

Comments on “Complications of Low-Profile Plate Fixation of Phalanx Fractures”

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Dear Editor,

We read with interest the article by Guerrero et al¹ in the 2021 issue of *HAND* that retrospectively studied whether the use of low-profile plates (LPP) decreased complications in plate fixation of 8 proximal and 15 middle phalanx fractures. In the study, the use of LPP consistently achieved fracture union for phalanx fractures but despite changing the brand of plates with profiles ranging from 0.8 to 2 mm or changing the approach (volar, lateral, or dorsal), a reduction in the high complication rate (52.2% of cases) could not be achieved. In terms of secondary stiffness at a final follow-up (average of 7.2 months), the mean total active flexion (TAF) was 187°, with the mean extensor lag of 27.4°, this lag being greater than 35° in 25% of cases.

However, in recent years, soft tissue handling appears to play a more important role in the procedural outcome than selection of an optimal implant. Tendon adhesions between the plate and the extensor tendons are responsible for the restricted range of motion (ROM). In fact, previous reports² have shown that the key factor for the development of tendon/implant adhesions is the intratendon inflammatory reaction with the consequent loss of tissue gliding and finally the reduced ROM. Despite the reduction in bulkiness of hardware implants with the use of low-profile mini-fragment plates or with a different lateral/midlateral/tendon sparing approach, the postoperative final ROM has not been significantly improved.^{3,4}

We thus suggest that the key factor is not solely the use of a volar or midlateral approach as with a volar or lateral or dorsolateral position of the plate, tendon adhesions still occur. On the contrary, the key issue is represented by the presence or absence of vascularized gliding tissue that works as a barrier preventing tendon adhesions in the interface of the tendon plate. A case report⁵ on an isolated unstable closed multifragmentary proximal phalangeal fracture described the utilization of a local adipofascial flap (AFF) as a useful tool to prevent tendon adhesions and leading to a good final ROM. There was reduced stiffness of the involved digit and no fixed flexion contracture of the proximal interphalangeal joint.

In a further comparative study,⁶ the results of open reduction and internal fixation (ORIF) after the use of dorsal 1.5-mm plates (Synthes Ltd, Zuchwil, Switzerland), at longer follow-up (mean: 11 years), with and without the use of an AFF were reported. This study involved 21 fingers in 18 patients.

The 2 techniques compared were equally effective at achieving good anatomic reduction and stable fixation until bone consolidation. However, the TAF was superior in patients with AFF compared with ORIF only. Excluding the 3 cases of thumb involvement, an average TAF of 156° ± 45° (median: 148°) in the ORIF only group was in contrast to 205° ± 38° (median: 218°) in the AFF group. Moreover, a lower rate of adverse effects and a lower visual analog could be found in the AFF group.

We share the view of Guerrero that a larger, well-controlled, prospective randomized multicentre trial with larger number of patients would be needed to compare the results of LPP “including” the use of the AFF technique to elucidate the effectiveness of *all* treatment options available. This study would provide evidence-based data and solve the debate about the best surgical treatments for these fractures and the potential extendability to middle phalangeal or metacarpal fractures.

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Ethical Approval

This study required no ethical approval by any ethical committee.

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Statement of Human and Animal Rights

The study was carried out to a high ethical standard.

Statement of Informed Consent

Informed consent was not required.

Declaration of Conflicting Interests

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References

1. Guerrero EM, Baumgartner RE, Federer AE, et al. Complications of low-profile plate fixation of phalanx fractures. *Hand (N Y)*. 2021;16(2):248-252.
2. Cohen MS, Turner TM, Urban RM. Effects of implant material and plate design on tendon function and morphology. *Clin Orthop Relat Res*. 2006;445:81-90.
3. Brei-Thoma P, Vögelin E, Franz T. Plate fixation of extra-articular fractures of the proximal phalanx: do new implants cause less problems? *Arch Orthop Trauma Surg*. 2015;135(3):439-445.
4. Sivakumar BS, An VV, Phan K, et al. Range of motion following extensor tendon splitting vs. tendon sparing approaches for plate osteosynthesis of proximal phalangeal fractures: a systematic review and meta-analysis. *J Hand Surg Asian Pac Vol*. 2020;25(4):462-468.
5. Lucchina S, Maggiulli F, Tos P, et al. Can an adipofascial flap be used to prevent adhesions after plating of the proximal phalanx? A case report. *Chir Main*. 2015;34(2):86-90.
6. Lucchina S, D'Ambrosio A, Fusetti C, et al. The use of an adipofascial flap to prevent extensor tendon adhesions after plating of the proximal phalanx of the fingers: a comparative study. *Hand (N Y)*. 2022;17(4):691-700.