INTRODUCTION

External laryngeal trauma is a relatively uncommon injury. This is partly because the cartilaginous framework provided by the thyroid cartilage helps to protect the larynx. However, if this framework is violated by trauma the tight space makes rapid airway compromise possible.

Blunt trauma to the larynx accounts for 5% of all neck traumas and this could present in varying degree of severity. However, isolated vocal cord haemorrhage is rarely reported but can potentially compromise the airway. Apart from trauma, other causes of spontaneous vocal cord haemorrhage include phonotrauma, use of aspirin, non-steroidal anti-inflammatory, anticoagulant therapy, thrombolysis and hormonal imbalances.1,2

The management of laryngeal trauma can be complex as each laryngeal injury is unique. Majority of the cases can be treated conservatively if the laryngeal framework is not disrupted. We have outlined an organized, careful systematic clinical assessment and described an appropriate management algorithm for various type of laryngeal trauma based on literature review in order to optimize both immediate and long-term functional outcome, in terms of breathing, speech and swallowing.

CASE REPORT

A 24 years old Caucasian male presented to the emergency department complaining of increasing dysphonia, dysphagia, and a tender anterior neck swelling 3 hours after he was punched in his neck on the front and left side of his larynx.

On examination, he was able to breathe comfortably and speak in sentences. There was no stridor or surgical emphysema. Flexible pharyngolaryngoscopy revealed no endolaryngeal mucosal tear but evidence of bleeding into his true vocal cords. The patient was successfully treated with dexamethasone, analgesia and voice rest. The patient refused to stay in hospital for overnight airway monitoring. The authors believe that all patients presenting with a blunt neck trauma should undergo laryngoscopy for assessment and monitoring of the airway.

DISCUSSION

Laryngeal trauma can be classified by use of the Schaefer Classification System,3 whereby, laryngeal
Injury is graded in an ascending order of severity. For example, a group-1 injury refers to minor laryngeal hematomas or lacerations without detectable fractures. However, a group-5, which is the most severe injury, refers to complete laryngotracheal separation. The use of this system allows use of a management plan specific to the group of classified injury. In this case, the patient sustained a group-1 injury.

In a clinical setting, laryngeal trauma should be suspected if the patient complains of rapidly increasing difficulty in phonation and swallowing following a blunt neck injury. Occasionally, patients could also present with haemoptysis. Signs of laryngeal trauma include subcutaneous emphysema, which may suggest perforation of hypo-pharynx or oesophagus; tenderness over the larynx area, echymosis of overlying skin, loss of thyroid cartilage prominence, and stridor; inspiratory, expiratory or biphasic, specific to the injury site. This patient's main symptoms at presentation were acute dysphonia and dysphagia following the assault with some soft tissue swelling over the thyroid prominence.

Investigating laryngeal trauma depends upon the stability of the patient and laryngeal injury. Flexible nasolaryngoscopy examination is essential to assess the extent of laryngeal trauma and gauge airway adequacy. In a stable injury, the value of high resolution Computerized Tomography (CT) imaging is controversial. In a case series of 15 patients, Schild and Denneny found CT scan to be reliable for defining the extent of soft tissue trauma and for diagnosing the presence and displacement of any fractures. A direct laryngoscopy, bronchoscopy and oesophagoscopy under general anaesthetic may be required to assess severity of injury and collateral damage. In addition, if concerned, a chest X-ray may be warranted to exclude pneumothorax, deviation of the trachea and pneumomediastinum. However, unstable laryngeal trauma may warrant a tracheostomy with neck exploration to enable laryngeal stabilization. This patient had a stable and adequate airway on flexible pharyngo-laryngoscopy examination.

The immediate management of any laryngeal trauma is guided by the principles of Advanced Trauma Life Support (ATLS) and proper airway management is of utmost importance. Further management is guided by the grade of injury according to the Schaefer Classification System. In those with grade-1 injury, conservative treatment such as voice rest, humidification of air and steroid has often been advocated although without any robust evidence to show that systemic steroid are effective in reducing laryngeal oedema. Close monitoring is crucial in all laryngeal trauma and the minimum period recommended is 24 hours for a grade-1 injury. Patients with grade-5 injuries may require surgical tracheostomy in order to secure the airway. The use of broad-spectrum antibiotic is recommended in the presence of any laryngeal mucosal disruption due to risk of infection. Antireflux medication is also often initiated to reduce laryngeal irritation. Nasogastric feeding tube should be inserted in the presence of mucosal laceration. This patient had refused to be admitted for 24 hours airway monitoring without ill effects. It is, therefore, debatable whether patients with grade-1 injury could be discharged following a few hours of airway monitoring in a casualty observation ward.

In more severe laryngeal trauma, the surgical management can be categorized into 3 main groups; endoscopy, endoscopy and exploration and endoscopy with exploration and stenting. Laryngeal exploration allows repair to any cartilage, and open reduction with internal fixation for any fractures. Early surgical exploration and fixation for patients with dislocated or comminuted laryngeal fractures is recommended to avoid long-term voice complications. In reference to stenting, this would be necessary if the anterior commissure has been disrupted or comminuted.
fractures of the laryngeal skeleton. It also has the benefit of preventing stenosis of the vocal cords.4

In the context of vocal fold haemorrhage as a result of laryngeal trauma, the principle management is conservative treatment. Complete resolution is achieved with voice rest for a week, addressing any reflux symptoms with anti-reflux medication, and speech therapy. Follow-up videostroboscopy is useful in determining the effectiveness of therapy, the speed of resolution of the haemorrhage, guidelines for voice use, and the need for further intervention, including surgery.2

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REFERENCES