Case Report

Turk Arch Otorhinolaryngol 2026; 64(2): 126-131
DOI: 10.4274/tao.2026.2025-12-9

Bench Pressing Related Traumatic Laryngeal Fracture

Muonga Kabaso, Holly Imperiale, Muhammad Shakeel

Aberdeen Royal Infirmary, Department of NHS Grampian ENT, Aberdeen, Scotland

Abstract

Laryngeal fracture is a rare but potentially life-threatening injury requiring prompt recognition and management due to the risk of airway compromise. We present the case of a 42-year-old man who presented to a tertiary center with symptoms of dysphonia and neck pain following blunt trauma sustained when a barbell fell on him while bench pressing without assistance. Computed tomography (CT) imaging confirmed a displaced fracture of the thyroid cartilage. He was managed conservatively with corticosteroids and high dependency unit airway monitoring. He recovered well and later resumed weightlifting with appropriate supervision. This case outlines the stages of assessment and management of laryngeal fractures, including airway evaluation, CT imaging and ear nose and throat (ENT) involvement. We discuss the benefit of conservative management in selected cases even when there are significant clinical findings and the importance of public health messaging to prevent such injuries. A high index of suspicion is essential for emergency physicians and ENT specialists when evaluating patients with neck trauma and voice changes.

Keywords: Laryngeal fracture, larynx/injuries, neck injuries, dysphonia, airway management, weight lifting/injuries, case reports

Introduction

Laryngeal fractures are rare but life-threatening, especially in cases of trauma. The degree of injury varies from mild non-displaced fractures to severe laryngotracheal separation. The incidence of laryngeal fractures is about 1 in 30,000 emergency department presentations (1). Blunt force trauma is the most common cause of laryngeal injury, often associated with high-impact incidents such as road traffic collisions, especially when there is hyperextension of the neck during impact with the body of the vehicle, such as the steering wheel or the dashboard. This hyperextended position more commonly causes laryngeal injuries than when the neck is in a relaxed position, where the larynx is protected by the cervical spine posteriorly, the sternum inferiorly, and the mandible bone anterosuperiorly (1-3). Bench-press-related laryngeal fractures are very rarely reported in the literature.

There is a rise in the incidence of lower-impact etiologies causing laryngeal fractures, such as sport-related injuries, including basketball, combat sports, ice hockey, or self-inflicted hanging injuries. These are all examples of where there is a high force of impact over the small surface area of the anterior neck (3,4). Whilst men tend to have shorter and wider necks that can protect their larynx, they make up a larger proportion of these injuries; this is thought to be due to their increased likelihood to take part in combat or violent sports (4).

ORCID IDs of the authors:
M.K. 0009-0004-8656-0240
H.I. 0009-0008-6622-8311
M.S. 0000-0002-6240-5957

Cite this article as: *Kabaso M, Imperiale H, Shakee M. Bench pressing related traumatic laryngeal fracture. Turk Arch Otorhinolaryngol. 2026; 64(2): 126-131*

Corresponding Author:
Muonga Kabaso, MD;
chiyokoma.kabaso@nhs.scot

Received Date: 15.12.2025
Accepted Date: 29.01.2026
Epub: 10.04.2026
Publication Date: 29.06.2026

We present the case of a patient who self-admitted to the emergency department with neck pain and dysphonia. He was found to have suffered a thyroid cartilage fracture after his barbell fell on his neck whilst exercising at his local gym.

Case Presentation

We present the case of an otherwise healthy 42-year-old man, with no past medical history and a lifestyle inclusive of regular exercise. He is a non-smoker and does not drink regularly. He self-presented to the emergency department with dysphonia and neck pain after an incident a few hours earlier. While at the gym, performing a bench press unassisted, he dropped a 180 kg weight onto his chest, which then rolled up to his neck. With help from bystanders, he was able to move this off and immediately described a sensation of neck pain, neck swelling, and difficulty breathing.

On initial assessment in the emergency department, he was unable to speak in full sentences, had a hoarse voice, neck pain, and odynophagia (painful swallowing) with difficulty swallowing his own saliva. He maintained his oxygen saturations on room air and was assessed to have a Glasgow Coma Scale of 15/15. Examination revealed some external neck swelling, neck bruising, no palpable surgical emphysema, and a good range of neck movement. His chest examination was unremarkable.

Due to the high-impact nature of his injury, an urgent neck and chest contrast-enhanced computed tomography (CT) was performed. This showed a comminuted fracture of the right thyroid cartilage, with the fracture fragment displaced medially. Adjacent soft tissue swelling suggesting haematoma, and visible anterior gas locules in the anterior commissure suspicious for laryngeal rupture (break in integrity of the larynx) (Figure 1).

