

# Clinical outcomes of conservative treatment for low-energy pelvic ring fractures

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## Introduction:

The increasing number of elderly people leads to a rising number of fractures in this cohort. A frequent type of low-energy fractures in elderlies are pelvic ring fractures, especially the combination of pubic branch and sacrum fractures as seen in lateral compression type 1 and 2 (LC1, and 2) fractures. The combined affection of the anterior and posterior ring bears the risk of prolonged pain, resulting in a decreased mobility and increased complications. But in this often multimorbid population, operative treatment poses a higher risk of intra- and post-operative complications. Hence the management and treatment of this particular fracture type remains controversial.

## Purpose:

The aim of this study is to analyse the outcome and to define parameters of conservative treatments of this fracture type.

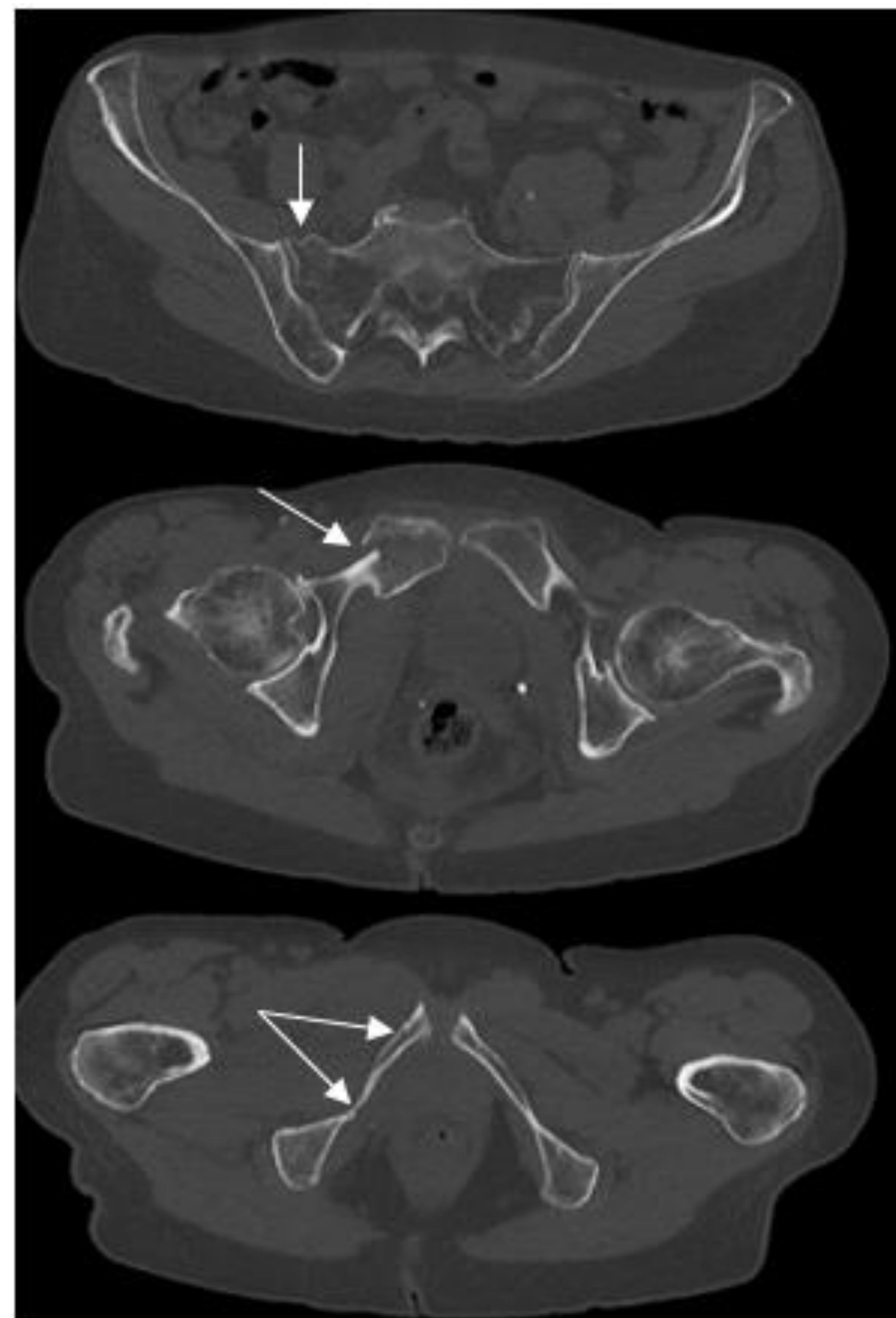


Fig. 1: CT scan of LC1 fracture, female 82y.

