出國報告（出國類別：開會）

第十二屆亞太手外科醫學會研討會與會報告

服務機關：台中榮民總醫院骨科部
姓名職稱：許承恩 主治醫師
派赴國家/地區：澳洲/墨爾本
出國期間：2020 年 3 月 11 日至 2020 年 3 月 14 日
報告日期：2020 年 3 月 31 日

摘要

參加於 2020 年 3 月 11 日至 2020 年 3 月 14 日在澳洲墨爾本舉行之第十二屆亞太手外科醫學會研討會，發表口頭論文一篇，就會議期間之所見所聞提出說明及報告。雖逢新冠狀病毒肺炎影響，身為醫護人員不能實地到場與會，依規定改以視訊方式參與，在會議中發表口頭報告一篇，報告過程獲得各方專家迴響，在聆聽其他專家學者之報告中了解到目前國際上相關領域之研究及發展方向，有助於自己在未來制定相關之研究課題上有相當多之啟發，更肯定了自己過去研究之成果及臨場報告之表現，可謂收穫豐碩。

關鍵字: 澳洲墨爾本 第十二屆亞太手外科醫學會研討會

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內文

一、 目的

參加第十二屆亞太手外科醫學會研討會，發表論文一篇，並與世界各地的學界專家學者交流討論。

二、 過程

ICECE 2017：第十二屆亞太手外科醫學會研討會於2020 年3 月11 日至2020 年3 月14 日在澳洲墨爾本舉行，有來自世界各地的學界及業界的專家學者參與。研討會之議程為三天，我的論文被安排在第一天(3/11)發表。以口頭演講發表個人論文一篇，題目:" Modified tension band wire-an ideal low profile internal fixation method for 5th metacarpal neck fracture。"

三、 心得

因為受到COVID-19疫情的影響不能出國，只能透過線上會議參與國際會議，儘管實際能到場的大多是當地醫師，少了與日本、韓國、中國、歐美的一些重量級老師當面交流的機會，但利用這次因應疫情特別以多會議廳可自選演講內容播放的方式補足了以往在會議廳之間選擇的缺憾與節省了在會議廳之間移動的時間，在個人之論文發表方面，經由聽取與外國學者之演講，得到相當多寶貴之新知，也了解了同樣的手術在國外的進行方式。在準備演講中也有機會提升自己的英文口語能力，對於本議題更深入的問題也能進一步挖掘與思考，如：掌骨骨折的固定可以在使用完全清醒無止血帶手術進行，確保肌腱滑動無虞，另使用我們的方法進行內固定時，雖有low profile的優點，但生物力學強度是否足夠在早期復健的前提下可能維持骨折復位仍是個不能忽視議題，使我對於未來如何在此領域從事更深入之研究得到相當多的啟發。

本次會議遇上眾多國家講者不能實地與會而採線上視訊會議方式進行，各講者因此皆有留下演講影片，是未來實地應用極佳的參考，所繳交之報名費也因此產生了極大的價值。

四、建議事項

未來如有本院舉行的會議遇上相似情況，可借鏡此次會議的經驗，以線上視訊會議與講者預錄影片的方式進行，仍可提供參與者不錯的與會經驗。

五、 附錄

1. 演講摘要

Objectives

The fifth metacarpal neck fracture is the most common type of metacarpal fracture. Open reduction is sometimes needed when reduction cannot be achieved with closed procedures. Traditional tension band wire (TBW) and plates cause soft tissue irritation for the prominence of the hardware. We proposed a simple and effective surgical technique for 5th metacarpal neck fracture fixation that provides adequate stability and low soft tissue irritation under a wide-awake approach.

Methods

The incision is made and the fracture was exposed. Wire guide made from steel part of 18 gauge needle was drilled into the distal and proximal fragments. Twenty-four gauge wire was used to pass wire guide as the figure 8 style. The fracture stability was checked by active and passive motion of MCP joint under wide-awake approach. Four patients undergone this procedure and the preoperative and postoperative data were collected.

Results

The average preoperative dorsal angulation angle was 51 degrees. The radiography showed bone union without any residual angulation and patients were able to use the finger without any pain or limited range of motion. They are asymptomatic and satisfied with the outcome at postoperative 6 months follow-up.

Summary

Internal fixation is sometimes needed in open reduction for metacarpal fractures. Traditional TBW and plates may cause soft tissue irritation for the prominence of the hardware. The modified TBW that we proposed provides adequate fracture stability and has a very low profile and a low cost. We recommend this method for metacarpal neck fracture when open reduction is performed.