After receiving a verbal report of the injury from the radiology team, the case was discussed with the ear, nose, and throat (ENT) team. They reviewed the images and assessed the patient using flexible nasolaryngoscopy, which was described as unremarkable with findings of symmetrical vocal fold mobility bilaterally, no significant mucosal disruption and no visible cartilage in his airway. In view of the injuries, the patient was admitted for close airway monitoring. He was managed as per local guidelines with intravenous dexamethasone 6.6 mg as an anti-inflammatory agent to reduce his risk of laryngeal edema and worsening neck swelling.

After a night of close observation, he underwent repeat nasolaryngoscopy with local anaesthetic approximately 11 hours later to formally assess his airway. Similar to his initial examination, this showed normal findings of symmetric vocal fold mobility bilaterally, no mucosal disruption, and no visible exposed cartilage. In addition to this, he also reported no difficulty swallowing, and his voice returned to normal. His steroids were discontinued after a single dose, and he was discharged from the hospital one day after admission.

On follow-up, he had no lasting signs of trauma or voice change. Although he was given safety advice on discharge, he

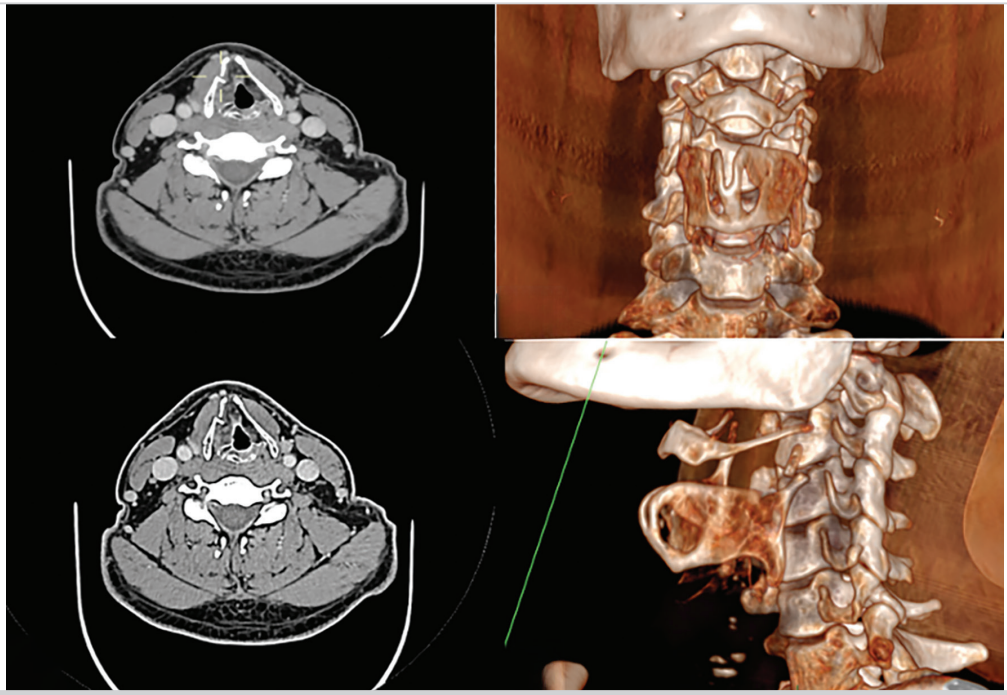

Figure 1. Computed tomography images of displaced comminuted fracture of the right thyroid cartilage with a fracture fragment displaced inwards

reported a return to his hobby of gym exercise. He reported that he now uses a spotter when attempting heavy lifts or maximal efforts during training to prevent further accidents while bench pressing. Written and verbal consent was taken from the patient.

Discussion

With the increasing focus on a healthy lifestyle and personal body image, weightlifting-related injuries will likely become a more problematic issue. A 2024/25 United Kingdom fitness report indicated a sustained increase in gym memberships compared to 2023. This rise can be attributed to growing public awareness of the importance of healthy lifestyles, the benefits of exercise on mental health as highlighted during the pandemic, and the increased availability and affordability of gyms (5).

As illustrated in our case, the risk of injury during a bench press occurs when a weighted bar is held above the chest while the individual is in a supine position with their neck extended. In addition, the thyroid cartilage is thought to be at increased risk in adults above the age of 20 years, as this cartilage progressively ossifies to the bone, and the lack of elasticity diminishes its ability to tolerate trauma (6).

