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## RESEARCH ARTICLE

### SCAPULA FRACTURES A TWENTY FIVE YEAR EXPERIENCE

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#### ABSTRACT

**Background:** To determine the importance of the scapula bone fractures upon the causes, sex, age groups, associated injuries, morbidity and mortality. **Methods:** In a 25 year period a retrospective study took place. One hundred and eight (108) patients diagnosed with scapula fracture in General Hospital of Nicaea-Piraeus Agios Panteleimon Thoracic and Orthopaedic Surgery Department. **Results:** Between the years 1995 to 2020(25years) 108 patients diagnosed with scapula bone fracture, 81 male (75%) and 27 female (25 %), aged 19-91 years mean age 34 years. **Aetiologic factor:** Traffic accident 81 (75%), fall from high 24 (22,22 %) and Gunshot injuries 3( 2,777%) patients. **Associated injuries:** Rib fractures 85, First and Second rib fractures 31, Sternal fractures 17, Flail chest 29, Pneumohaemothorax 81, Haemopericardium 2, Pneumomesopneumonium 1, Lung Contusion 65, Diaphragmatic ruptures 3, Kidney injury-Nephrectomy 2, Haemoperitoneum 14, Head injuries 34, Vertebral fractures 37, Pelvis fractures 8, Upper extremities fractures 67, Lower extremities fractures 13. Surgical treatment of the scapula required 9 patients, all male. Mortality rate raised 3,703 %. Four patients all male and octogenarians. **Conclusion:** Most of the patients underwent chest drain insertion for Pneumohaemothorax. Otherwise conservative treatment for the majority of the patients, analgesic and anti-inflammatory medication, nebulizers, low molecular heparin, monitoring, physiotherapy and early mobilization. A simple chest radiography is standard for the diagnosis, but computer tomography is considered gold standard. Surgical treatment required approx. 1% of the population study. All for glenoid scapula fractures. Attention should be given to collaboration with other specialties in the hospital, like, general surgeons, neurosurgeons, orthopedics and anesthesiologists for the proper management when intervention or operation is required.

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## INTRODUCTION

Scapula fractures are not seen very often. When this happens, special attention should be given because of the comorbidities. The aim of this study was to determine the importance of the scapula bone fractures upon the causes, sex, age groups, associated injuries, morbidity and mortality.

## MATERIALS AND METHODS

In a 25 year period a retrospective study took place. One hundred and eight (108) patients diagnosed with scapula bone fracture, 81 male and 27 female, aged 19-91 years in General Hospital of Nicaea-Piraeus Agios Panteleimon Thoracic and Orthopaedic Surgery Department

## RESULTS

Between the years 1995 to 2020(25years) 108 patients diagnosed with scapula bone fracture, 81 male (75%) and 27 female (25 %), aged 19-91 years mean age 34 years.

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Figure 1. Left scapula fracture

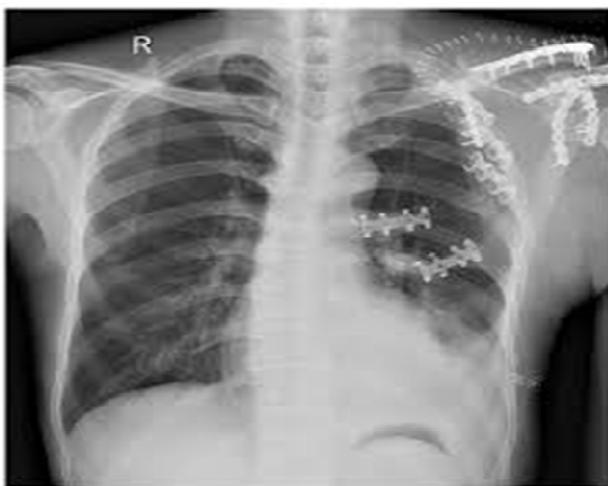


Figure 2. Post scapula fracture, rib and clavicle repair.