## Literature:

Villiger K, Demographic changes in pelvic fracture patterns at a Swiss academic trauma center from 2007 to 2017, Journal of Trauma and Acute Care Surgery 2022;92:862-72  
Rommens PM, Fragility fractures of the pelvis, Unfallchirurg 2019;122:469-82. <https://doi.org/10.1007/s00113-019-0643-7>  
Rommens PM, Comprehensive classification of fragility fractures of the pelvic ring: Recommendations for surgical treatment, Injury 2013;44:1733-44  
Holstein JH, What are predictors of mortality in patients with pelvic fractures? Trauma. Clin Orthop Relat Res, vol. 470, Springer New York LLC; 2012, p. 2090-7  
Gaski GE, Nonoperative Treatment of Intermediate Severity Lateral Compression Type 1 Pelvic Ring Injuries With Minimally Displaced Complete Sacral Fracture, J Orthop Trauma, 2014 Dec;28(12):674-80  
Küper MA, Pelvic ring fractures in the elderly, EFORT Open Rev 2019;4:313-20

## Methods:

A retrospective data analysis of 41 patients (F/M; 27/14) treated conservatively for a low-energy LC1 or LC2 fracture between the years 2016 and 2020 was performed. The primary measure was mobility after 2 weeks and 6 weeks. The data was assembled via chart analysis and phone interviews.

In addition to descriptive statistics, a binary logistic regression model was conducted to determine the factors having an impact on patient's outcomes. As a secondary measure, the consolidation of fractures was assessed via X-ray analysis.

## Results:

The mean age at the time of fracture was 79.8 years. 32 patients regained mobility (F/M; 25/7) after 2 weeks. Another 7 patients were mobile after 6 weeks (F/M; 2/5).

Two male patients did not regain mobility. The most determinant variable of non-mobility at 2 weeks was male gender ( $p < 0.01$ ). Age, BMI, pubic branch fracture dislocation  $>5\text{mm}$ , analgesic use of opiates, corticosteroid therapy, rheumatoid arthritis, alcohol, and smoking had no effect on mobility. 10 patients (F/M; 5/5) were lost to follow-up. One female patient showed no radiologic consolidation. In 73.2% patients (F/M; 21/9) fracture consolidation was present in follow-up imaging.

