Hand Surgery and Rehabilitation xxx (2017) xxx–xxx

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EM|consulte
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Surgical technique

Elastic retrograde intramedullary percutaneous pinning for fifth metacarpal neck fractures: A series of 32 patients

Ostéosynthèse par brochage élastique rétrograde centromédullaire dans les fractures du col du cinquième métacarpien : à propos d'une série de 32 patients

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ARTICLE INFO

Article history:
Received 29 November 2016
Received in revised form 10 April 2017
Accepted 19 April 2017
Available online xxx

Keywords:
Fifth metacarpal neck
Fracture
K-wire
Retrograde intramedullary pinning

ABSTRACT

The aim of our study was to evaluate an original surgical technique for the treatment of fifth metacarpal neck fractures: elastic retrograde intramedullary percutaneous pinning (ERIPP). From January 2014 to January 2016, patients with a fifth metacarpal neck fracture with greater than 30° volar displacement and/or clinodactyly were included. All patients underwent an ERIPP procedure. With this technique, K-wires are used as joysticks to assist reduction when the Jahss maneuver is insufficient. Clinical evaluation incorporated the DASH score, range of motion and grip strength at 3 months. Radiographic evaluation comprised apex dorsal angulation and metacarpal shortening at 1 month and 3 months. Thirty-two patients were included in the study. All fractures were healed after a mean of 5 weeks (range 4–7). The DASH score was less than 30 for all patients, indicating an absence of disability. There were no differences in grip strength at 3 months between the injured and the contralateral hand. There was less than 10° extension deficit in the metacarpophalangeal joint. In our experience, retrograde percutaneous pinning is a stable, compressive fixation method with effective reduction of displaced fifth metacarpal neck fractures. However, this result needs to be confirmed in comparative studies.

Mots clés :
Col du cinquième métacarpien
Fracture
Brochage rétrograde centromédullaire

RÉSUMÉ

Le but de notre étude était l'évaluation d'une nouvelle technique chirurgicale dans le traitement des fractures du col du 5e métacarpien par brochage rétrograde élastique percutané centromédullaire. Entre janvier 2014 et janvier 2016, tous les patients ayant été opérés d'une fracture du col du 5e métacarpien avec un déplacement supérieur à 30° ou présentant une clinodactylie ont été inclus. Tous les patients ont été opérés par brochage rétrograde élastique centromédullaire. Elle permet d'utiliser les broches comme des joysticks afin de faciliter la réduction lorsque la manœuvre de Jahss est insuffisante. L'évaluation clinique comprenait le questionnaire DASH, la force de poigne et l'amplitude articulaire de la métacarpo-phalangienne du 5e doigt (MCP5) à 3 mois. Une évaluation radiologique du degré de déplacement de la fracture et du raccourcissement métacarpien était réalisée à 1 et 3 mois. Au total, 32 patients ont été inclus dans l'étude. Tous les patients ont consolidé dans une moyenne de 5 semaines (4–7 semaines). Le score DASH était inférieur à 30 pour tous, traduisant l'absence d'incapacité. La force de poigne était similaire à celle de la main controlatérale à 3 mois. Le déficit moyen d'extension de la MCP5 était inférieur à 10° en moyenne. Le brochage percutané rétrograde semble être une technique stable d'ostéosynthèse permettant une réduction satisfaisante des fractures déplacées du col du 5e métacarpien dont l'efficacité doit être confirmée par des études comparatives.

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http://dx.doi.org/10.1016/j.hansur.2017.04.004
2468-1229/

1. Introduction

Fifth metacarpal neck fracture, or the so-called "boxer's fracture", is very common [1] and can leave esthetic or functional sequelae after treatment. Conservative treatment is proposed in cases with slight volar displacement (flexion $< 30^{\circ}$) [2–4] and absence of clinodactyly. Surgical treatment is indicated in all other cases, provided the patient is compliant. "Bouquet" osteosynthesis [5], transverse fixation [6] and a combination of transverse and intramedullary pinning [7] have been described as percutaneous treatments for fifth metacarpal neck fractures. An open approach with non-locked or locked plates has been proposed but was not preferred to the percutaneous approach by their authors [8]. When closed reduction proves difficult using the Jahss maneuver [9], introducing an intrafocal percutaneous K-wire can help with reduction [10,11]. A surgical technique that can reduce the volar displacement and fix it with a single percutaneous technique would therefore be useful. Elastic retrograde intramedullary percutaneous pinning (ERIPP) is a potential solution; however, it could be overly aggressive for the metacarpophalangeal (MCP) joint.

The aim of this study was to evaluate the functional and radiologic outcomes of the ERIPP procedure.

