

A Case of Bilateral Severe Proximal Humeral Fracture Treated Operatively and Conservatively

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Abstract

Introduction

We present a case of active 54-year-old male who, over a period of one year, sustained severe fractures of his shoulder joints bilaterally. The first trauma was treated operatively but the intervention was unsuccessful. Intensive rehabilitation was performed which led to unexpectedly good functional results. Few months later the patient suffered same type of injury contralaterally. Only the rehabilitation protocol was repeated and this led to even better results.

Materials and Methods

We used the Neer classification to determine the type of fracture. The right shoulder was treated operatively with a PHILOS plate implanted. The left shoulder joint was treated only conservatively. To evaluate the condition of the shoulder joints after the treatment we used the DASH Score. To evaluate the pain in the shoulder joints we used the VAS system. To evaluate the change of quality of life we used the SF-36 questionnaire (provided by RAND Healthcare). There were two evaluations done: one 40 days after treatment for both shoulder joints and another one: 18 months for the right shoulder and 6 months for the left shoulder.

Results

The DASH Score result for right shoulder was 60.83 pts. on the 40th day and 10 pts., 18 months later. For the left shoulder it was 56.66 pts. on the 40th day and 7,5 pts. on the 6th month. The results based on the Visual Analogue Scale were as follows: 5 pts. for right shoulder and 4 pts. for the left shoulder on the 40th day. Several months later the patient reported 1pt. for both shoulder joints.

Conclusion

Often when operative treatment has to be postponed or is impossible, conservative treatment can give very good results if carried out strictly.

Keywords: Proximal Humeral Fractures, Unsuccessful Surgical Treatment, Rehabilitation

1. Introduction

We present a case of active 54-year-old male who, over a period of one year, sustained severe fractures of his shoulder joints bilaterally. He was treated operatively and conservatively. In this report, we consider the importance of rehabilitation in this type of trauma [1-5].

2. Case History

In 2022 a 54 y.o. Patient was admitted with a type iii neer proximal humeral fracture of his right shoulder. Fig.1 [6].

