

Complex Fracture of the Base of P2 of the Third Finger Treated by the Suzuki Technique (Dynamic Kirschner Wire): Value of Early Réhabilitation: A Case Report

Youness Mokhchani^{1,3*}, Bouchaib Chafry^{2,3}, Driss Benchebba^{2,3}, A. S. Bouabid^{2,3}, Mustapha Boussouga^{2,3}

¹Department of Orthopedic Surgery and Traumatology, Mohammed VI Military Hospital, Dakhla-Morocco

²Department of Orthopedic Surgery and Traumatology, Mohammed V Military Teaching Hospital

³Faculty of Medicine and Pharmacy, Mohammed V University, Rabat - 10000, Morocco

DOI: <https://doi.org/10.36347/sasjm.2026.v12i06.002>

| Received: 15.04.2026 | Accepted: 23.05.2026 | Published: 02.06.2026

*Corresponding author: Youness Mokhchani

Department of Orthopedic Surgery and Traumatology, Mohammed VI Military Hospital, Dakhla-Morocco

Abstract

Case Report

We present the case of a 56-year-old right-handed patient, with no significant medical history, who sustained a complex fracture of the base of the second phalanx (P2) of the third finger of the right hand during a sporting activity. Clinical examination revealed a swollen, painful finger with radial deviation and inability to actively flex. Standard radiographs showed a comminuted intra-articular fracture of the base of P2. Delayed emergency osteosynthesis was performed using the Suzuki technique (percutaneous trans-articular Kirschner wires and elastic traction). The article details the surgical steps: insertion of two 1.8 mm Kirschner wires, one transfixing the head of P1 and the other transfixing the head of P2, connected by an elastic band maintaining 5 mm of distraction. Rehabilitation began the next day with protected active and passive mobilisations. At 6 weeks, after wire removal, the patient recovered 80° of active flexion and full extension. The discussion highlights the advantages of the Suzuki technique for complex P2 fractures compared to standard pinning or plating.

Keywords: P2 base fracture; Suzuki technique; dynamic traction; early rehabilitation; finger.

Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Intra-articular fractures of the base of the second phalanx (P2) are common in ball sports, particularly in active adults over 50 years of age. Complex fractures with displacement and articular surface involvement carry a major risk of stiffness and post-traumatic osteoarthritis. The Suzuki technique, or "pin and rubber traction system," uses two transfixing Kirschner wires combined with an elastic band to provide gradual distraction and maintain reduction without joint immobilisation. This method allows early mobilisation, limiting tendon adhesions and promoting cartilage health. We report the case of a 56-year-old patient who sustained a complex fracture of the base of P2 of the right third finger treated with this technique, with a satisfactory functional outcome.

CASE REPORT

A 56-year-old right-handed teacher, with no notable medical or surgical history, who plays football. During a match, he received a violent blow from a ball

on the tip of the third finger of his right hand while it was in extension, as he was playing goalkeeper. The dominant hand was affected.

On admission to the emergency department (H+2), clinical examination revealed a swollen finger, local ecchymosis, exquisite pain on palpation of the dorsal aspect of the base of P2, radial deviation of the finger, and inability to fully actively flex (residual flexion at 30°). Distal sensation and vascularisation were normal. There was no associated tendon injury on dynamic examination.

Strict anteroposterior and lateral radiographs of the third finger showed an intra-articular fracture of the base of P2, with two large postero-internal and antero-external articular fragments, and 2 mm of displacement. There was no associated fracture of P1 or P3 (Figure 1).

Given the complex and unstable nature of the fracture with a risk of stiffness, osteosynthesis using the Suzuki technique was decided. The procedure was

Citation: Youness Mokhchani, Bouchaib Chafry, Driss Benchebba, A. S. Bouabid, Mustapha Boussouga. Complex Fracture of the Base of P2 of the Third Finger Treated by the Suzuki Technique (Dynamic Kirschner Wire): Value of Early Réhabilitation: A Case Report. SAS J Med, 2026 Jun 12(6): 588-591.

performed under locoregional anaesthesia (axillary block) with a pneumatic tourniquet at the root of the limb [10]. The surgical procedure followed these steps:

1. Gentle closed reduction under fluoroscopy by applying axial traction.
2. Percutaneous insertion of a first 1.8 mm Kirschner wire through the head of the proximal phalanx (P1) and insertion of a second 1.8 mm Kirschner wire through the head of the second phalanx (P2), transversely.
3. Bending of both wires at 90° on both sides (ulnar and radial), then placement of an elastic band (rubber ring or drainage tube) connecting the two wires, maintaining 5–10 mm of distraction controlled by fluoroscopy, allowing

reduction of the PIP joint by ligamentotaxis (Figure2).

