Partial trapeziectomy and Pyrocarbon interpositional arthroplasty for trapeziometacarpal joint osteoarthritis: analysis of the follow-up after a minimum of 5-years

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Background
Osteoarthritis of the base of the thumb is the second most common site of arthritis in the hand. Surgical treatment is indicated for persisting symptoms despite adequate non-operative treatment. Several surgical options have been described including trapeziectomy with or without some soft tissue reconstruction, carpometacarpal joint arthrodesis, metacarpal extension osteotomy, and prosthetic replacement. None has been shown to be better over another in terms of pain and function (Wajon et al., 2009). The goal of this study is to prove the efficacy of Pyrodisk, which is a biarticular convex disc, made of pyrocarbon designed to act as an interpositional spacer after minimal resection of the trapezo-metacarpal joint (TM). The implant and the TM joint are stabilized by an hemi-transfer of flexor radialis carpi passed through the implant itself.

Material and methods
This is a prospective case series analysing 27 consecutive Pyrodisk implants in 25 women for advanced osteoarthritis of the TM joint (Eaton II and III). Mean age 63 y.o. (range 48-76). Mean follow up 92 months (82-103). Functional assessment were made preoperatively and at 1, 3, 6 and 12 months postoperatively, and annually thereafter.

Clinical assessment:
Visual analogue scale (VAS) (10 cm) for pain
DASH score
Kapandji score for opposition
Key pinch strength: Jamar dynamometer (FEI, Irvington, New York, USA)
Patient’s satisfaction
Radiographic assessment:

Results
All patients experienced a reduction in the DASH score 1 month postoperatively. The VAS score for pain and opposition of the thumb also showed significant post-operative improvement. Further positive changes in the DASH score, VAS score and key pinch strength occurred progressively over the first postoperative year, whereas the opposition of the thumb steadily improved from the first to the sixth postoperative month. All the patients except one were satisfied with surgery. One patient had improvement in the DASH score but she still experienced an high VAS score and reduction of the pinch. She had hyperextension of the metacarpophalangeal joint. After 4 years she underwent further surgery (trapeziectomy and Ceruso’s arthroplasty). Two patients were lost at 5 years follow-up for death.

Conclusions
Partial trapeziectomy with pyrocarbon arthroplasty may prove to be a successful option for the treatment of trapeziometacarpal joint osteoarthritis. Further long-term comparative studies are warranted. However our study did not demonstrate superior outcomes compared to other studies of trapeziectomy with or without suspensionplasty. Our data are similar to others found in literature for the same implant (Barrera-Ochoa et al., 2015). The extra-cost of using an implant are not justified.

References
Barrera-Ochoa S, Vidal-Torrason N, Correa Varquez E, et al. Pyrocarbon interposition (Pyrodisk) implant for trapeziometacarpal osteoarthritis: minimum of 5 year follow-up