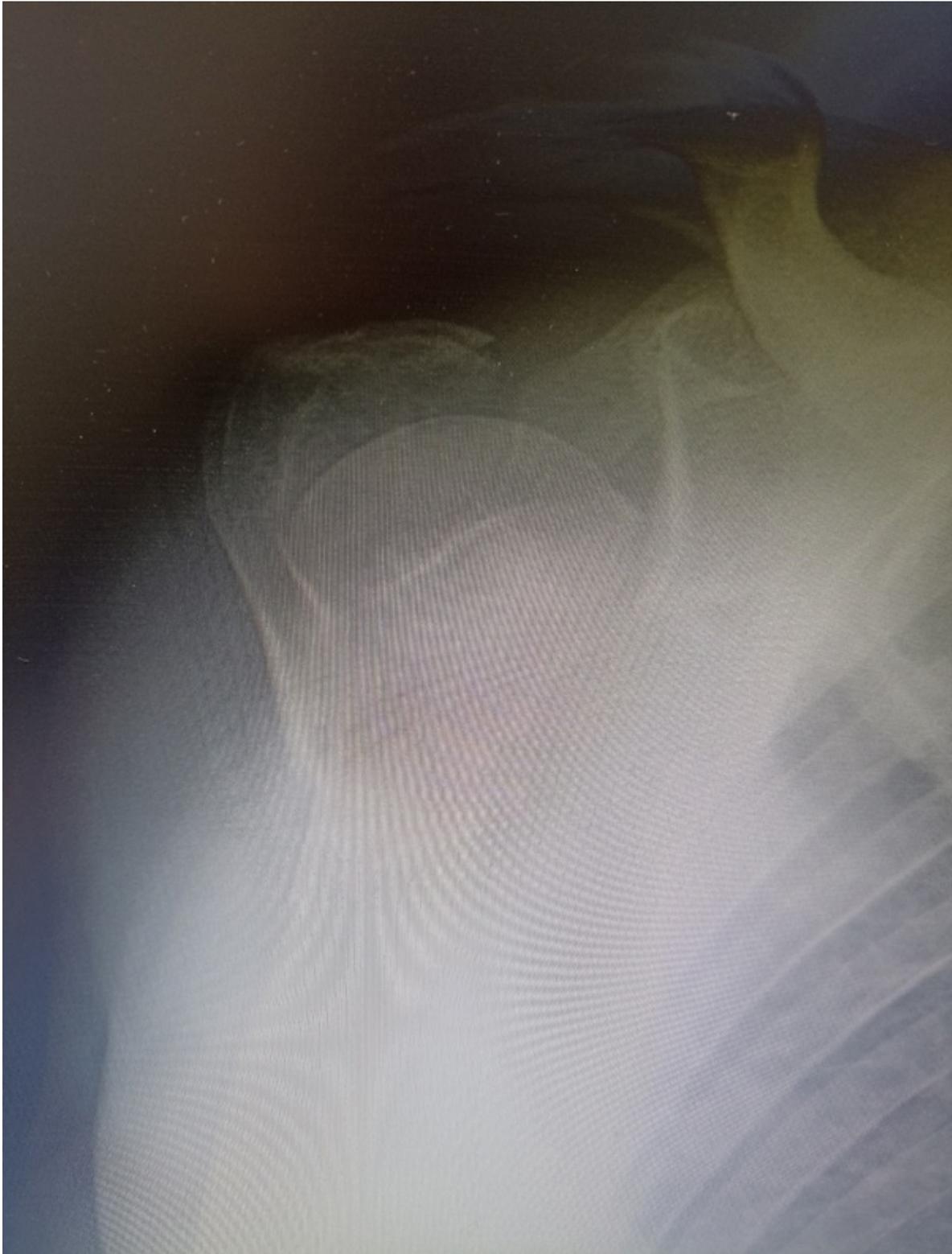


Figure 1: AP View of The Right Shoulder, Preoperatively

The patient was in excellent health and the incident happened while he was jogging in bad weather. For some reason he postponed his treatment and the operation was performed 20 days later. Fig.2 [7].

