

Hyoid bone fracture identified only with nasal Valsalva manoeuvre

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Abstract

Objective: We present two cases of a hyoid bone fracture identified through careful clinical examination with a Valsalva manoeuvre during nasendoscopy.

Method: Case reports and review of the literature, with emphasis on technique during nasendoscopy.

Results: The first patient had sustained a blow to the neck with a stick, six months prior to presentation with a globus sensation. External examination and standard nasendoscopy were unremarkable. The second patient had been struck across the neck by a wire whilst riding a motorbike at low speed. Endoscopy revealed swelling of the supraglottis. He recovered and was asymptomatic at review one month later. Computed tomography scans on both patients were unremarkable. During nasendoscopy, both patients were asked to forcibly expire with their mouths closed (the so-called nasal Valsalva manoeuvre), and the hyoid bone was seen to swing into view on the side where the first patient complained of symptoms, and in the second case where swelling had been noticed previously.

Conclusion: We would not ordinarily have reached a diagnosis in these patients, as radiography and examination were otherwise unremarkable. The use of the nasal Valsalva manoeuvre during routine nasendoscopic examination is recommended, as unusual pathology may be demonstrated and the need for direct laryngoscopy under general anaesthesia may, in some instances, be avoided.

Key words: Hyoid; Fracture; Diagnosis; Endoscopy; Valsalva Manoeuvre

Introduction

We present two cases of a hyoid bone fracture identified through careful clinical examination with a Valsalva manoeuvre during nasendoscopy.

Case reports

The first patient, a 26-year-old man, presented to our department with a lump sensation in his throat whilst swallowing; this sensation had been present for six months, with no other symptoms. On detailed questioning, he admitted to sustaining a blow to the neck with a shinty stick just prior to the onset of symptoms; he recalled having difficulty swallowing for a few days after the injury but had not sought medical attention. External and standard nasendoscopic examinations were unremarkable.

The second patient, a 44-year-old man, was admitted following an injury to his neck. He had been riding a motorbike at low speed (around 10 mph) and a wire across the track had caught him across the chest and glanced up onto his neck, knocking him off his motorbike. Following the injury, he complained of hoarseness and pain in his throat. There was no stridor or airway compromise. Flexible nasendoscopic examination of the larynx revealed some left-sided supraglottic swelling. He was treated in the acute setting with intravenous dexamethasone and adrenaline nebulisers and discharged following 24 hours of observation, during which time his symptoms had settled. He remained asymptomatic at out-patient review

one month later. External examination and repeat nasendoscopy were unremarkable.

During nasendoscopy, both patients were asked to forcibly expire with their mouths closed (the so-called nasal Valsalva manoeuvre), and the hyoid bone was seen to swing into view on the side where the first patient complained of symptoms, and in the second case where swelling had been noticed previously. This is demonstrated in Figures 1 and 2 and in the accompanying video (Appendix 1).

A computed tomography (CT) scan of the neck was unremarkable in the first case. The second patient's CT scan revealed mild depression of the hyoid bone, but no fracture was identified.

Both patients were managed conservatively, as neither desired surgical intervention.

Discussion

Isolated fracture of the hyoid bone is a rare clinical entity usually caused by blunt trauma to the anterior neck, through strangulation or hanging.¹ Acute injuries may present with bruising in the anterior neck or mouth, and dysphagia or dysphonia may also be present.

There is no agreement on how to manage isolated closed hyoid fractures, but conservative management of the acute injury is recommended unless there is airway compromise, in which case the airway must be secured.^{1–3} Open fractures will require exploration and debridement, and subsequent management as appropriate.²