2. 演講逐字稿 (依投影片順序)

1. Good morning, I am Doctor Hsu from Taichung Veterans General Hospital, Taiwan.
Today I am going to share the experience of using Modified Tension Band Wire to fix 5th Metacarpal Neck Fracture. We think this method is an Ideal Low Profile Internal Fixation Method for this region

2. In today speech I separate it into 3 parts. In the first part, I will introduce current treatment methods for metacarpal neck fracture. In the second part, I will share how and why we apply tension band wire on metacarpal neck fracture In the last part, I will present the clinical results and make the conclusion for this treatment

3. 50% Metacarpal neck fracture involve fifth metacarpal bone. It is usually caused from direct blow to the metacarpal head. It is also called boxer' s fracture
Reviewing the literature, treatments for metacarpal bone fracture includes close reduction with casting or percutaneous pining, plating or intramedullary pining or screw fixation. Its common complication includes joint stiffness and tendon irritation

4. For the comparing of cast fixation methods, one paper in 2008 advocated that MCP-extension cast had advantages of quicker application and, to a much lesser degree, better tolerability, range of motion, and final grip strength than volar outriggers after 4 weeks immobilization

5. In a report of case series in 2009, authors reported good radiographic and functional results for the treatment of 5-10 minutes traction and 4 week casting and buddy tapping

6. In 2010, a paper compared the treatment outcomes of fifth metacarpal neck fracture treated with locking plate and intramedullary K-wire
One Kirschner wire was inserted antegradely from proximal metaphyseal region. Locking plate was put on dorsal aspect of the metacarpal bone. The results showed Intramedullary pinning had better active range of motion. The pain, DASH score, strength, time off work or head displacement were similar. On the other hand, plating on metacarpal bone had complication of avascular necrosis of metacarpal head and tendon irritation.

7. Another fixation method to fix 5th metacarpal fracture is percutaneous transverse pining. In a series of 28 cases, they had good ROM and DASH score

8. In comparison of antegrade intramedullary pinning and retrograde intramedullary pinning. Antegrade pinning seems to have better results in pain, range of motion and strength.

9. We have a summary from literature review. For the immobilization treatment, MCP extension cast is more practical than the volar outrigger. Buddy tapping is a good protection choice in more unstable fracture. For the percutaneous pinning, both transverse pinning and IM pinning had good results.

Antegrade pinning had better outcomes than retrograde pinning. Generally intramedullary pinning had better results than plating for reduced tendon irritation.

10. In the second section of this speech, I will introduce tension band wire in the following time. Tension band wire can convert tensile force into compression force at the opposite cortex to improve fracture stability and improve bone union.

11. The mechanism of tension band wire had been applied on many fractures including medial malleolar fracture, olecranon fracture, patellar fracture and proximal humerus fracture.
For the metacarpal fracture, there are also tension side and compression side at dorsal and volar side respectively.

12. Our procedure is as followed: Under local anaesthesia with 20 c.c 1% lidocaine and 1: 100,000 epinephrine injection to subcutaneous tissue (Lalonde and Wong, 2013), central incision of dorsal 5th metacarpal was made. The plane between extensor digitorum communis (EDC) and extensor digitorum minimi (EDM) was split. The fracture site was exposed. The metacarpal-phalangeal joint capsule was opened to expose distal end of metacarpal. The steel part of 18 gauge needle was separated (Figure 2) and mounted on the electric driller to be the wire guide (Figure 3).Two wire guides were drilled into the distal and proximal parts of fractured metacarpal at middle point between the near and far cortex which were around 0.5-1 cm to the fracture site(Figure 4). The fracture reduction and wire guide positions were checked by intraoperative C-arm image intensifier. A small gauge 25 stainless-steel wire was used to pass the two wire guides as the figure 8 style. The needle was then withdrawn after fracture was reduced, and the wire was then tightened (Figure 5). The fracture stability was checked by active and passive motion of metacarpal-phalangeal joint.

13. We can find good fracture stability during passive motion of metacarpal phalangeal joint

14. Good fracture stability can also be observed during active motion of metacarpal phalangeal joint under WALANT procedure

15. In the postoperative radiography, a well-reduced fracture and low profile fixation can been found

16. The patient was able to use this finger without pain or limited range of motion 6 months after operation.

17. No splint nor cast was used during postoperative course .
Six months post-operatively, the radiography showed bone union without any residual angulation

18. We recommend this internal fixation method for metacarpal neck fracture. Anatomic reduction and

rigid and low profile device fixation can be all achieved with this method. We demonstrated the technique of how to apply tension band wire technique on metacarpal bone fracture with an excellent treatment outcome. This surgical procedure may also be useful in other metacarpal or phalangeal fractures.