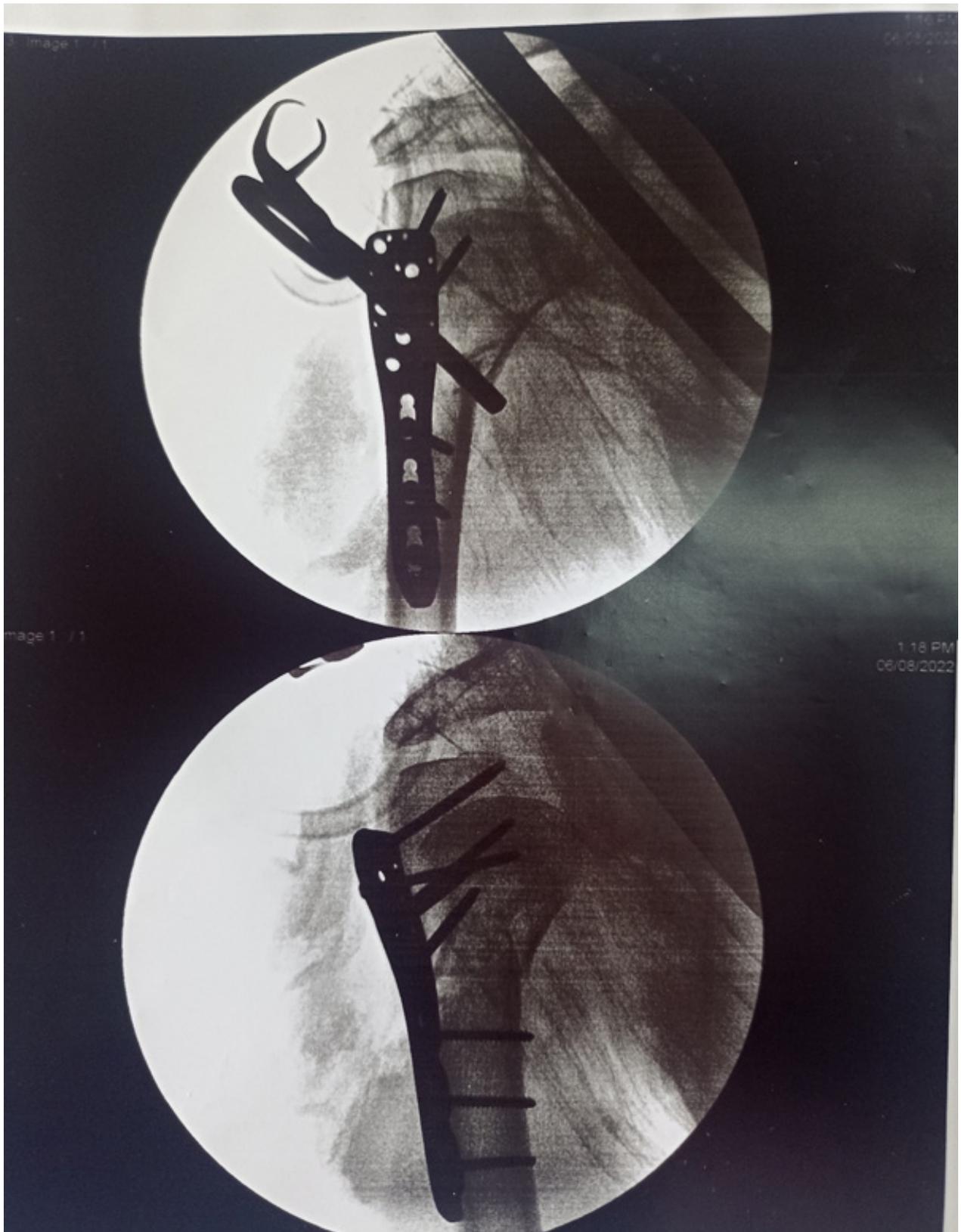


Figure 2: Intraoperative Result: Philos Plating of The Right Shoulder

As seen on the postoperative x- ray, almost no reposition of the fragments was achieved. We were sceptical about the function of the shoulder. His shoulder was immobilized with orthosis in abduction and a standard rehabilitation protocol was initiated after 1 week. The patient was a strong believer with various hobbies like fitness, fishing, archery and others.

He was consuming only organic food. Surprisingly 40 days postoperatively he was able to abduct and flex his shoulder above his head (more than 90 degrees). Not long after that he also started going to gym regularly. One year later in 2023 he suffered from another type III Neer fracture on his left shoulder: Fig.3 [8-10].