2. Material and methods

2.1. Patients

Patients undergoing surgical treatment following the diagnosis of a boxer's fracture between January 2014 and January 2016 were included in the study after signing an informed consent form. All patients were operated on by the same senior hand surgeon.

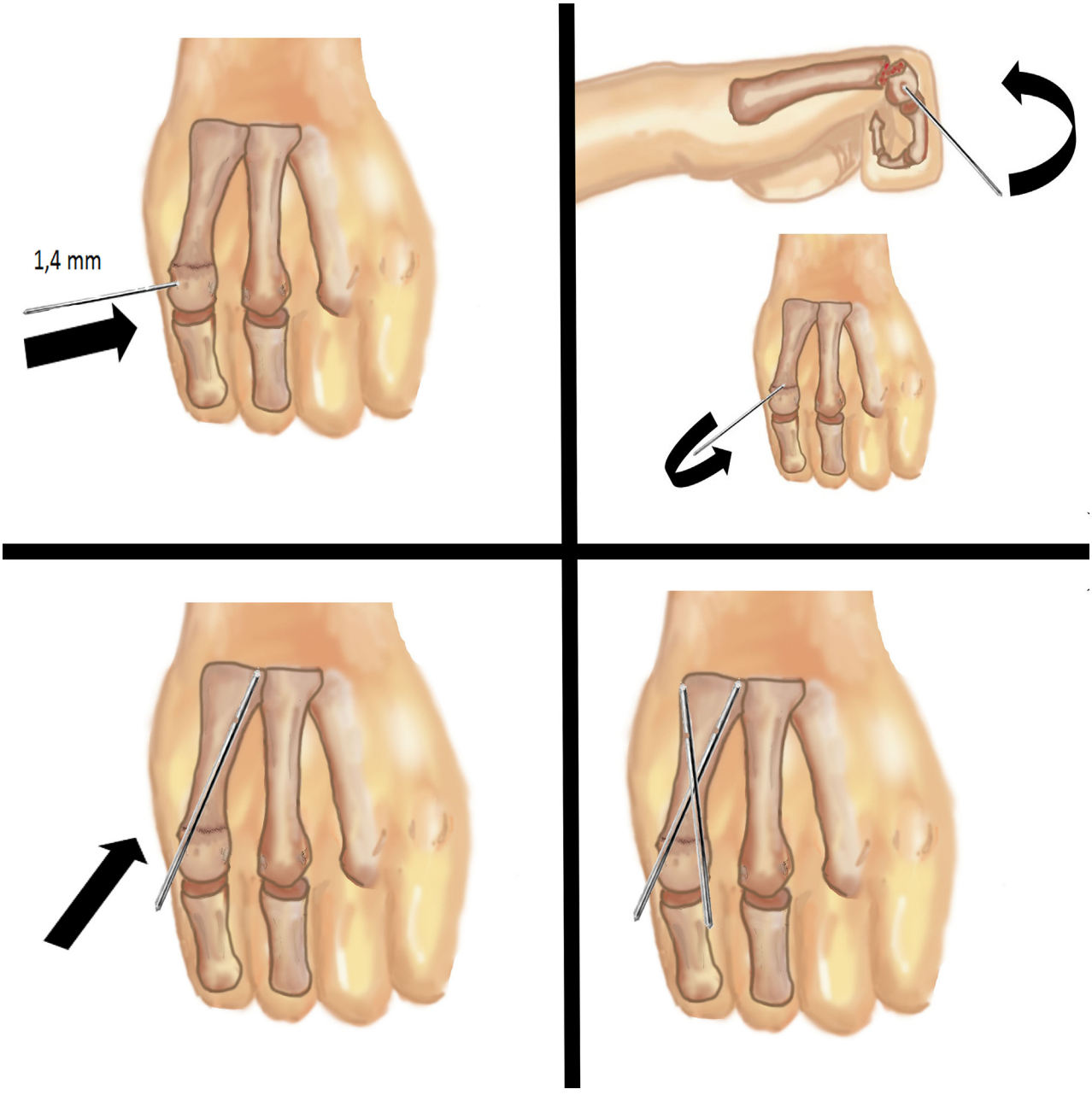

Fig. 1. Drawing of the elastic retrograde intramedullary percutaneous pinning technique. Insertion of the K-wire perpendicular to the bone, distal to the collateral tubercle of the fifth metacarpal neck (top left). Reduction of displacement by upward and lateral leverage (top right). The K-wire is pushed to the cortical base (bottom left). Same maneuver with a second K-wire on the contralateral side of the finger (bottom right).

Please cite this article in press as: Poumellec M-A, Dréant N. Elastic retrograde intramedullary percutaneous pinning for fifth metacarpal neck fractures: A series of 32 patients. Hand Surg Rehab (2017), http://dx.doi.org/10.1016/j.hansur.2017.04.004