19. Thanks for your attention

演講投影片後附

Modified Tension Band Wire-an Ideal Low Profile Internal Fixation Method for 5th Metacarpal Neck Fracture

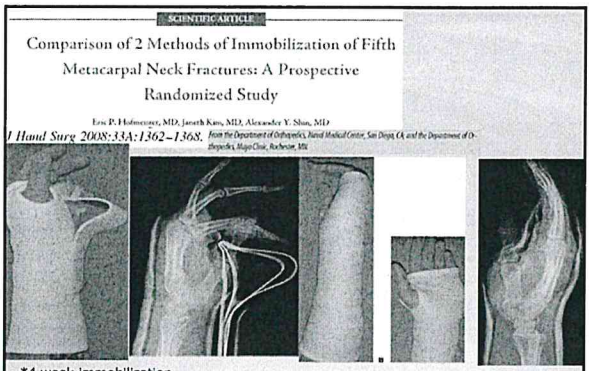
Cheng-En Hsu[1] , Yung-Cheng Chiu[2]
1 Taichung Veterans General hospital, Taiwan
2 China Medical Hospital, Taiwan

Outlines

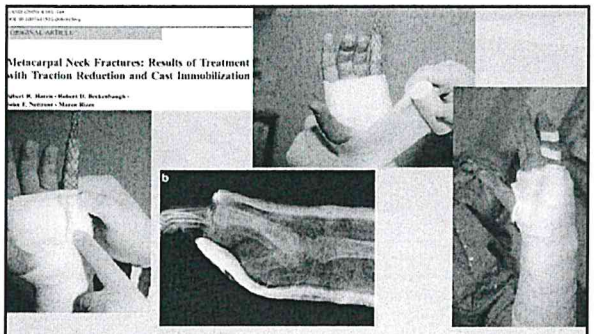
- Metacarpal neck fracture and its treatments
- Tension band wire
- Clinical experiences and conclusions

Metacarpal Neck Fracture

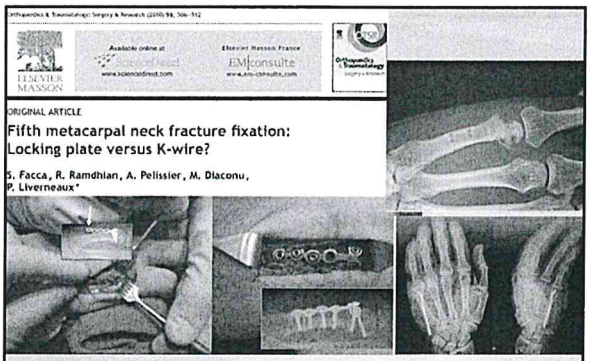
- Metacarpal neck fracture
  - 50% involve 5th metacarpal bone
  - Treatments
    - Close reduction (CR)+casting
    - CR+percutaneous pinning
    - Plate or IM pinning or screw
  - Complication:stiffness, tendon irritation



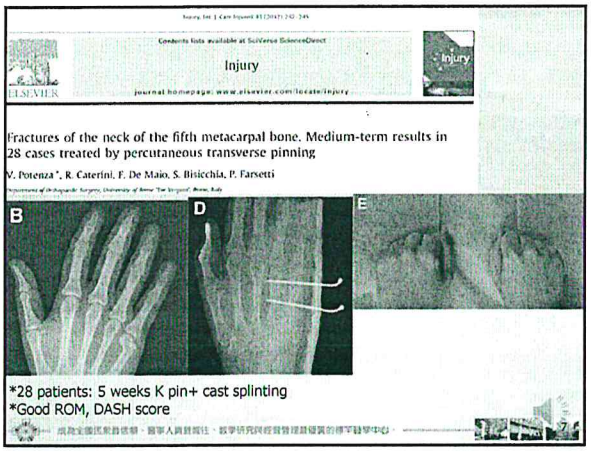
*4 week immobilization
MCP-extension cast better than volar outriggers