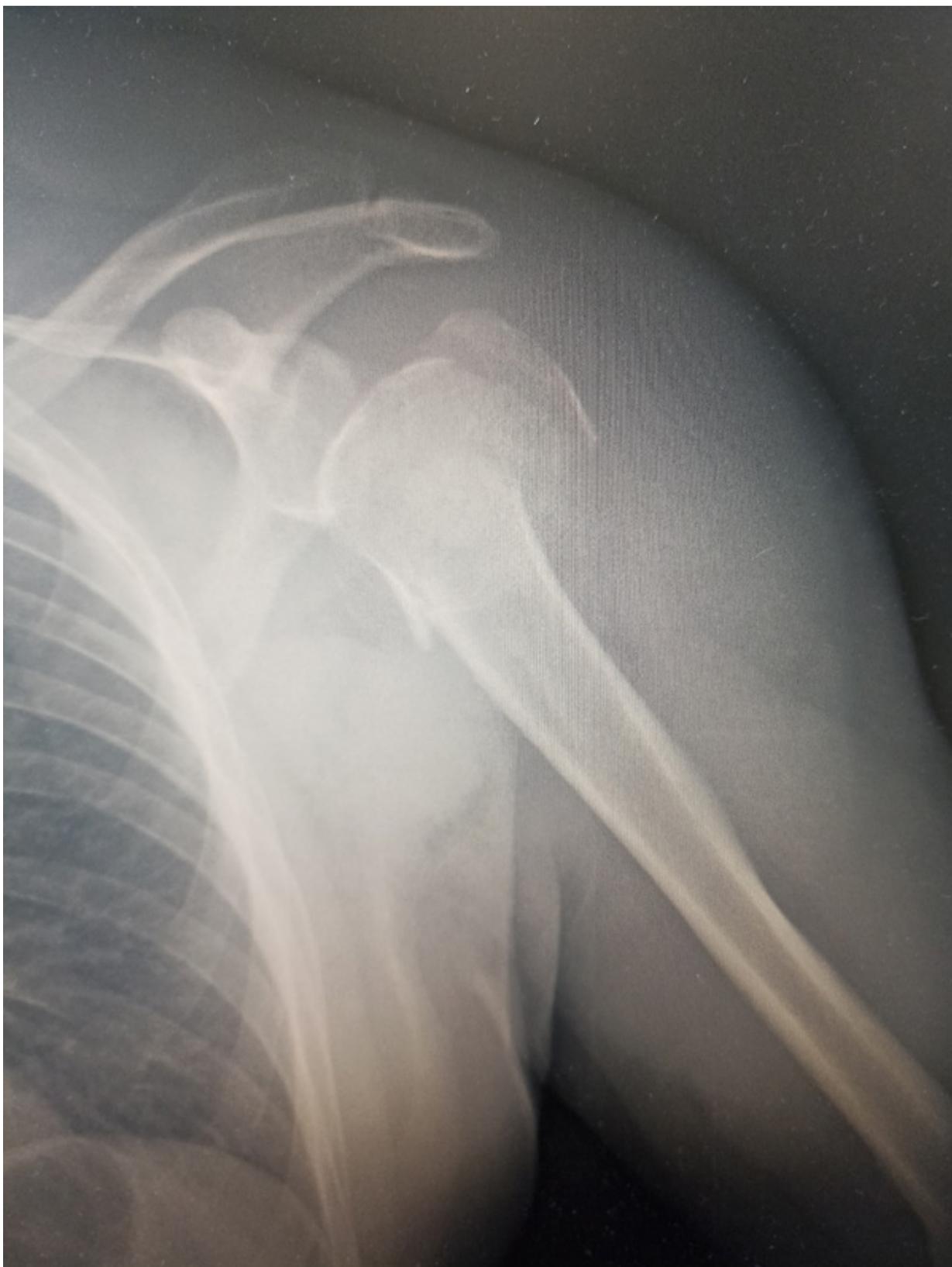


Figure 3: Left Shoulder, On the Day of The Trauma

Having in mind his past experience we decided to treat the new fracture conservatively. Again, the shoulder was immobilized with an orthosis in abduction. At the beginning of the second week he initiated a standard rehabilitation

protocol which he continued in his home. On the 40th postoperative day the result he reported was even better than the one of his right shoulder. Fig.4,5,6,7,8,9