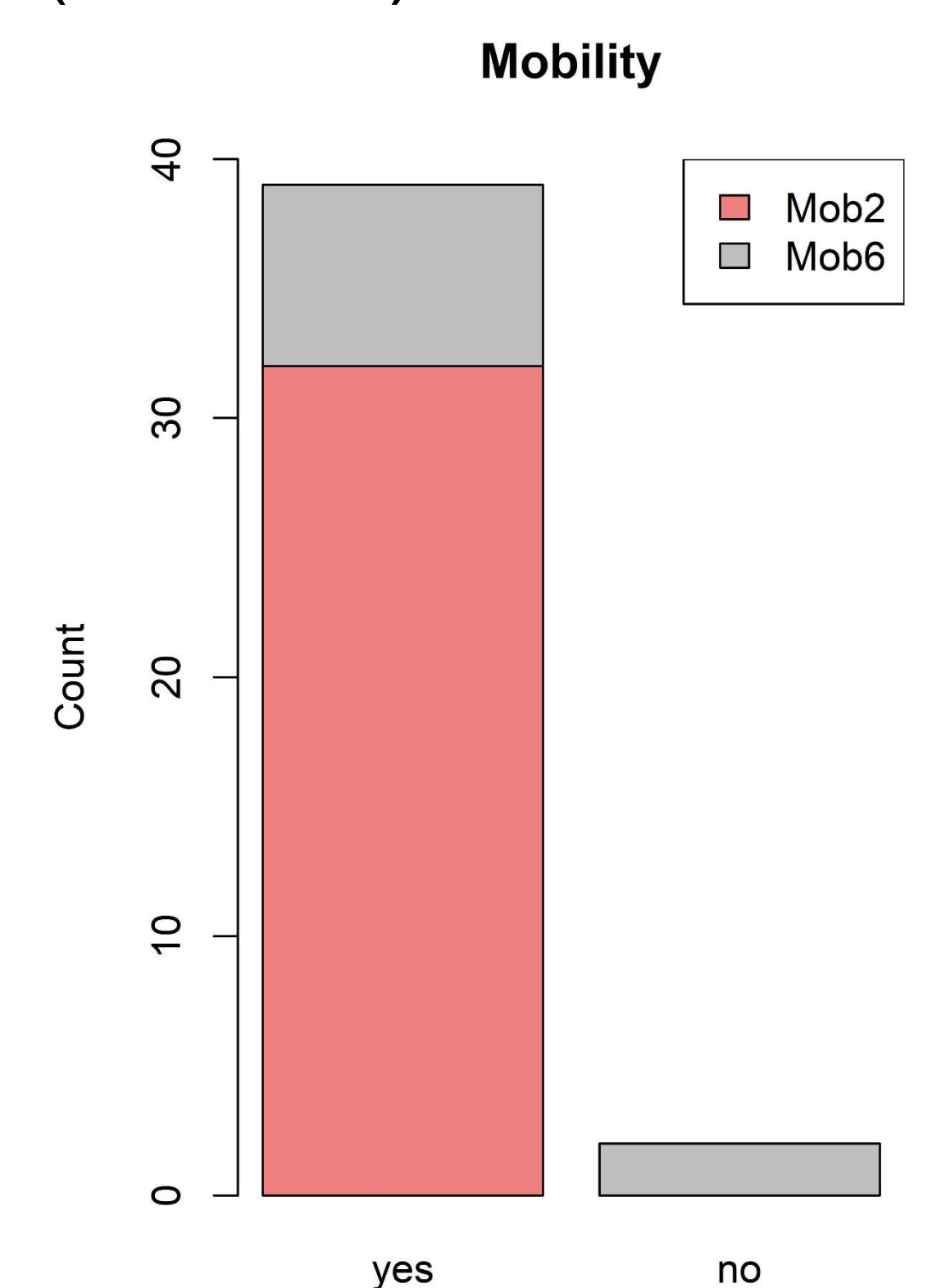


Fig. 2: Mobility after 2 and 6 weeks.

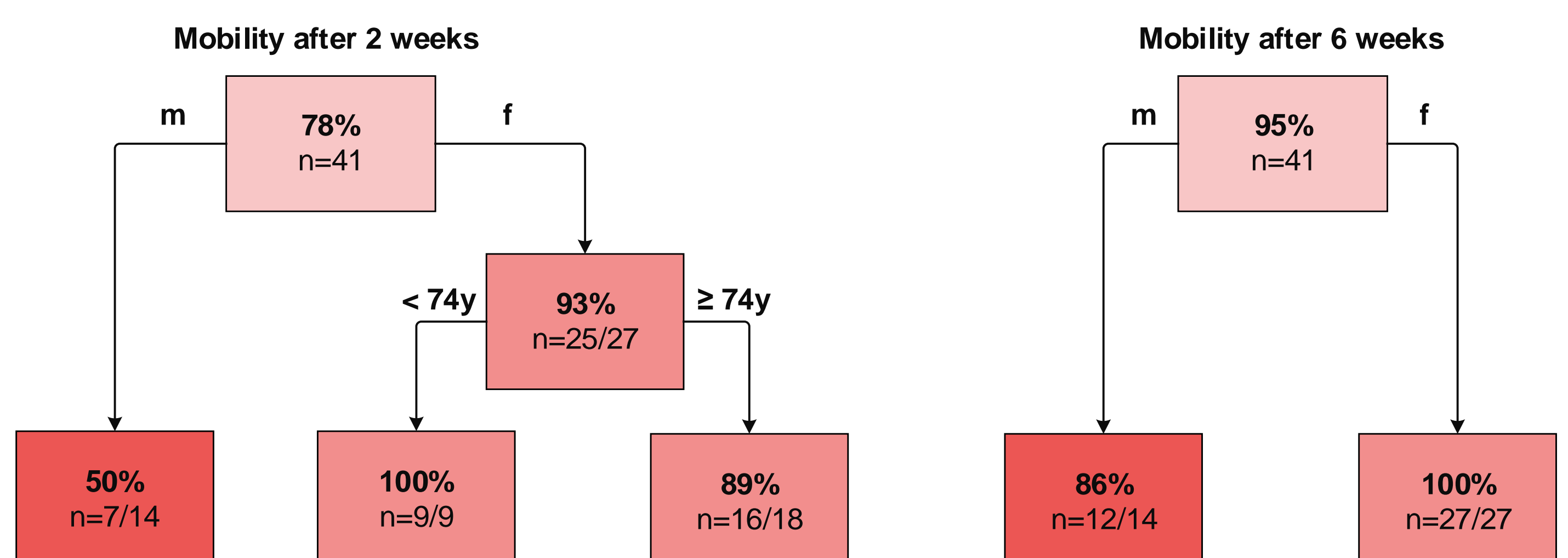


Fig. 3: Mobility in percentage after 2 and 6 weeks for male and female patients, respectively.

## Conclusion:

These results show a successful remobilisation of all but 2 patients within 6 weeks. The only factor with a negative influence on early mobilisation seems to be male gender. Radiographic fracture displacement  $>5\text{mm}$  of the pubic branches shows no adverse outcomes. Therefore, conservative treatments are a promising option for low-energy LC1 or LC2 fractures.