

# Does the radial approach for paediatric radial fractures provide better clinical and radiographic outcome? - A 10 year review

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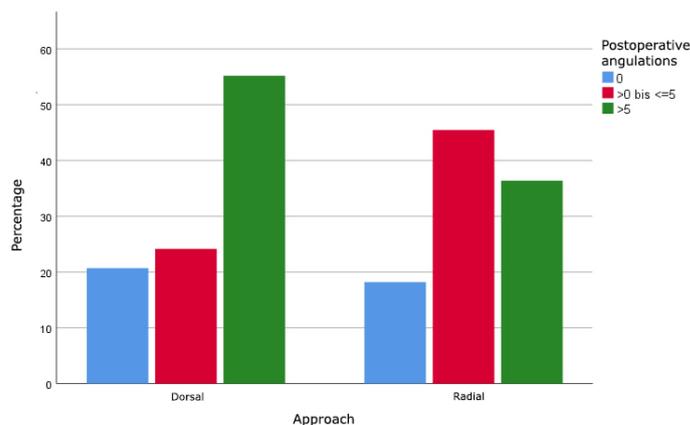
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## Introduction

Forearm fractures are one of the most common fractures in children. Over the last years, a tendency towards surgical treatment was seen, especially closed reduction and internal fixation with elastic stable internal nailing (ESIN). Despite an overall low complication rate was described, a risk of intraoperative complications remains. Especially the risk of lesion of the extensor pollicis longus tendon (EPL) in approaching the distal radius was previously described.

## Material & Methods

237 patients with forearm or radius fractures treated with closed or open reduction and internal fixation with (ESIN) between 2010 and 2020 were included in the study. The retrospective review of 245 fractures in 237 patients (8.3±1.2 years) focused on fracture pattern, pre- and postoperative angulation, complications and surgical approach for nail implant. The fracture pattern and pre- and postoperative angulation was radiographically measured. Complications were analyzed using the charts. Complications like ruptures of the EPL tendon and sensibility disorders of the superficial branch of the radial nerve (SBRN) were further analyzed.



Maximal postoperative angulations in degrees in both planes of distal forearm and radial fractures operated with dorsal or radial approach.

## Results

In 201 cases we performed a dorsal approach to the distal radius, in 44 fractures a radial approach. 25 surgical related complications were found, 21 needed further surgical treatment. 16 EPL ruptures, 4 sensibility disorders of the superficial branch of the radial nerve, 2 refractures after implant removal, 2 wound infections and one child with limited range of motion of the elbow after surgery occurred. All EPL ruptures needed surgical repair. No sensibility disorder needed revision surgery. An overall improvement of postoperative angulation was found ( $p < 0.001$ ). No statistical significance between pre- and postoperative angulation correlated to fracture pattern ( $p = 0.749$ ) or diameter of the ESIN ( $p = 0.563$ ) was seen. The radial approach showed less surgical related complications (radial 4, dorsal 26;  $p < 0.05$ ). Postoperative angulation showed no significant difference between approaches ( $p = 0.129$ ). Nevertheless, distal diaphyseal forearm fractures showed a better radiographic outcome using radial approach ( $p = 0.563$ ).

Surgery related complications	N (%)
EPL rupture	16 (6,5%)
Lesion of SBRN	4 (1,6%)
Refracture after ESIN removal	2 (0,8%)
Wound infection	2 (0,8%)
Limited ROM	1 (0,4%)
Total	25 (10%)

## Conclusion

Even though no statistical significance in postoperative angulation was found, the radial approach showed less patients with postoperative angulation over 5 degrees. Especially due to the low risk of damaging the EPL tendon, the radial approach showed a lower complication rate which needed further surgical treatment. The risk of lesions of the superficial radial nerve remains.