

Proximal interphalangeal joint arthrodesis in the hand: Tension band wire vs Apex intramedullary fusion device

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Background

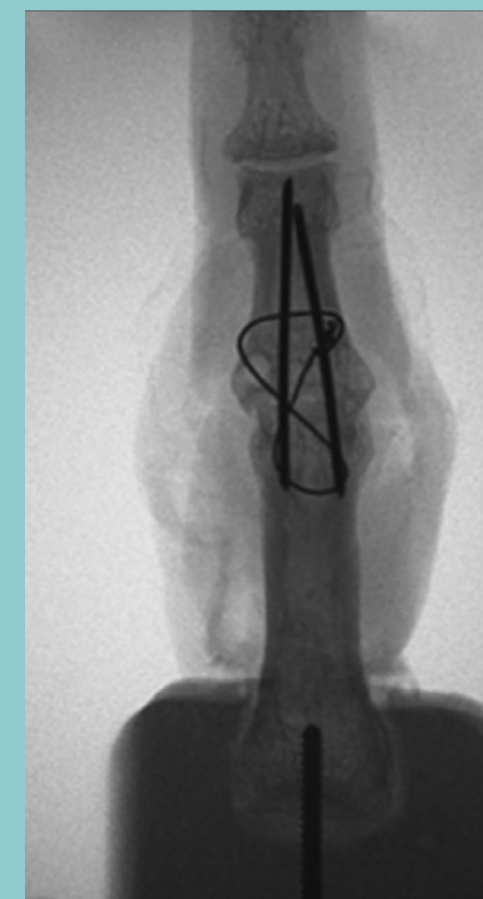
- Tension band wiring (**TBW**) is a popular technique for fusing arthritic proximal interphalangeal joints (**PIPJs**) of the hand
- Patients often struggle with **prominent metalwork** and **require further surgery** to remove the wires.

Study aims:

- Compare the **outcomes** of PIPJ fusion using TBW with the newer Apex intramedullary implant at a single unit
- Examine the **cost-effectiveness** of the **Apex** device



Apex intramedullary implant



Tension band wiring

Methods

- **Retrospective analysis** of 50 PIPJ fusions
- At a single unit between January 2013 and March 2020
- Performed in 37 consecutive patients
- Clinical and radiographic records reviewed by 2 independent surgeons

Primary outcome measure:

- Clinical and radiographic fusion of the joint

Secondary outcome measures:

- Complications
- Need for further surgery

Cost benefit analysis:

- Determine overall cost of each procedure and subsequent treatment

Results

- **Comparable** groups for age, gender, diagnosis, co-morbidities
- **27 TBW** fusions vs **23 Apex** fusions
- 10 TBW fusions (**37%**) required **removal of metalwork** (ROM)
- One stitch abscess and one digital neuropraxia reported in the Apex cohort

Cost-benefit analysis:

- Total additional cost/patient following TBW to remove metalwork: **£2032**
- Additional cost of Apex implant/patient: **£655**
- For n = 100 people:
total cost of **TBW** with 37% ROM: **£75814**
total cost of **Apex**: **£65500**
- **£96.84** per patient saved when using Apex

Conclusions

- Apex demonstrated 100% fusion, comparable to TBW
- No additional removal of metalwork was required
- Apex is a cost-effective alternative fusion method

This study supports the use of the Apex implant as a favourable alternative to traditional TBW techniques for PIPJ fusion in the hand.

