

# Closed reduction internal fixation rates and procedure times for metacarpal fractures treated in a minor surgery area before and after the introduction of a mini C-arm unit

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## Objective

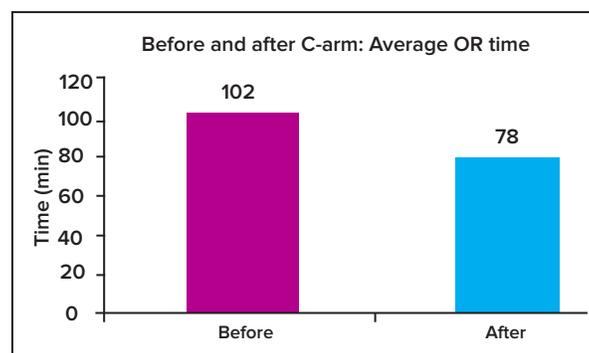
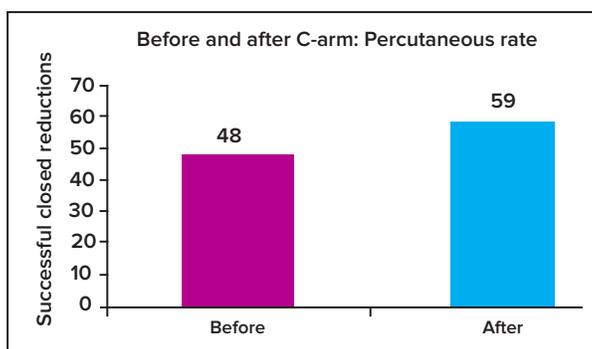
The purpose of the study was to examine the efficacy of a mini C-arm at increasing the successful closed reduction internal fixation rate and decreasing procedure time for metacarpal fractures treated in a minor surgery center. Before the mini c-arm, patients were sent to the x-ray department after the procedure. If the reduction or the fixation were found to be inadequate or incorrect, then the patient would have to undergo further intervention, costing both time and resources.

## Method

- A retrospective chart review was performed for consecutive metacarpal fractures requiring internal fixation treated in the MSC before and after the introduction of the mini C-arm.
- Open versus closed approach, procedure time and total operating room (OR) time were recorded.
- Descriptive statistics were used and results are averages rounded to the nearest whole number.
- Mini C-arm not used on all patients in "After C-arm introduction" group.

## Results

- Before the introduction of the mini C-arm, the percutaneous rate was 48% and the average procedure and total OR times were 55 min and 102 min, respectively.
- After the mini C-arm was introduced, the percutaneous rate increased to 59% and the average procedure and total times were 36 min and 78 min, respectively.



## Conclusion

- Mini C-arm provided real-time feedback on reduction and fixation and eliminated the patient transfer to and from the radiology department.
- Mini C-arm's portability and ability to take multiple real-time images play an important role. The mini C-arm also detects metal, gravel and glass with an accuracy equivalent to that of standard x-rays.
- When compared with full-size C-arms or other standard imaging devices, the mini C-arms can be more financially favorable not only to purchase, but to operate as well.
- Unlike the standard C-arm, the mini C-arm is typically operated by the surgeon and may not require a technologist.