

Dynamic Distraction External Fixation Derived from the SUZUKI Frame for PIP Joint Fractures

Hassan Boussakri*, Abdelhalim Elibrahimi and Abdelmajid Elmrini

Department of Osteoarticular Surgery (B4), CHU Hassan II, Morocco

Article Information

Received date: Dec 18, 2015

Accepted date: Dec 19, 2015

Published date: Dec 21, 2015

*Corresponding author

Hassan Boussakri, Department
of Osteoarticular Surgery (B4),
CHU Hassan II, Morocco,
Email: Boussakri.hassan@gmail.com

Distributed under Creative Commons
CC-BY 4.0

Keywords Proximal Interphalangeal
Joint; Unstable Fracture; Dynamic Joint
Distractor; SUZUKI

Letter to the Editor

We present a case of an unstable proximal interphalangeal fracture of the fifth finger. We want to review the treatment of this entity, by using a dynamic external distractor designed from the Suzuki frame; we recommend this technique to young orthopaedic surgeons.

Mr.AM:21 years old, right-handed, a manual worker, who consults for pain and inability to flex the PIP joint of the fifth finger, which occurred after accidentally punching a wall. Initial X-ray of the front and side of the hand showed a comminuted fracture of the PIP joint. Further investigation for a precise evaluation of injury was performed using a CT scan with reconstruction (Figure 1). Our choice of treatment was surgery. We opted for a Suzuki dynamic external fixation (1994). This surgery was performed under local anesthesia (Figure 2) and (Figure 3). The procedure was completed by a well-conducted gentle reduction of the joint. Follow up in the eighth month was satisfactory with the patient having a normal mobility of the joint compared to his other hand. The patient was able to resume his daily activity without disabilities.

Fractures of the proximal interphalangeal joint are complex [1]. Stable fractures of this joint must be differentiated from unstable fractures. Unstable fractures must be securely fixed to avoid any immobilization of the PIP joint. This trauma is characterized by an extreme pathological variety, as well as difficulties in dealing with the risk of stiffness, instability and osteoarthritis. These fractures weigh heavily on the ability entire finger and the overall function of the hand.

Therapeutic management of this trauma remains a subject of debate and scientific discussion. Several surgical techniques that respect the anatomical features of this region have since been proposed. Two basic surgeries have been described i.e. open reduction or external fixation. Each has its own anatomical basis and biomechanical prerequisites.

We report our experience with a designed dynamic external distractor derived from the Suzuki frame through this case report craft. The philosophy and the concept of dynamic external distraction is based on external fixation of the fracture (ligamentotaxis) using a simple and relatively cheap material like two Kirchner wires and rubber bands. This system has been well studied and detailed by Suzuki [2] (Figure 4).



Figure 1: X-ray and CT scan of the PIP fracture.

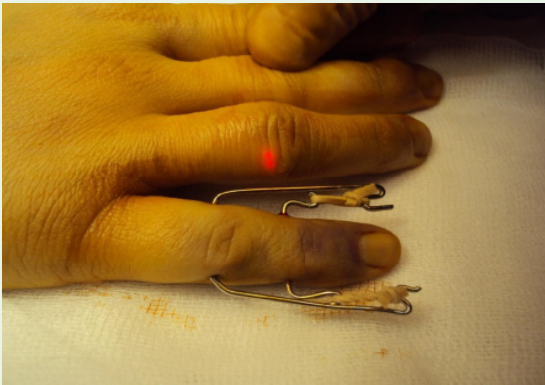


Figure 2: Clinical appearance after dynamic external fixation.

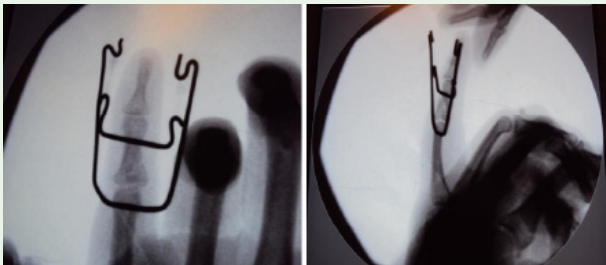


Figure 3: Intraoperative X-ray image of the fracture.

The review of the literature found few studies which evaluate this original surgical technique. We conducted our research on PUBmed, Google scholar, using keywords; Suzuki traction, articular fracture, PIP joint, finger [2-6]. However, this technique remains a choice in our personal experience. We will like to note that prospective series of 10 cases is ongoing for our personal long-term evaluation of this technique.

The designed dynamic external distractor derived from the Suzuki frame is light to wear for the patient, it is simple to produce and thus can be easily taught to younger surgeons.

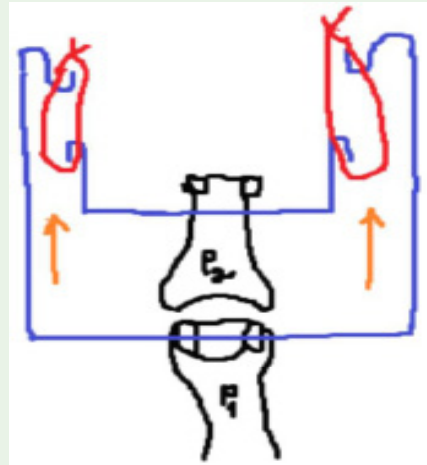


Figure 4: Diagram shows the biomechanics of dynamic external fixator.

Acknowledgement

Dr Tenkorang Snr Somuah contributed immensely towards the redaction of this article in English and made substantial contributions to its conception.

References

1. Van Onselen EB, Karim RB, Hage JJ, RittMJ. Prevalence and distribution of hand fractures. *J Hand Surg Br.* 2003; 28: 491-495.
2. Suzuki Y, Matsunaga T, Sato S, Yokoi T. The pins and rubbers traction system for treatment of comminuted intraarticular fractures and fracture-dislocations in the hand. *J Hand Surg Br.* 1994; 19: 98-107.
3. Keramidas E, Solomos M, Page RE, Miller G. The Suzuki frame for complex intra-articular fractures of the proximal interphalangeal joint of the fingers. *Ann Plast Surg.* 2007; 58: 484-488.
4. Nam SM, Park ES, Shin H, Jung SG, Kim YB. Interphalangeal traction for comminuted fracture of middle phalanx fingers: case report. *J Hand Surg Am.* 2010; 35: 1282-1285.
5. Richter M, Brüser P. [Long-term follow-up of fracture dislocations and comminuted fractures of the PIP joint treated with Suzuki's pin and rubber traction system]. *Handchir Mikrochir Plast Chir.* 2008; 40: 330-335.
6. Walaszek I, Zyluk A. [Results of the treatment of intra-articular fractures of the fingers with a modified Suzuki traction device]. *Chir Narzadow Ruchu Ortop Pol.* 2009; 74: 27-30.