Figure 4: AP View of The Right (Operated Shoulder) 18 Months Postop

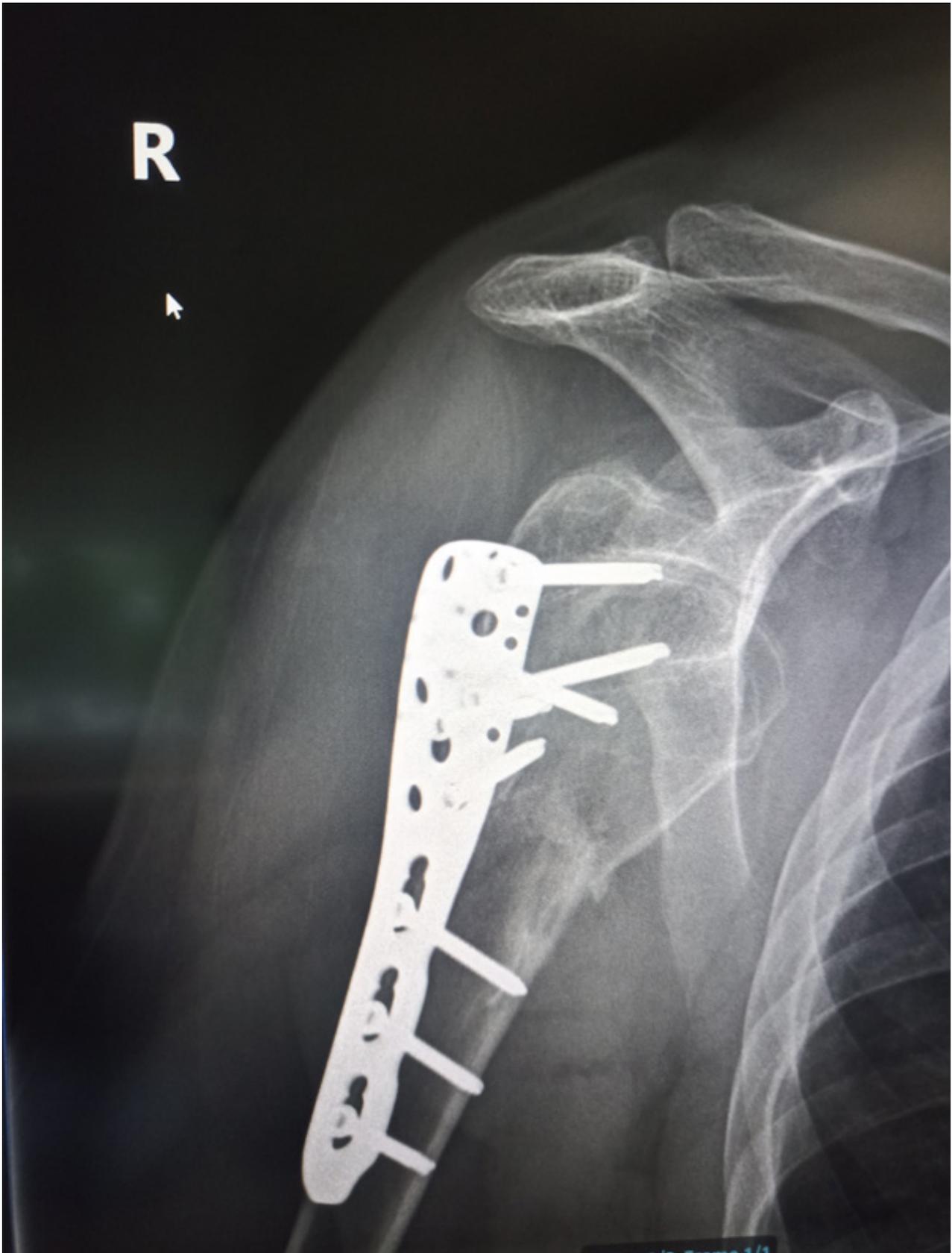


Figure 5: Lateral view of right shoulder 18 months postop.

