

**FIBULAR STATION AS A RADIOGRAPHIC ASSESSMENT OF SYNDESMOTIC MALREDUCTION IN
A SPECIALTY HOSPITAL IN THE PHILIPPINES: A CROSS SECTIONAL STUDY**

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Keywords: Medial Clear Space (MCS), Tibiofibular Clear Space (TFCS), Tibiofibular Overlap (TFO), Anterior Fibular Length Ratio (AFL) Ratio, Posterior Fibular Length (PFL) Distance, Computed Tomography (CT)

ABSTRACT

Background:

Syndesmotic injuries are common in ankle fractures and pose challenges in accurate reduction assessment. While computed tomography (CT) remains the gold standard, it is often unavailable in many clinical settings. Fibular station, a radiographic measurement on lateral ankle radiographs such as the Anterior Fibular Length (AFL) Ratio and Posterior Fibular Length (PFL) Distance, has been proposed as a practical tool for evaluating syndesmotic reduction, but its diagnostic validity remains underexplored in the Philippine population.

Objective:

This study aimed to evaluate the diagnostic accuracy of fibular station in detecting syndesmotic malreduction compared with conventional radiographic parameters and CT imaging.

Methods:

A cross-sectional study was conducted at the Philippine Orthopedic Center from April 2023 to August 2025 involving 50 patients aged ≥ 18 years with acute ankle fractures and suspected syndesmotic injury. Radiographic parameters assessed included medial clear space (MCS), tibiofibular clear space (TFCS), tibiofibular overlap (TFO), AFL ratio, and PFL distance. CT scans served as the reference standard. Diagnostic performance was analyzed using sensitivity, specificity, predictive values, and accuracy.

Results:

Among patients seen with acute ankle fractures at the emergency room, CT imaging confirmed syndesmotic malreduction in 39 patients (78%). Among conventional measures, MCS demonstrated the highest diagnostic performance (sensitivity 74.4%, specificity 100%, accuracy 80.0%). Fibular station parameters showed complementary utility: AFL ratio had high sensitivity (76.9%) but low specificity (18.2%), while PFL distance demonstrated low sensitivity (28.2%) but excellent specificity (90.9%). Combining MCS with fibular station indices improved sensitivity (87.2%) and overall accuracy (84.0%), exceeding that of any single radiographic measure.

Conclusion:

The findings suggest that conventional radiographic markers such as MCS and TFCS remain the most frequently abnormal parameters in syndesmotic malreduction. MCS demonstrated the highest diagnostic accuracy while TFO and TFCS show low to moderate validity for diagnosis. Fibular station measurements on the other hand provide valuable adjuncts to conventional radiographic parameters in detecting syndesmotic malreduction. Combining fibular station indices with medial clear space assessment enhances diagnostic reliability, offering a cost-effective and accessible alternative in resource-limited settings.