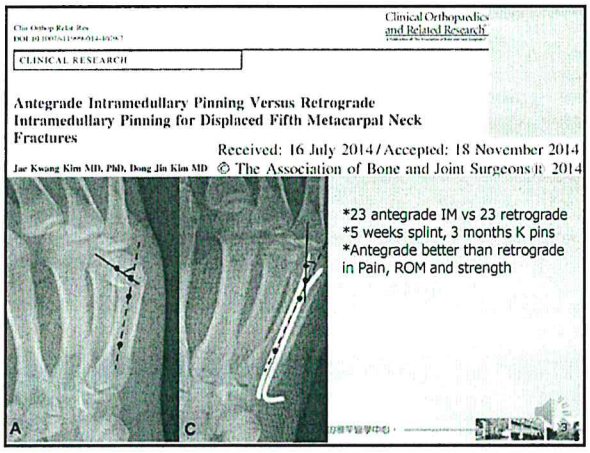


*5-10 min traction+4-weeks casting+buddy tapping
*59 patients series: good radiographic and functional results



*18 Locking plate vs 20 IM pinning:
*IM pinning: better active ROM, same pain, DASH, strength, time off work or head displacement



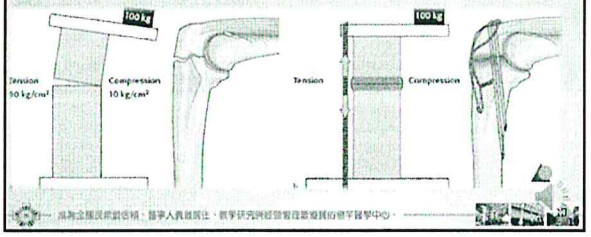


Sectional Summary

- Immobilization
  - MCP- extension cast > Volar outriggers
  - Good results for casting+ buddy tapping
- CRPP
  - Good results for transverse pinning, IM pinning
  - IM pinning > plating
  - Antegrade pinning> retrograde

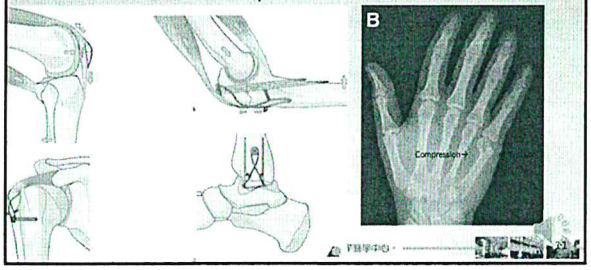
Tension Band Wire

- Tension band wire (TBW) principle
  - Covert tensile force into compression force at the opposite cortex→ Improves stability and bone union

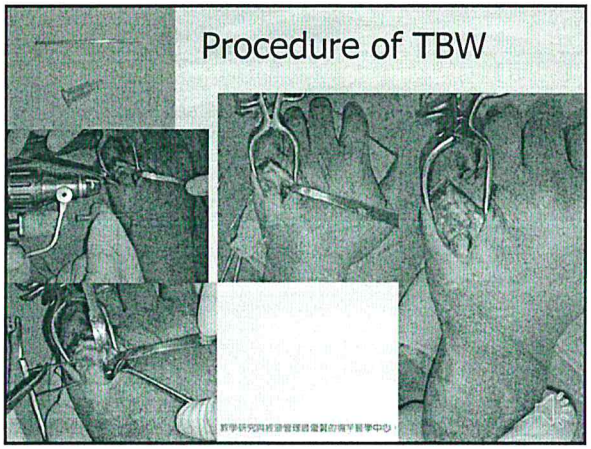


Tension Band Wire

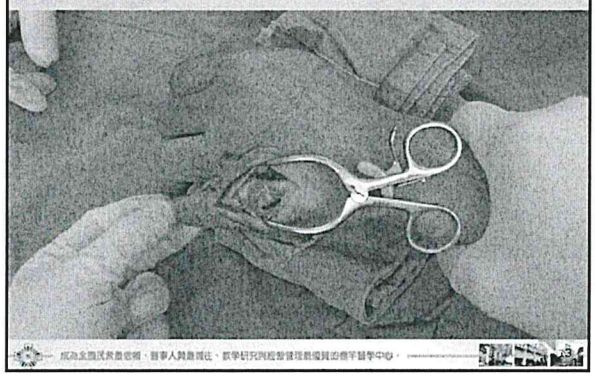
- Application
  - Extensively used to stabilize fracture with tension and compression sides



Procedure of TBW



Fracture Stability: Passive ROM



Fracture Stability: Active ROM

Pre-OP and Post-OP Radiographs

Full ROM at 3 Month f/u

Bone Union at 3 Month f/u

Discussion

- TBW advantages
  - Low profile
  - Rigid internal fixation, immobilization free
  - Wide awake surgery, intraoperative test
- Possible drawbacks
  - Tendon irritation
  - Contraindication in volar cortex comminution condition


台中榮民總醫院
Taichung Veterans General Hospital
Thanks for your Attention