Figure 3. Post right scapula fracture and right humeral neck repair

Table 1. De Cloux and Lemerle classification

SCAPULAR FRACTURES
<i>De Cloux and Lemerle classification</i>
<i>Type 1: Scapula body fractures</i>
<i>Type 2: Apophyseal fractures ( coracoid, acromion</i>
<i>Type 3: Fractures through the supero-lateral angle of scapula</i>

Table 2. Mayo classification

SCAPULAR FRACTURES Glenoid fractures: Mayo classification
<i>Mayo modification of the Ideberg classification</i>
<i>Type 1: anterior glenoid rim fracture</i>
<i>1A: fracture fragment 5mm or less 1B: fracture fragment &gt; 5mm</i>
<i>Type 2: Inferior glenoid fracture involving part of the neck</i>
<i>Type 3: Superior glenoid fracture extending through base of coracoid</i>
<i>Type 4: Horizontal fracture involving scapular neck and body fracture runs below the spine of scapula</i>
<i>Type 5: Type 4 fracture with complete or incomplete neck fracture</i>

Surgical treatment of the scapula required 9 patients, all male. Multi trauma patients required intensive care unit and required a longer stay in the hospital. Mortality rate raised 3,703 %. Four patients all male and octogenarians.

## DISCUSSION

The scapula is sturdy and located in a protected place, so it rarely breaks- scapular fracture. When it does, it is an indication that the individual was subjected to a considerable amount of force and that severe chest trauma may be present<sup>1</sup>. This pain is often immediate localized to the upper back, across the shoulder blade, and/or at the top of the shoulder. It is also aggravated by arm movement or taking deep breaths, because chest wall movement may cause the fractured scapula to move (Bartoniček, 2018). A simple chest radiography is standard for the diagnosis (Armitage et al., 2009; Cole, 2012), Computer tomography is considered gold standard because can diagnose other associated injuries (Armitage et al., 2009; Cole, 2012). The treatment most of the time is conservative (Bartoniček, 2018; Efstathios, 2019; Bozkurt, 2006). Surgical treatment is rare. Treatment involves immobilization with a sling or a shoulder immobilizer, pain medications-nerve block, nebulizers, early immobilization, low molecular heparin (Metaxas, 2019). The sling is usually kept for comfort for the first two weeks with subsequent increase of the shoulder's range of motion. Most scapular fractures heal completely by 6 weeks, and all external support is discontinued at this time. Progressive use of the upper extremity is encouraged. Physiotherapy exercises required until full shoulder mobility is recovered (Bozkurt, 2006). Surgical treatment is rare (Bozkurt, 2006; Jones, 2009). The fractured scapula blade does not require surgical intervention. Occasionally acromion scapula fractures may require surgical intervention very rare when there is instability and coexist clavicle fracture (Bozkurt, 2006; Jones, 2009; Lin, 2015). Most of the intervention to scapula fracture was for the glenoid fractures (Judet operation). All operations underwent in Orthopaedic department were for glenoid scapula fractures (Jones, 2009; Lin, 2015). Some airlines require to wait 24 hours after a plaster cast has been fitted for flights less than 2 hours, and 48 hours for longer flights. This is because there's a risk of swelling after a plaster cast is first fitted, which can affect circulation. There are a few classifications about scapular fractures. DeCloux and Lemerle classification (DeCloux, 1956), OTA Scapula fracture Classification System,

Aetiologic factor: Traffic accident reported 81 (75%) patients, fall from high 24(22,22%) patients and Gunshot injuries 3 (2,777%) patients. Associated injuries: Rib fractures 85, First and Second rib fractures 31, Sternal fractures 17, Flail chest 29, Pneumohaemothorax 81, Haemopericardium 2, Pneumomesopmeumonium 1, Lung Contusion 65, Diaphragmatic ruptures 3, Nephrectomy 2, Haemoperitoneum 14, Head injuries 34, Vertebral fractures 37, Pelvis fractures 8, Upper extremities fractures 67, Lower extremities fractures 13.

Euler and Rüedi classification (Euler, 1996), Glenoid fractures: Mayo classification, Mayo modification of the Ideberg classification see table 1&2.

## Conclusion

Most of the patients underwent chest drain insertion for Pneumohaemothorax. Otherwise conservative treatment for the majority of the patients, analgesic and anti-inflammatory medication, nebulizers, low molecular heparin, monitoring, physiotherapy and early mobilization. A simple chest radiography is standard for the diagnosis, but computer tomography is considered gold standard. Surgical treatment required approx.1% of the population study. All for glenoid scapula fractures. Attention should be given to collaboration with other specialties in the hospital, like, general surgeons, neurosurgeons, orthopedics and anesthesiologists for the proper management when intervention or operation is required (Efstathios, 2006; Metaxas, 2014). The patient's hospital stay and the results of the treatment were determined mostly by the gravity of the associated injuries and the early diagnosis and management. There is no doubt about scapula fractures and associated injuries that the successful management needs to be done by a multidisciplinary trained and experienced team (Efstathios, 2006; Metaxas, 2014).

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