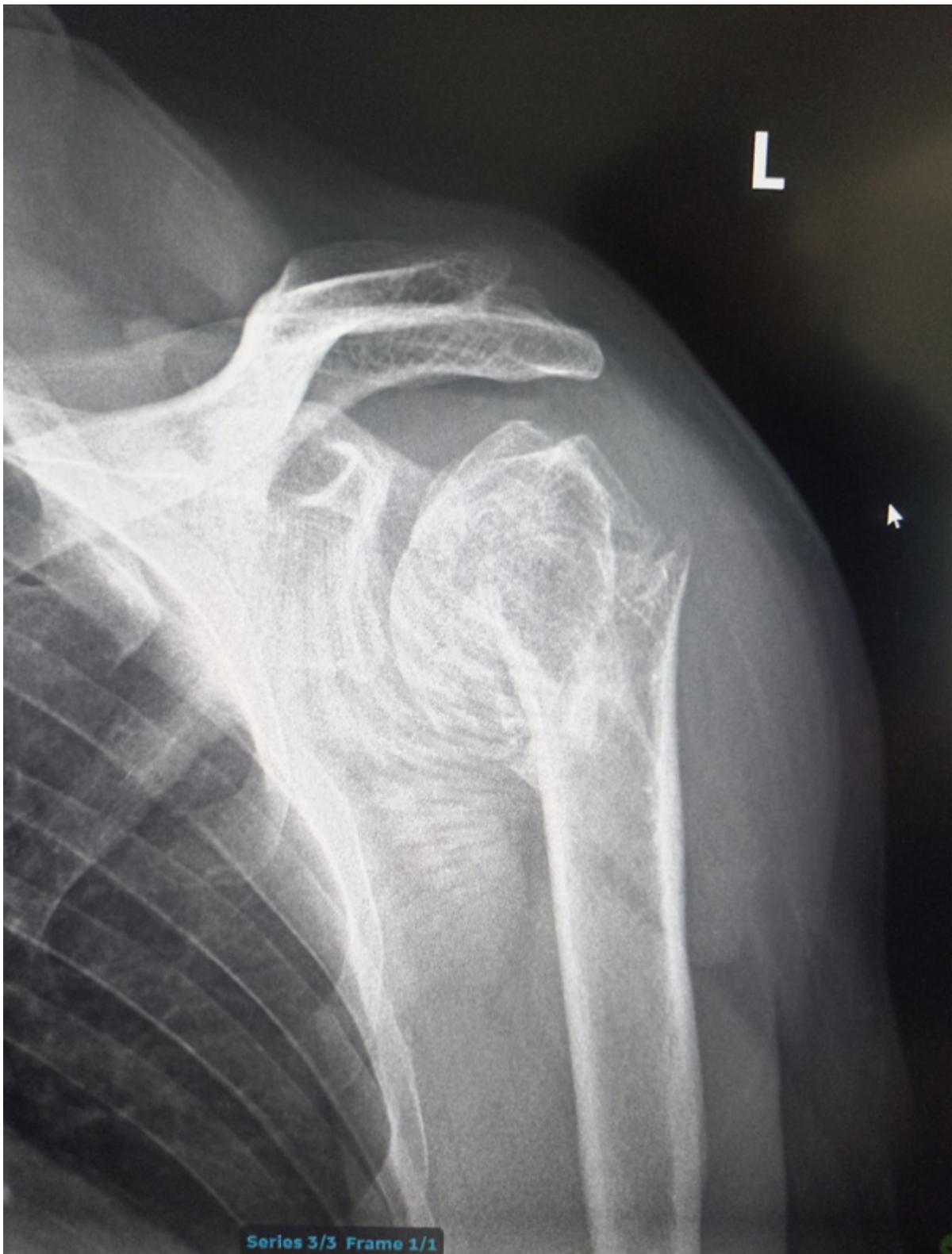


Figure 6: AP view of the left shoulder, 6 months after the trauma



Figure 7: Semi Abduction/Flexion of the right (operated) shoulder 18 months postop



Figure 8: Abduction of left (non operated) shoulder 6 months post trauma



Figure 9: Flexion of both shoulders

3. Materials and Methods

Differential diagnosis. The possibility for pathological injuries was considered. The first consideration is the osteoporotic type of fracture. Research shows that this type of fracture is

much more common in women. Above the age of 50 years, the ratio is 4:1 in favor of the females. Moreover, as mentioned, the patient exercises regularly. Third: intraoperatively in the first fracture, the bone quality was good and the fragments

could hardly deform during manipulation. These facts exclude the possibility of an osteoporotic fracture. The possibility of fatigue fractures was also considered. These are traumas, the first cases of which were described in conscript soldiers, and subsequently many cases were also reported in athletes. The reason for this type of fracture is the continuous repeating of the same type of motion that causes stress in a certain area of the bone. As a result, a fracture gradually appears, which radiologically may not be noticed until the twenty-first day or even later. The rate of development depends on the intensity of the repeated exercises. Statistically, these fractures mainly involve the lower limbs. These facts make the possibility of this type of fracture in the patient very unlikely [11-15].

Other causes of pathological fractures that came into consideration were: congenital defects, general systemic diseases, Paget's disease, osteomalacia, osteomyelitis or osteitis caused by tuberculosis or syphilis, primary or metastatic bone tumors. The patient denied having any hereditary or systemic diseases. Biochemical indicators were normal, including CRP, which excludes hidden infection. Although there are atypical forms. The tuberculosis of the proximal humerus mainly occurs in two forms: Caries

Carnosa and Caries Sicca. As both have specific radiological signs. These were absent in this patient. Moreover, he lacked any biochemical and clinical indicators of tuberculosis. The possibility of a tumor that might have weakened the bone was also ruled out radiographically [16].