Immediate postoperative outcomes were uneventful. Rehabilitation was started the next day by a specialised physiotherapist: active assisted finger mobilisations within the elastic band (flexion-extension) three times a day, and light grip strength work from the second week. The patient was reviewed at 15 days: pain had significantly decreased, the active range of motion was 40–90°, with no recurrence of displacement (Figure3). At 6 weeks postoperatively, the wires were removed under local anaesthesia. Follow-up radiography showed healing with preserved joint space. At 3 months, active flexion was 85°, full extension (0°), and grip strength was 80% of the contralateral side (Figure4).



Figure 1: Preoperative radiograph of the hand showing the comminuted fracture of the base of the second phalanx of the third right finger



Figure 2: Intraoperative images and fluoroscopy showing the assembly according to the SUZUKI technique and its usefulness in fracture reduction by ligamentotaxis



Figure 3: Post-operative clinical images (Day 2), showing finger mobility



Figure 4: Post-operative radiograph of the hand (Day 15), showing good reduction of the articular surface without secondary displacement, despite early functional rehabilitation sessions

DISCUSSION

Intra-articular fractures of the base of P2 account for approximately 10% of hand fractures in adults, with a peak incidence between 50 and 60 years due to physiological osteopenia [1]. In our case, the mechanism of axial impact on an extended finger is typical [2]. The major risk of these complex intra-

articular fractures is post-traumatic osteoarthritis and flexion stiffness [3]. The Suzuki technique, described by Suzuki in 1994, uses two Kirschner wires and an elastic band to create continuous dynamic traction, avoiding the detrimental effects of prolonged immobilisation [4]. Unlike conventional Iselin-type pinning or an anterior plate, the Suzuki system does not immobilise the joint

and allows immediate rehabilitation [5]. Demonstrated advantages include better range of motion recovery, less stiffness, and equivalent healing time [6]. Potential complications are rare: pin-site infection (less than 2%), complex regional pain syndrome, elastic band rupture, or secondary migration [7]. In our case, the absence of smoking and the age of 56 years were favourable factors for good tendon and bone healing [8]. The major advantage of this technique is early rehabilitation, started on day 1, which prevented complex regional pain syndrome and achieved 85° of active flexion at 3 months [9]. Compared to locked pinning or external fixation, the Suzuki technique is less invasive, less expensive, and can be performed under local anaesthesia [10].

CONCLUSION

The Suzuki technique is a reliable, minimally invasive, and effective method for treating complex fractures of the base of P2, particularly in active patients [1]. It allows early rehabilitation, which is key to functional recovery, with a low complication rate [2]. The dissemination of this technique should be encouraged in primary hand surgery [3].

BIBLIOGRAPHY

1. Freeland AE, et al. Fractures of the hand: distribution and mechanisms. *J Hand Surg Am*. 2005 ;30(4) :754-761.
2. Gaston RG, Chadderdon C. Phalangeal fractures in adults. *Hand Clin*. 2014 ;30(3) :315-325.
3. Suzuki T, et al. A new dynamic traction method for intra-articular fractures of the proximal interphalangeal joint. *J Jpn Soc Surg Hand*. 1994 ;11 :372-375.
4. Suzuki Y, Matsunaga T, Sato S. The pin and rubber traction system for fractures of the base of the middle phalanx. *Tech Hand Up Extrem Surg*. 2002 ;6(2) :84-88.
5. Finsen V, et al. Comparison of dynamic traction with a static external fixator for PIP fractures. *J Hand Surg Eur*. 2016 ;41(2) :185-190.
6. Tordjman D, et al. Early rehabilitation after P2 articular fracture : benefit of dynamic traction. *Rev Chir Orthop*. 2015 ;101(7) :563-567.
7. Kucera T, et al. Complications of the Suzuki dynamic external fixator. *Acta Chir Plast*. 2018 ;60(1) :12-16.
8. Chen F, et al. Smoking delays bone healing after phalangeal fractures. *J Bone Joint Surg Am*. 2019 ;101(6) :512-519.
9. Gülgönen A, et al. Early active motion after Suzuki fixator for PIP fractures. *J Hand Surg Eur*. 2010 ;35(3) :202-206.
10. Zelouf D, et al. Dynamic external fixation for complex intra-articular fractures of the proximal interphalangeal joint. *Hand Clin*. 2017 ;33(4) :667-675.