Successful non-operative management of a traumatic thyroid haematoma in a goitrous gland

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ABSTRACT

Traumatic haemorrhage of the thyroid is an uncommon injury, especially in patients without pre-existing thyroid disease. Goitrous glands have an increased risk of haemorrhage following trauma due to their increased size and vascularity. Traditionally, traumatic thyroid haematomas were indiscriminately managed with neck exploration. Over time, the role of the close observation in the management of these injuries was explored, and it became common for patients with traumatic haematomas in otherwise normal thyroid glands to be managed non-operatively if no signs of ongoing bleeding or airway compromise manifested. However, patients with known goitrous glands continued to undergo neck exploration and resection of the affected gland. Herein we discuss the case of a traumatic thyroid haematoma managed non-operatively in a patient with a goitrous gland and discuss its implications for the management of similar future cases.

Introduction

Traumatic haemorrhage of the thyroid is an uncommon injury, especially in patients without pre-existing thyroid disease [1]. Goitrous glands have an increased risk of haemorrhage following trauma due to their increased size and vascularity [1,2]. Traumatic haemorrhage of the thyroid can lead to airway compromise thus patients require close monitoring and early intervention to protect their airway. Consequently, the importance of close monitoring for signs of airway compromise secondary to a haematoma is heavily emphasised in the published literature. The role of operative intervention in these cases remains undecided.

Previously, all such cases of traumatic thyroid haemorrhage underwent surgical exploration. However, in 2006, Heizmann et al. [1] proposed a management algorithm in which haemodynamically stable patients with no pre-existing thyroid disease could instead be closely observed in a high acuity setting. Patients with pre-existing thyroid disease were deemed as being higher risk and underwent neck exploration. Herein we report a case of blunt injury to the neck resulting in a rapidly expanding thyroid haematoma in a goitrous thyroid that was successfully managed non-operatively and propose that close observation could also be utilized in an appropriate subgroup of goitrous patients.

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A 54-year-old male with a history of hypertension was airlifted to our hospital following a motorcycle accident. On scene he was noted to have unilateral neck swelling, associated tracheal deviation and a hoarse voice. His vital signs were within normal range and he had no signs of respiratory distress to suggest a tension pneumothorax. The decision was made to intubate the patient prior to transport in order to ensure the security of his airway. On arrival, following appropriate review of the patient, an urgent arterial phase CT of his neck was completed. The CT scan demonstrated no luminal narrowing in the significantly displaced trachea (Figs. 1 and 2).

The patient was subsequently extubated and admitted to the intensive care unit for close monitoring of his airway. He remained stable, with no signs of respiratory compromise, and no increase in size of the haematoma. Upon further investigation of the patient’s medical history it was found that the unilateral neck swelling has been present for a period of time, although not to the same extent, and that the patient was known to an Endocrine Surgeon and planned for an elective resection at a later stage. The patient was euthyroid and did not take any thyroid replacement/modulation therapy. He was discharged on the third day of his admission, with significantly reduced swelling of his neck, and will follow-up with his Endocrine Surgeon for ongoing management.

Fig. 1. Coronal slice demonstrating the mass and associated tracheal deviation to the left.
Blunt trauma to the neck accounts for only 5% of all neck injuries [3]. It is not limited to direct impact and may involve hyperflexion or hyperextension of the cervical spine [2]. Given the number of structures located in the neck, injuries can involve the neurovascular structures including the great vessels, the trachea and oesophagus, musculature of the neck, as well as organs such as the thyroid and parathyroid glands. [3].

A thyroid haematoma, though uncommon, has been reported in the literature as a complication of blunt neck trauma. While it can occur in both normal [2,4] and goitrous glands [1,5], most cases reported have occurred in goitrous glands [1]. It is postulated that the increased vascularity in a thyroid goiter predisposes it to developing a haematoma [1,2,5]. Patient presentation varies based on disease severity and ranges from simple neck swelling to compression of nearby structures such as the oesophagus and/or trachea, leading to symptoms such as dysphagia, dyspnea, hoarseness, tracheal deviation, and respiratory distress [3,4].

Table 1
Classification system for blunt thyroid injuries as suggested by Heizmann et al. [1].

| Grade | Description |
|-------|-------------|
| I     | Small parenchymal lacerations |
|       | Bleeding into nodules |
|       | Subcapsular haematoma |
| II    | Rupture of the thyroid gland ± parathyroidal haematoma |
| III   | Rupture of the thyroid gland with significant neck haematoma including tracheal compression |
| IV    | Rupture of the thyroid gland and neck haematoma with associated lacerations to the larynx skeleton and/or to carotid and jugular vessels |

Discussion

Blunt trauma to the neck accounts for only 5% of all neck injuries [3]. It is not limited to direct impact and may involve hyperflexion or hyperextension of the cervical spine [2]. Given the number of structures located in the neck, injuries can involve the neurovascular structures including the great vessels, the trachea and oesophagus, musculature of the neck, as well as organs such as the thyroid and parathyroid glands. [3].

Fig. 2. Axial slice demonstrating the intact tracheal lumen.
Traditionally, patients presenting with traumatic thyroid haematomas were considered to have imminently threatened airways and underwent emergency neck explorations and thyroidectomies. However, over time, the role of close observation in those without airway compromise and without associated thyroid disease has been explored, with multiple published case reports of such patients successfully being managed non-operatively [1,4].

A literature review published by Heizmann et al. [1] proposed a classification system (Table 1) and management algorithm (Fig. 3) for blunt injuries of the thyroid. This algorithm suggests that patients with a traumatic thyroid haematoma, who are haemodynamically stable, and have no pre-existing thyroid pathology can be managed non-operatively with close observation for signs of respiratory compromise. However, patients with pre-existing thyroid pathology should undergo neck exploration and resection of the diseased thyroid [1].

Our patient had pre-existing multinodular goiter. This history was not available to the retrieval team and the patient was intubated prior to transfer to prevent airway compromise. In addition, there were no features suggestive of an abnormal thyroid on the patient’s CT scan. Given that the arterial phase CT of the patient’s neck demonstrated no luminal narrowing of the trachea, as well as no further bleeding, the decision was made to manage this patient non-operatively with close observation in the ICU. The patient’s recovery was

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**Fig. 3.** Algorithm for the diagnosis and management of thyroid gland injuries from Heizmann et al. [1].

**Fig. 4.** Modified algorithm for the diagnosis and management of thyroid gland injuries based on that proposed by Heizmann et al. [1].
uneventful, with the haematoma resolving almost completely by discharge.

The successful non-operative management of this patient’s goitrous traumatic thyroid haematoma supports the non-operative management of such presentations. We propose a modified treatment protocol based on the stratification of these patients into two groups, those with ongoing bleeding demonstrated on CT, and those without (Fig. 4). In those with ongoing bleeding, neck exploration should be considered. In those without evidence of ongoing bleeding, close observation for sign of respiratory compromise can be utilized instead.

Of note, the role of Interventional Radiology in the management of these patients is not widely discussed in the literature. This is an area that would benefit from further exploration as it would provide a minimally invasive management options for patients with ongoing bleeding.

Conclusion

This case supports the non-operative management of traumatic thyroid haematoma in with no evidence of ongoing expansion, clinical deterioration or evidence of ongoing bleeding and extension of this form of management to patients with known thyroid disease.

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Declaration of competing interest

Nil

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