Accurate history-taking and examination of such patients are important in evaluating laryngeal injuries; however, this can be complicated by dysphonia and aphonia, where reliance on collateral history becomes necessary. This cohort of patients will usually present with a history of trauma, dysphonia, dysphagia, neck pain, or stridor (7). When assessing patients with suspected laryngeal injury, the first step is to establish a stable airway. If the patient is able to speak and there is no additional noisy breathing, conservative management should be considered. If there is concern of a compromised airway, the primary aim is to place a cuffed airway tube to keep the trachea open and protected. This can be achieved via intubation, tracheostomy, or cricothyroidotomy. The following signs and symptoms suggest airway compromise and increase the necessity of intubation or tracheostomy: respiratory distress, neck haematoma, significant bleeding, subcutaneous neck emphysema, stridor, hoarseness, hemoptysis, thrill, bruit, and distorted neck anatomy (3). If there is no immediate concern for a compromised airway but symptoms or signs are suggestive of laryngeal injury, urgent referral to ENT is still vital. Edema can develop progressively, and airway compromise may be delayed.

The choice of method for securing the airway can be challenging, as intubation in the presence of laryngeal fracture is technically difficult and carries the risk of converting a partially obstructed airway into a completely lost airway. This highlights the need for a multidisciplinary approach, including the early involvement of surgical specialists. In cases of a compromised airway with a displaced laryngeal fracture, a tracheostomy under local anaesthetic or a cricothyroidotomy is recommended (1).

If there is concern regarding the airway with no immediate compromise, the patient should be assessed by a physician knowledgeable in endoscopy, such as an ENT specialist. If the patient is stable and a fracture is of concern, then CT scans have been recommended in the literature to visualize the cartilaginous and bony structures of the larynx (7). This has been shown to have an advantage of early surgical intervention and removes the possibility of missed diagnosis due to the rare frequency of laryngeal fractures (Figure 2).

A literature search in PubMed revealed that thyroid cartilage fractures resulting from bench pressing are exceedingly rare, with only two comparable cases reported involving weights of at least 100 kg falling onto the neck. The first case involved a 49-year-old man who sustained his injury after a 100 kg barbell fell onto his chest and rolled onto his neck. He was assisted by bystanders and assessed in hospital with an immediate neck CT and repeat nasolaryngoscopy. He was managed conservatively with airway observation and later discharged (4). The second case involved a healthy 55-year-old man with no past medical history who was bench-pressing 180 kg, the same weight as in our case. He suffered a vertical thyroid fracture while bench-pressing this weight alone in a private gym. He was unable to receive assistance and died at the scene. His findings were identified on postmortem CT (8).

The management of laryngeal fractures is based on the severity of the fracture and its associated injuries. The American Otolaryngology Society advises the use of the Schaefer classification system for laryngeal trauma, as it incorporates clinical examination and imaging findings to guide treatment decisions (Table 1). According to the Schaefer classifications, thyroid cartilage fractures that are non-displaced with no evidence of injury on endoscopy are managed with a range of non-surgical management options. These include head elevation, voice rest, humidified oxygen, steroids, and anti-reflux medication (Table 2) (3).

Although our patient had a displaced thyroid fracture, flexible nasolaryngoscopy demonstrated no visible laryngeal hematoma, mucosal disruption, or exposed laryngeal cartilage, and he demonstrated no signs of immediate airway compromise. Based on these findings, the injury lay between group 2 and 3 of the Schaefer classification. Given his stable clinical presentation, he was categorized as group 2 despite the presence of a displaced fracture, and conservative management was therefore chosen. This decision was made with the caveat that close monitoring and re-assessment would be undertaken, with consideration for surgical intervention should clinical deterioration occur.

