeal diffuse edema. An abnormal mobility and fracture on the right lamina of the thyroid cartilage was observed. A blackish haematoma located under the capsule of the right thyroid lobe was also seen. In this autopsy, it was observed that laryngeal injury caused the obstruction of the laryngeal space by elevation of mucosa due to haematoma and laryngeal diffuse edema.

Discussion

Injuries to the anterior neck should always raise the question of laryngeal trauma (1). Laryngeal trauma caused by external forces is relatively rare in the emergency room visits (1,2). However, in recent years, traffic accidents or the popularity of motorcycles have produced an increasing incidence of laryngeal injuries (3,4).

Laryngeal trauma has been classified as either penetrating or blunt (1,2,5,6). Penetrating injuries usually result from gunshot or knife wounds (1,2). Blunt laryngeal trauma, however, may be caused by three mechanisms:

1. Direct blow, such as in sport injuries, dashboard injuries in motor vehicle accidents, striking the neck on a tense rope or wire whilst riding a motorcycle or bicycle, and assault.
2. Deceleration injuries, such as in high-speed traffic accidents, may cause shearing injuries at fixed points at the cricoid or the carina.
3. Anteroposterior crushing injuries to the chest may result in sudden increase in tracheal pressure.

The autopsy case in the present report would be considered as a blunt blow trauma, since the girl struck the metal bar which impacted the neck when she fell.

Laryngeal trauma is less common in children than adults because pediatric larynx is more pliable and therefore more resistant to fracture (2). In addition, the high location of the pediatric larynx provides better protection. But the pediatric larynx is more prone to severe edema following trauma because of the loose attachment of the submucosa to the underlying perichondrium (2,4). In our study, we found diffuse edema on the larynx and fracture on the right side of the thyroid cartilage.

Subcutaneous emphysema is the most common physical and radiological finding in the aerodigestive injuries (2,7). In our case radiological subcutaneous emphysema was present diffusely in the paralaryngeal space.

¹ Uludağ University Medical Faculty, Department of Forensic Medicine, Görükle 16059, Bursa, Turkey.

² Bursa Branch of the Council of Forensic Medicine of Turkey, Görükle 16059, Bursa, Turkey.

³ Başkent University Medical Faculty, Görükle 16059, Bursa, Turkey.

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FIG. 1—The metal bars on the playground. Arrow denotes the metal bar, which the girl struck her neck while she was falling.



FIG. 2—Arrows denote the symmetrical anterolateral under-mucous haematomas located in the infraglottic cavity.

Laryngeal injuries have been well described in strangulation, hanging, gunshot or knife injuries in the forensic literature. There are two reports published cases where death resulted from atypical compression of the neck between bed bars (8,9). This autopsy case is unusual because we have not observed such a case in the literature with the death of a child falling accidentally, displaying these particular injuries.

Blunt laryngeal injuries may vary from submucosal haematomas to complete transection. We report an autopsy case where haematomas were found on the internal surface of the larynx symmetrical anterolateral and under mucosal causing asphyxia. This condition was not detected in a search of the medical literature.

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Additional information and reprint requests:

Dilek Durak, M.D.
Uludağ University Medical Faculty
Department of Forensic Medicine
Görükle, Bursa, 16059
Turkey