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A case of hanging

by

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Introduction

Blunt trauma to the larynx is usually caused by road traffic accidents or sporting injuries and its management has been well documented (Maran and Stell, 1970). Injuries secondary to hanging have received little notice in the literature and present possible unusual features of interest to the Otolaryngologist. We present this case to illustrate the problems of local injury caused by the shearing and compressive force of hanging, and how this can cause systemic complications.

Case report

A 22-year-old man presented in the Casualty Department after an attempted suicide by hanging with a rope of braided string approximately $\frac{1}{2}''$ in diameter. Having lost consciousness the rope snapped and he fell to the ground.

At presentation he was fully conscious and alert. He was able to give a full history and his voice was normal. He was coughing up a quantity of bright red blood that appeared to be coming from the pharynx.

On examination, his airway was not compromised in any way despite gross surgical emphysema of the neck. He had a rope burn at the level of the thyroid cartilage and the neck was held in full extension. He was noted to have widespread crepitations over the lung fields although there was no respiratory embarrassment. A lateral neck X-ray showed surgical emphysema, with air in the retropharyngeal space and an intact cervical spine with no displacement of the vertebral bodies.

Direct laryngoscopy under general anaesthesia was performed. A tear of the pharynx extending to the posterior aspect of the arytenoids was found, but otherwise the larynx and pharynx were assessed as normal. There was considerable bleeding in this area and inspection proved very difficult.

The neck was formally explored *via* an extended collar incision. There was gross bruising and emphysema obscuring the tissue planes and making dissection difficult. The thyroid cartilage was found to have a partial mid-line fracture and there was a complete tear of the thyro-hyoid membrane and pharyngeal mucosa. Haemostasis was obtained only after ligature of both superior thyroid arteries and the left external carotid artery. The thyroid cartilage fracture was undisplaced and not repaired. The thyro-hyoid membrane was closed. An elective tracheostomy was performed and a naso-gastric tube inserted. The patient made an uneventful recovery.

Discussion

Most injuries to the larynx and pharynx are the result of a direct blow with a hard object such as a steering wheel, resulting in a shattering force disrupting the structures. The damage subsequent to this usually takes the form of a fracture of the thyroid cartilage or the hyoid bone. Soft-tissue injuries may be concomitant with this, such as vocal cord disruption leading to possible long-term stenosis. A tearing or shearing force such as occurs with prolonged hanging may cause in addition to this, damage to the soft tissues of the neck, and a normal voice with a good airway may be misleading as to the clinical state of the patient. It is not unlikely that a pharyngeal injury may be sustained with no loss of integrity of the skeletal structures of the larynx. Investigation of this condition outside the operating theatre is difficult.

Radiography of the neck is useful mainly in establishing the integrity of the cervical spine, as instrumentation under anaesthetic could prove fatal. Tomography or xero-radiography (Doust and Ming Ting, 1974) of the larynx may be of

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help, but it is not easily obtained in this situation.

Direct laryngoscopy is of the utmost importance in assessing laryngeal injuries (Maran and Stell, 1970). However, with pharyngeal injuries as in this case, adequate visualization of the whole pharynx is difficult and small tears may be missed, particularly so when there is a quantity of free blood around.

Exploration of the neck should be undertaken in the presence of laryngeal disruption, compromise of the airway, surgical emphysema from an unknown source, or other evidence of a pharyngeal tear. However, conservative treatment could be undertaken with a minor pharyngeal laceration.

More distant complications as a result of the peculiar forces involved in hanging may occur. Post-suspension syndrome is a state encountered after pressure to the neurological structures in the neck, showing severe long-track signs, deep unconsciousness, hyper-reflexia, hypertonia, and decerebrate posture with the cranial nerves remaining intact. This condition, although suggesting a poor prognosis, may resolve spontaneously with little long-term neurological deficit (Braye and Guy, 1983).

Pulmonary oedema, apparently of neurogenic origin, may also occur (Theodore and Robin, 1975). This appears to relate to the shearing force of hanging previously described. The correct management of this condition appears to be conservative administration of intravenous fluids and the possible use of diuretics.

Summary

The unusual nature of trauma to the neck following hanging presents different problems in view of the compressive and shearing nature of the force applied, rather than the more common single blow with a blunt object. The possible sequelae of this injury need understanding and management different from the more usual problems of laryngeal disruption.

Abstract

A case history of attempted hanging with pharyngeal and laryngeal injuries is described. The management of this problem is discussed to include not only treatment as for a more commonly occurring laryngeal injury, but also to be aware of pharyngeal tears and the possibility of the rarer post-suspension syndrome and neurogenic pulmonary oedema.

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