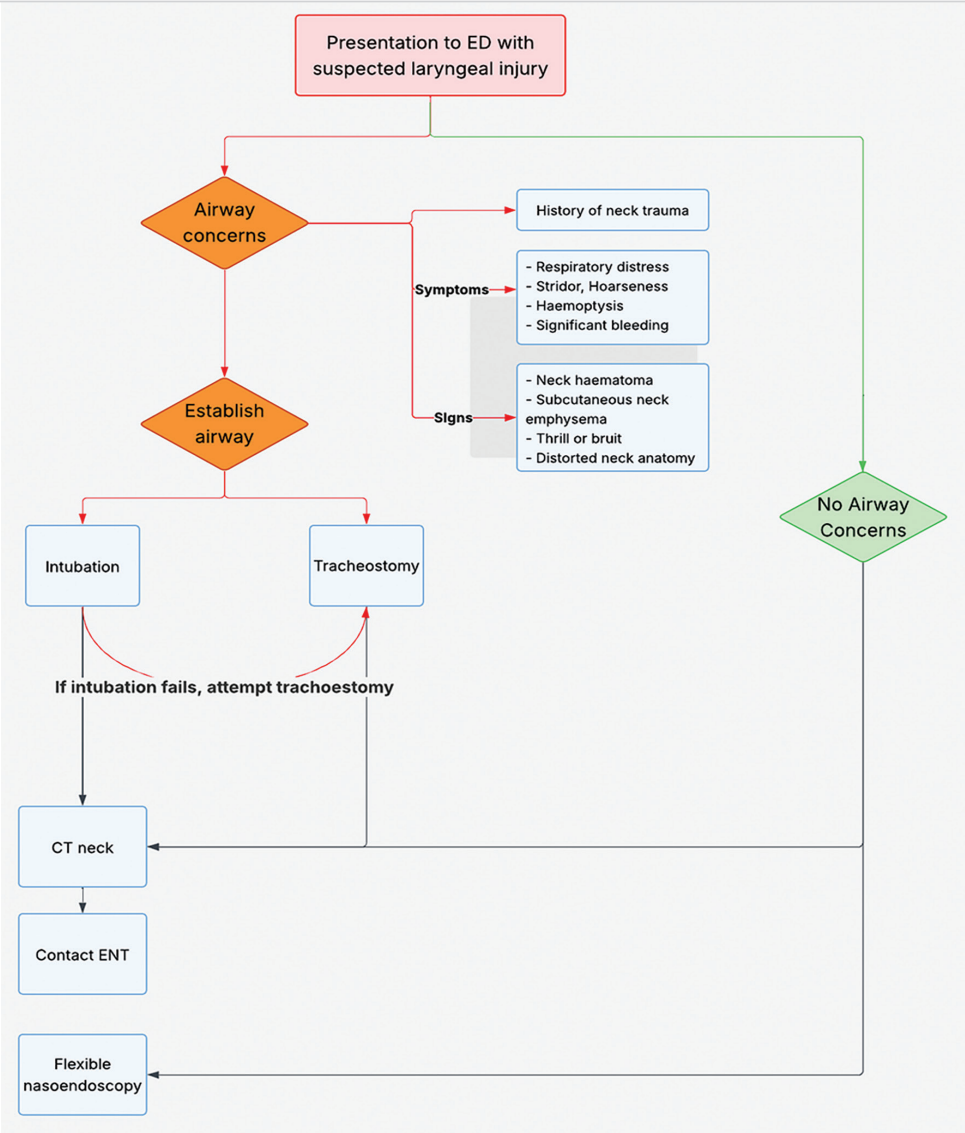

Figure 2. Flowchart of laryngeal injury assessment and management in the emrgency department
ED: Emergency department, ENT: Ear, nose and throat, CT: Computed tomography

Table 1. The Schaefer classification of laryngeal injuries

Group	Severity of injury
1	Minor laryngeal hematomas or lacerations without detectable fractures
2	Severe edema, hematoma, minor mucosal disruption without exposed cartilage, or non-displaced fractures
3	Severe edema, large mucosal lacerations, exposed cartilage, displaced fractures, or vocal cord immobility
4	Same as group 3, but more severe with disruption of anterior larynx, unstable fractures, two or more fracture lines, or severe mucosal injuries
5	Complete laryngotracheal separation

Table 2. Overview of conservative management strategies for laryngeal injuries and their rationale

Management type	Rationale
Head elevation	Improves venous return, reducing laryngeal edema and hematoma formation
Humidified oxygen	Moistens the mucosa to aid healing and prevent further laryngeal damage
Corticosteroids	Reduce laryngeal edema
Voice rest	Prevents further laryngeal trauma and promotes healing by minimizing vocal cord movement
Medication for acid reflux	Protects healing tissues from exposure to stomach acid

He was managed with high dependency unit-level airway observations, monitoring for late-onset laryngeal edema. After his repeat nasolaryngoscopy and full voice recovery during his time in the hospital, he was discharged approximately 24 hours after admission.

Comparing the cases identified in the literature review and our own, the primary determinant of survival following a bench-pressing neck injury in the pre-hospital setting is external assistance. Recommendations for the safe use of the bench press in the United Kingdom and the United States emphasize the importance of having a spotter who can lift the barbell if the lifter reaches their limit, thereby preventing injuries to the neck and chest. Additional safety measures include the use of safety catches to prevent bar descent onto the body, the use of Smith machines with integrated locking mechanisms, and appropriate gym induction to ensure users are adequately informed about safe training practices (4,9,10).