We used the Neer classification to determine the type of fracture. The right shoulder was treated operatively and conservatively. The left shoulder joint only conservatively. To evaluate the condition of the shoulder joints after the treatment we used the DASH Score. To evaluate the pain in the shoulder we used the VAS system. To evaluate the change of quality of life we used the SF-36 questionnaire provided by RAND Healthcare. There were two evaluations done: one 40 days after treatment for both shoulder joints and another one: 18 months for the right shoulder and 6 months for the left shoulder.

4. Results

The DASH Score result for right shoulder was 60.83 pts. on the 40th day and 10 pts., 18 months later. For the left shoulder it was 56.66 pts. on the 40th day and 7,5 pts. on the 6th month. Chart.1

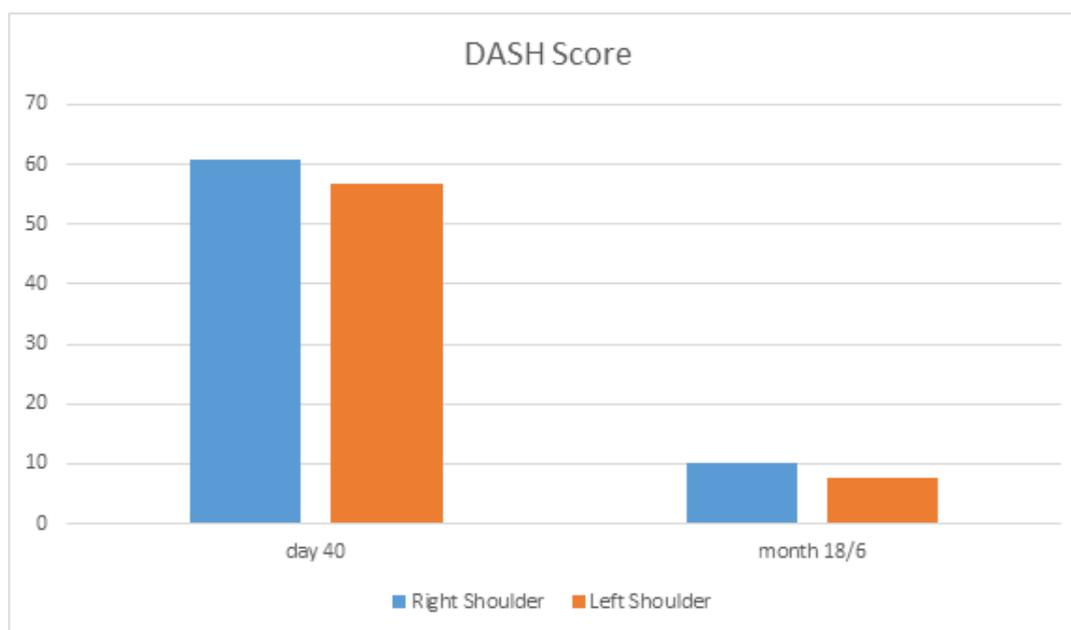


Chart 1: Dash Score Results for Both Shoulders

The results based on the Visual Analogue Scale were as follows: 5 pts. for right shoulder and 4 pts. for the left shoulder on the 40th day. Several months later the patient reported 1pt. for both shoulder joints. He explained that he usually doesn't feel pain but in case of an extreme motion he feels discomfort. To evaluate the change of quality of life we

used the SF-36 questionnaire for the period before the first trauma; several months after the first trauma and several months after the second trauma. The first two evaluation were performed at the time when the patient sought medical care for a second time. The third evaluation was performed 6 months later. The results are presented on Chart 2.

