Case Report

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# Severe Thoracic Trauma Due to an Intrathoracic Dislocation of a Fractured Humeral Head in an Aged Patient; A Case Report

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## ABSTRACT

Fracture and intrathoracic dislocation of the humeral head are extremely rare and often the result of a severe trauma. We herein report a case of humeral head fracture and dislocation with displacement into the chest cavity. A 75-year-old man fell down the stairs at home, landing on the right half of his body. Clinical impressive was a massive skin emphysema on the right hemithorax. A chest x-ray was performed. Conspicuous was a dubious opacity in the right subfield of the lung. The following CT-scan showed an additional fracture of the right scapula, a lung contusion and as "corpus delicti" a right intrathoracic dislocated humeral head fracture. The current case is extremely rare pattern of injury and the surgical emergency management is discussed. In most patients, a thoracotomy, which is related to a higher lethality and higher morbidity, can be avoided, if after stabilization a video assisted thoracoscopy is performed for revision of the pleural cavity and extraction of the humeral head.

**Keywords:** Humeral head fracture; Intrathoracic dislocation; Thoracic trauma; Video assisted thoracoscopy; Shoulder endoprosthesis; Multiple rib fractures.

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## Introduction

Fracture and intrathoracic dislocation of the humeral head are extremely rare and often the result of a severe trauma. Due to the exceedingly limited number of cases, appropriate treatment modality remains unclear [1]. For the selection of the appropriate treatment, e.g. early video-assisted thoracoscopy or stabilization at the moment, an efficient clinical examination and a fast detection of the dislocated humeral fragment are necessary. We herein present a remarkably case of an intrathoracic dislocated fractured humeral head with multiple rib fractures and a haemato-pneumothorax.

## Case Presentation

A 75-years-old man fell down the stairs at home, landing on the right half of his body. On his arrival in the trauma room the patient complained about

intense pain in the right arm and the right half of the thorax. In our trauma room the patient was hemodynamically stable and responsive but suffered from pain on his right arm and the right half of the thorax. The laboratory parameters were within the normal range except of leucocytosis (23000/µl). Clinical impressive was a massive skin emphysema on the right thorax. After analgesia, a chest radiography was performed. The overview showed a serial rib fracture (1.-4. rib), a hematothorax and a comminuted humeral head fracture on the right side. Additionally, conspicuous was a dubious opacity in the right subfield of the lung (Figure 1). A CT-scan of the chest was performed immediately. The CT-scan showed an additional fracture of the scapula, a lung contusion and as "corpus delicti" an intrathoracic dislocated humeral head fracture on the right side (Figures 2). To release the hemato-pneumothorax a high-lumen chest drain was instantly placed on the right side (28 Ch.). Because of the lung contusion and the consequently limited pulmonary function as well as the stable circulation parameters, a 3-day non-invasive ventilation treatment was performed under intensive care conditions to optimise the surgery conditions. After the stabilization period a video assisted thoracoscopy (VATS) was performed, which showed the humeral head fragment "sitting on" the diaphragm and "caught in" the inferior lobe of the lung (Figure 3, Video). After suction of the remaining hematothorax and dissection from the inferior lobe of the lung with local haemostasis, the two-piece fragment could be extracted by a mini-thoracotomy in the 6$^{th}$ intercostal space (Figure 4). The thorax was closed after a chest drain was placed (28 Ch.). After another week of non-invasive ventilation treatment under intensive care conditions the humeral head fracture could finally be treated with a shoulder endoprosthesis. After another 10 days of hospitalization the patient was released into rehabilitation without secondary health damages.

## Discussion

This very rare pattern of injuries mostly appears after a fall and is normally accompanied by a severe thoracic trauma [1-9]. Therefore, this

