

Introduction

- PyroCarbon hemi-arthroplasty is a proposed treatment for trapezio-metacarpal joint arthritis of the thumb.
- This procedure's potential benefits include:
 - early return of range of motion
 - minimal post operative pain
 - does not eliminate the possibility of future trapeziectomy
- Previous studies have observed a high rate of subluxation, hardware loosening and trapezial fracture leading to decreased popularity of this technique.
- The author (NFJ) has previously published his technique which focuses on strong dorsal capsular reconstruction, and post operative immobilization in abduction and extension.

Methods

- Retrospective chart review (n=20)
- Inclusion criteria:
 - Any patient who underwent PyroCarbon implant hemi-arthroplasty by single surgeon (NFJ)
- Minimum 2 year follow-up
- Outcomes reviewed:
 - Implant survival
 - Grip strength
 - Pinch strength
 - Range of motion
 - Pain score pre and post
 - Complications
 - Radiographic changes over time

Results

- Twenty-one procedures (12 saddle, 7 hemispheric and 2 Ascention® Nugrip™ implants)
- 17 female & 3 male patients
- Average age 66.1 ± 7.1 years
- Follow up ranged 24 – 95 months
- All patients achieved full range of motion, Kapandji score ≥ 9 (Figure 2)
- There were no surgical revisions or implant removal.
- Complications:
 - 1 patient required operative deep suture removal
 - 1 patient required steroid injection at 3 months for De Quervain's tenosynovitis
- There were no implant dislocations or infections.
- Serial radiographs show no increasing lucency or significant deterioration.

Figure 1- Pre and post operative radiographs after a hemispheric PyroCarbon hemi-arthroplasty



Figure 2- Pre and post operative range of motion 3.5 years after a hemispheric PyroCarbon hemi-arthroplasty



Results

- Pre-operative VAS score ranged 5-10
- Post-operative VAS score ranged 0-3

Table 1- Post operative patient outcomes

<i>Grip strength</i>	
Operative hand (n=19)	49.6 ± 20.3 [□]
Contralateral hand (n=19)	57.2 ± 22.5 [□]
Percentage recovered (n=20)	89.6 %
<i>Pinch strength</i>	
Operative hand (n=19)	11.2 ± 4.9 [□]
Contralateral hand (n=19)	14.0 ± 6.1 [□]
Percentage recovered (n=20)	79.4 %

[□] Value presented as mean and SD

Conclusions

- All patients had excellent return of strength and range of motion with minimal post operative pain.
- Serial radiographs showed the implants maintained position over long term follow-up.
- There were no dorsal subluxations or dislocations.
- PyroCarbon implant hemi-arthroplasty can successfully decrease pain due to CMC osteoarthritis.
- In contrast to previous reports, this group of patients all had favorable long-term results for PyroCarbon implant hemi-arthroplasty.