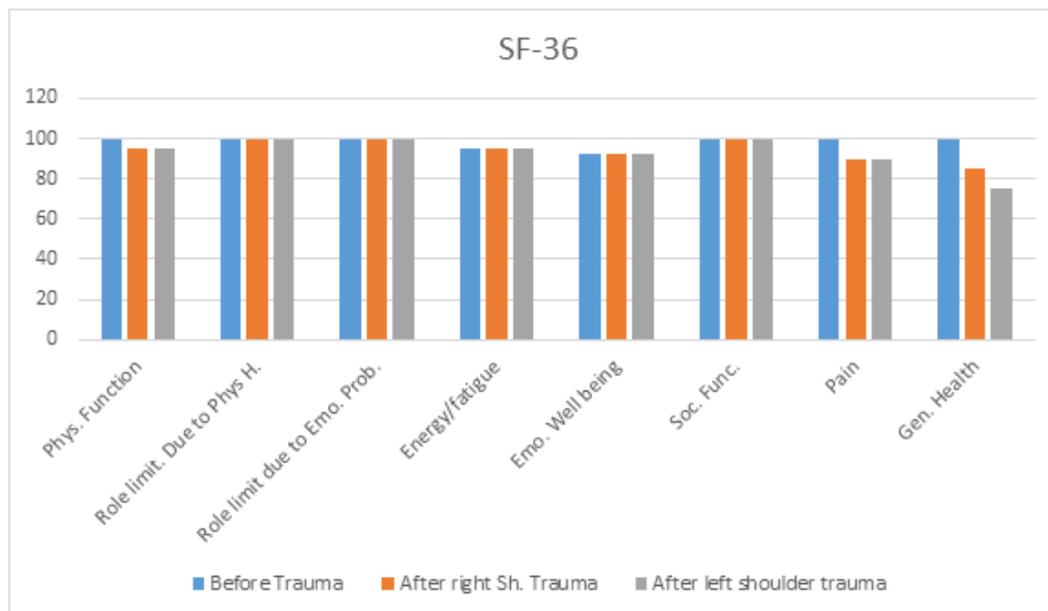


Chart 2: SF-36 Results

In conclusion first of all we believe that these miraculous results are achieved due to the exceptional nature and high spirit of the patient. The rehabilitation protocol he underwent in his home was strict and intense. Almost immediately he returned to his activities: fishing, archery, fitness, etc. which correlates with the high scores from the SF-36 questionnaire. It is evident that, the lower results in the last category “General health” is due to the understanding that his state is changed for good. We also believe that the slightly better outcome for the left shoulder is due to the fact that, since he did not undergo a surgery, his soft tissues remained intact. With this report we prove the importance of the rehabilitation protocol of the joint in combination with high collaborativeness and purposeful mindset in the treatment of these types of traumas. Operative treatment does not necessarily lead to excellent results, especially if it is not combined with a proper rehabilitation protocol. If conservative treatment is preferred, patients should be encouraged to perform rehabilitative exercises rigorously and diligently.

5. Discussion

There is this debate whether to treat operatively or conservatively the severe proximal humeral fractures¹. This question stays at every age. For example, the low density of the bone of a senile patient makes it useless to perform an osteosynthesis². On the other hand a young muscular patient makes the operation very hard to perform with a high risk of muscle injury. Furthermore, a surgeon should consider whether should he perform an osteosynthesis of the fragmented humeral bone or an arthroplasty of the joint^{3,4,5,6}. Of great importance is the expected vitality of the humeral head. The condition of the Circumflex arteries and more specifically the anterior one is to be assessed^{7,8,9}. This also begs the question whether to choose surgical treatment for a young active patient.

Key Clinical Message

Severe proximal humerus fractures are often the subject of debate regarding their treatment. Often when operative treatment has to be postponed or is impossible, conservative treatment can give very good results if carried out strictly

Conflict of Interest Statement

The authors declare that the research was conducted without any commercial or financial relationships construed as a potential conflict of interest.

Funding Information

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Ethics Approval and Consent to Participate

Before data collection, this study was approved by the institutional review boards of our university in compliance with the Declaration of Helsinki, and an exemption from informed consent was obtained. The patient’s personal data remains private.

Consent

Written informed consent was obtained from the patient to publish this report in accordance with the journal’s patient consent policy.

This manuscript is case report Clinical trial number

Not applicable

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