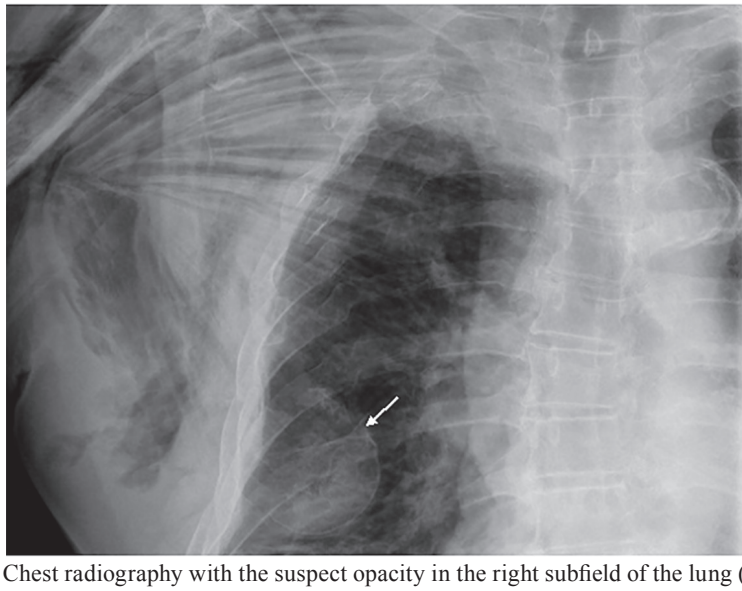

**Fig. 1.** Chest radiography with the suspect opacity in the right subfield of the lung (arrow).

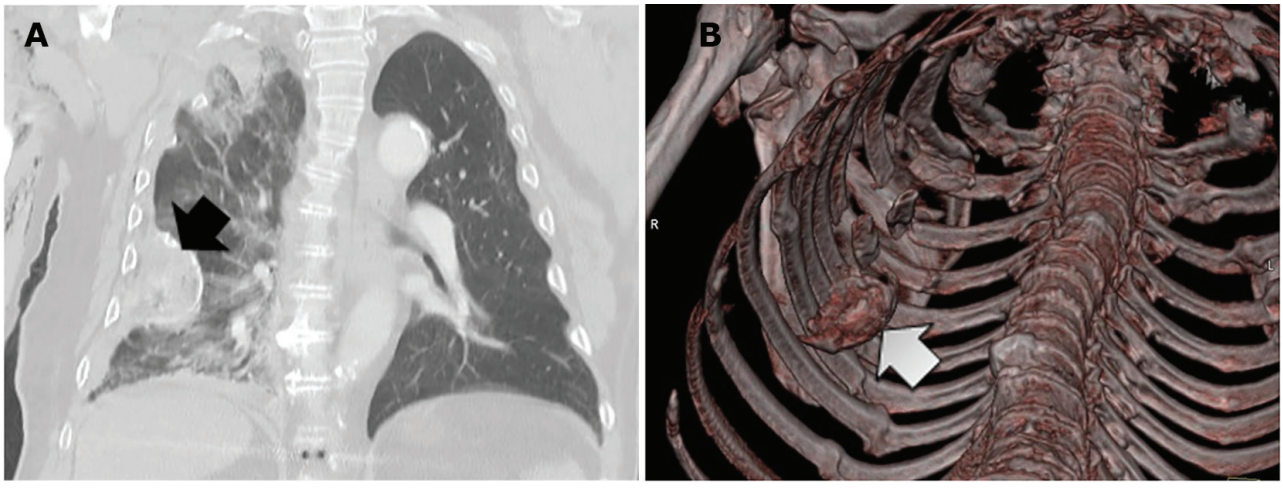


**Fig. 2.** Coronal (A) and 3-dimentional reconstruction (B) CT-scan of the chest cavity demonstrating a hyperdense lesion in right hemithorax with a wide base in favour of the intrathoracic humeral head (arrow).

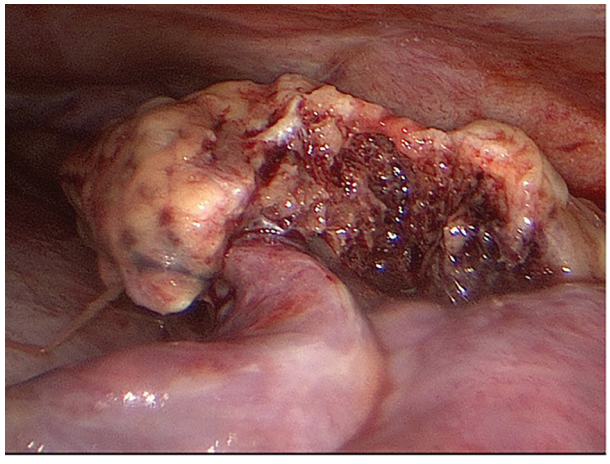

**Fig. 3** Video-assisted-thoracoscopy showing the intrathoracic humeral head.

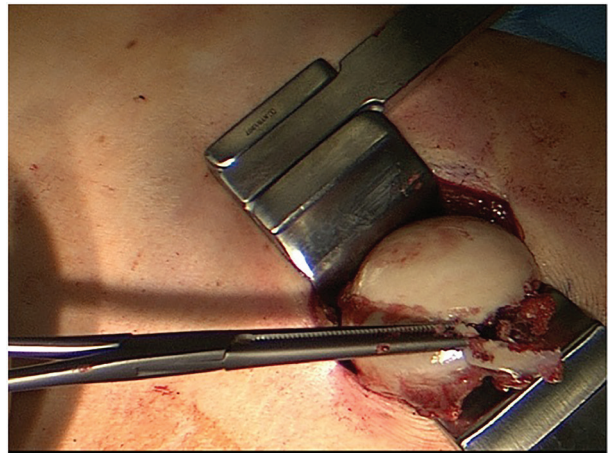

**Fig. 4.** Surgical extraction of the humeral head via mini-thoracotomy.

combination should lead to the suspicion of this special injury, especially when a visible and palpable skin emphysema [4, 5, 8, 10] is given. Preclinical auscultation is immensely important to detect a tension pneumothorax under the recurrent pneumothoraces [2, 4, 5]. A chest X-ray is only permitted for first orientation aid because the X-ray does not detect bone fragments or intrathoracic injuries precisely [6-9]. A CT-scan is essential-also for planning the next tactical steps. If an evidence for vascular-related lesions, e.g. vessel rupture, is given, a thoracotomy has to be performed [4-9, 11, 12]. In most cases the frequently present haemato (pneumo) thorax could be evacuated by a high-lumen chest drain [3-5] to treat the existing comorbidities (for example heart- and lung failure) [4, 10].

Promptly – in our case on the 3rd posttraumatic day – a video assisted thoracoscopy should be performed for revision of the pleural cavity and extraction of the humeral head [2, 4, 6, 7, 9, 12].

As a result, in most cases the higher-risk thoracotomy, which is also related to a higher morbidity and lethality, can be avoided [7, 11, 12]. Secondly, mostly after another week, the humeral head fracture is treated with an endoprosthesis [2, 3, 6-8, 10].

**Conflicts of Interest:** None declared.

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