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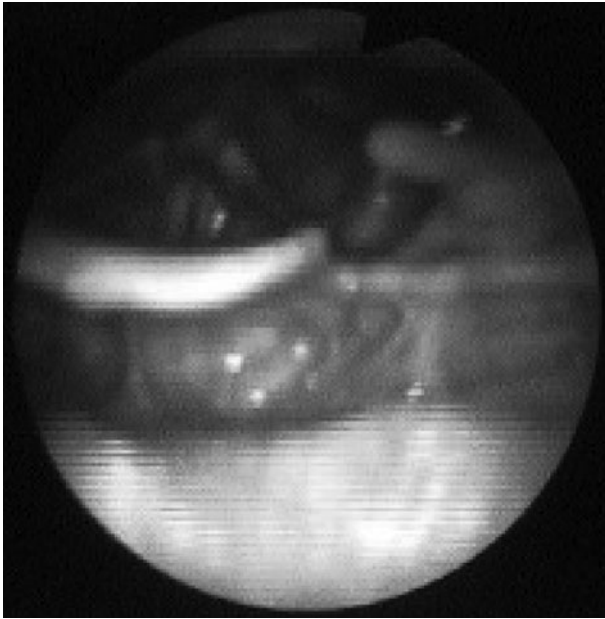


FIG. 1

Hyoid bone visible at nasendoscopy during forced Valsalva manoeuvre.

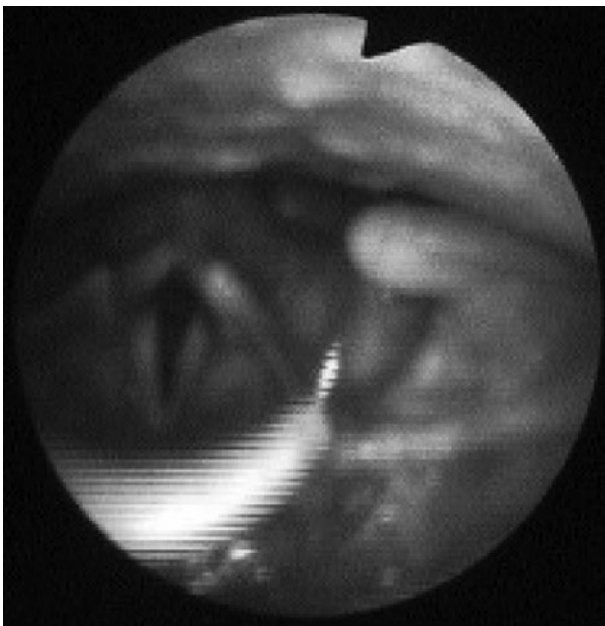


FIG. 2

Hyoid bone visible at nasendoscopy during forced Valsalva manoeuvre.

Plain radiography will often be sufficient to identify a hyoid fracture, but a CT scan will give more detail of the fracture and any injury to the surrounding structures. However, in our two cases no fracture was identified on CT scan. In these cases, we suspect that there had been a malunion or non-union, which can be difficult to identify radiographically.

Standard nasendoscopy with a flexible fibre-optic endoscope is highly effective for visualising the upper aerodigestive tract; however, the pyriform sinuses and post-cricoid areas remain difficult to visualise. Several techniques

have been reported to improve visualisation of these areas: modified Valsalva manoeuvre, trumpet manoeuvre and skin traction.^{4–6} Each technique aims to enable better visualisation of the collapsed recesses of the pharynx. The nasal Valsalva creates positive pressure in the pharynx and thus opens up these recesses; in the presented cases, this positive pressure caused the mobile hyoid segment to push into the lateral pharyngeal wall and thus to be easily visualised.

- **Isolated fracture of the hyoid bone is a rare clinical entity usually caused by blunt trauma to the anterior neck, through strangulation or hanging**
- **Hyoid fractures may present in isolation and be difficult to identify radiologically**
- **The two presented cases illustrate how a nasal Valsalva manoeuvre, performed during endoscopic laryngoscopy, can be diagnostically useful in cases of hyoid fracture**

Conclusion

We would not ordinarily have reached a diagnosis in these two patients, as radiography and clinical examination were otherwise unremarkable. The use of the nasal Valsalva manoeuvre during routine nasendoscopic examination is recommended, as unusual pathology may be demonstrated and the need for direct laryngoscopy under general anaesthesia may, in some instances, be avoided.

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Appendix 1. Supplementary video material

A video clip demonstrating the appearance of the fractured hyoid bone at nasendoscopy during forced valsalva manoeuvre is available online on *The Journal of Laryngology & Otolology* website.

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Mr P Spielmann takes responsibility for the integrity of the content of the paper.
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