Conclusion

Laryngeal fractures are rare but can progress to potentially fatal complications. Patients typically present with a history of neck trauma accompanied by dysphonia and dysphagia. In those displaying signs of respiratory distress, prompt airway management is crucial. In all cases, CT imaging in conjunction with endoscopic evaluation serves as the gold standard for establishing a diagnosis of laryngeal fracture. Early ENT referrals are essential to facilitate further assessment and monitoring, with the Schaefer classification used to determine injury severity and guide management. While a high index of clinical suspicion is essential given the rarity of these injuries, prevention strategies must also be adopted to reflect the changes in the exercise habits of the general population. With an uptake in gym memberships of the public, education on safe techniques is paramount. As with other widely accepted public safety precautions such as mouth guards in contact sports and seatbelts in cars, having a supervising partner or spotter should be encouraged to prevent life-threatening injuries when weightlifting in vulnerable positions. By enhancing clinician awareness and promoting prevention strategies among individuals lifting weights over the body, the incidence of laryngeal injuries may be reduced and patient outcomes improved. Going forward, future research should focus on the efficacy of these safety interventions in gym environments.

Ethics

Informed Consent: Written and verbal consent was taken from the patient.

Footnotes

Authorship Contributions

Surgical and Medical Practices: M.K. M.S., Concept: M.K. M.S., Design: M.K. M.S., Data Collection and/or Processing: M.K., H.I., Analysis or Interpretation: M.K., H.I., Literature Search: M.K., H.I., Writing: M.K., H.I., M.S.

Conflict of Interest: The authors declare that they have no conflict of interest.

Financial Disclosure: The authors declare that this study has received no financial support.

Main Points

- Laryngeal fractures are rare but life-threatening injuries with the potential of evolving.
- Whilst thyroid cartilage fractures have a significant morbidity rate, in a stable patient there is a role for conservative management with close observation and assessment.
- In the interest of public health, when exercising with heavy weight, it is good practice to have supervision.

References

1. Rai S, Anjum F. Laryngeal fracture. Treasure Island (FL): StatPearls [Internet]; 2025 (updated 2023 Aug 14; cited 2025 Sep 29). Available from: https://www.ncbi.nlm.nih.gov/books/NBK562276/. [Crossref]
2. Trinidade A, Shakeel M, Stickle B, Ah-See KW. Laryngeal fracture caused by a Lacrosse ball. J Coll Physicians Surg Pak. 2015; 25: 843-4. [Crossref]
3. Shaker K, Winters R, Jones EB. Laryngeal injury. Treasure Island (FL): StatPearls [Internet]; 2025 (updated 2023 Jul 4; cited 2025 Sep 29). Available from: https://www.ncbi.nlm.nih.gov/books/NBK556150/ [Crossref]
4. Chiba T, Endo T, Oka A, Kitamura H, Imanishi Y, Shiga T. Pain in the neck: bench press injury. J Am Coll Emerg Physicians Open. 2023; 4: e12937. [Crossref]
5. PureGym. The UK Fitness Report – 2024/25 Gym Statistics [Internet]. [Crossref]
6. Ciofalo A, Fatuzzo I, Lo Re F, Gilardi A, Messineo D, Greco A, et al. A silent laryngeal trauma case: an unexpected late fracture of the superior portion of the thyroid cartilage superior horn. Ear Nose Throat J. 2025; 104: 177S-9S. [Crossref]
7. Olding J, Olding C, Bew D, Fan K. Penetrating head & neck trauma – epidemiology and injury characteristics in terror-related violence, interpersonal violence and deliberate self-harm at a level 1 trauma centre. Surgeon. 2019; 17: 133-8. [Crossref]

8. Bandou R, Idota N, Akasaka Y, Ikegaya H. A case of fatal asphyxia by a barbell during a bench press. Forensic Sciences. 2022; 2: 1-6. [Crossref]
9. Mäkitie RE, Nyman K, Ilmarinen T, Tapiovaara L. Changes in occurrence and management of laryngeal fractures at the Helsinki University Hospital during 25 years. Eur Arch Otorhinolaryngol. 2024; 281: 915-24. [Crossref]
10. British Powerlifting Union (BPU) and ABPU. The bench press [Internet]. [cited 2025 Feb 11]. [Crossref]