

PRÓTESIS TRAPECIOMETACARPIANA: CÓMO Y POR QUÉ

Alejandro García Reza
FEA Cirugía Ortopédica y Traumatología
Complejo Hospitalario Universitario de Pontevedra





HISTORIA



Primer diseño en
1971 (Le Caffinière)

- Prótesis cementada
- Alta tasas de aflojamiento
- Resultados iniciales decepcionantes

2ª generación en los
'90

- Con modificaciones en el diseño y la fijación
- Algunas desaparecieron por persistencia de fallos

La mayoría se
desarrollan en Europa

- En USA se colocan en el 2% de los pacientes
- En Francia o Bélgica se ofrece x2/x3.5 respecto a trapezectomía



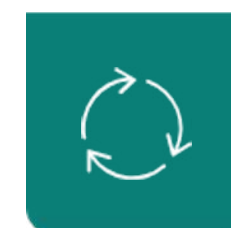
Table 1 Main different types of TCP	
1971	Caffinière (De la) (Formerly Howmedica, UK)
1982	Braun-Cutter (SBI/Avanta Orthopaedics, San Diego, CA, USA)
1985	Guepar I (Alnot) No commercialized
1986	Steffee
1987	Cooney (Mayo-Clinic prosthesis)
1989	Roseland 2 (DePuy International Ltd, Leeds, England) No commercialized
1990	Moje Acamo®
1990	Ledoux/Carrat®: 1st noncemented TCP (DIMSO/Stryker) No commercialized
1991	Arpe® (Zimmer Biomet, Warsaw, IN, USA)
1994	Ivory® (Stryker Corporate Kalamazoo, MI, USA)
1996	Elektra® (formerly, SBI Inc, Morrisville, PA, USA)
1996	Avanta® (Avanta Orthopaedics, San Diego, CA, USA)
1997	Rubis II®
1999	Maia® (Lepine, Lyon, France)
1999	Nahigian prosthesis
2000	Camarque® (France) No commercialized
2003	Guepar II
2006	Isis® (Biotech, Evolutis)
2013	Moovis® (Stryker Corporate Kalamazoo, MI, USA)
2014	Touch® (KeriMedical, Geneva, Suisse)

FILOSOFÍA Y TIPOS



Principio de “ball-and-socket”

Reestablecer el centro de rotación normal de la articulación TM



Centro de rotación

Suele estar en el trapecio



Amplia modularidad y variedad de implantes

Vástagos: HA o cementados
Copas: hemisféricas, cónicas, atornilladas,...
Modularidad en cuellos o insertos
Doble movilidad



Pares de ficción

Metal-metal, metal-PE, cerámica-cerámica

VARIEDAD DE MODELOS PROTÉSICOS



Elektra

- metal-metal
- cúpula cono



Rubis

- metal-metal
- cúpula atornillada
- modelo invertido



De La Caffinière

prótesis cementada



Moje Acamo

- todo cerámica
- no cementada



MAIA

- DM o no DM
- copa hemisférica

INDICACIONES

1

Dolor en la articulación
CMC1

3

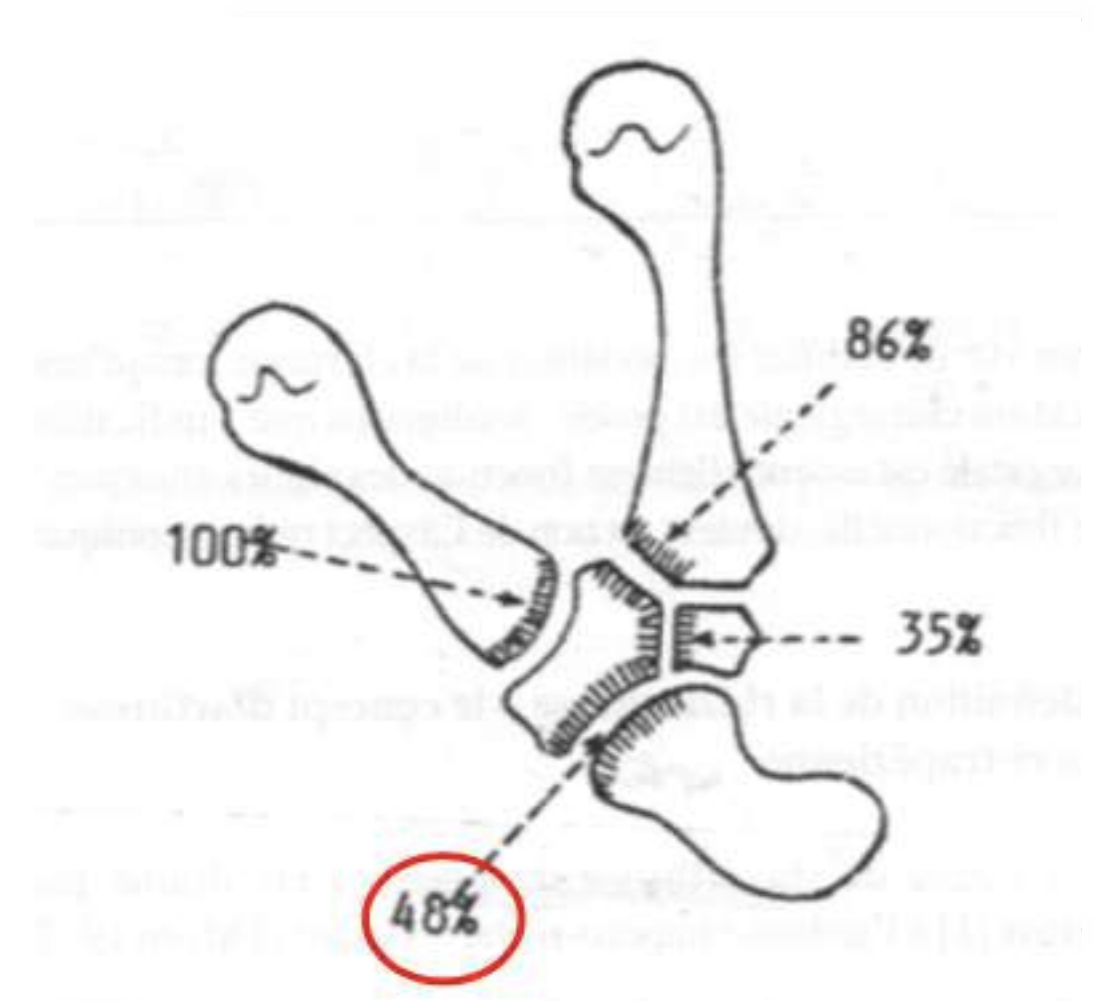
Fracaso medidas
conservadoras

2

Grado II-III Eaton
¿Grado IV asintomático?

4

¿Artrosis STT?:



ARTROSIS STT

Review > [Orthop Clin North Am.](#) 2019 Oct;50(4):489-496. doi: 10.1016/j.ocl.2019.05.004.

Epub 2019 Jul 5.

Arthritis of the Thumb Interphalangeal and Finger Distal Interphalangeal Joint

[John C Wu](#)¹, [James H Calandruccio](#)², [William Jacob Weller](#)², [Peter R Henning](#)²,
[Colin W Swigler](#)²

Affiliations + expand

PMID: 31466664 DOI: [10.1016/j.ocl.2019.05.004](#)

> [Hand Surg Rehabil.](#) 2023 Feb;42(1):45-50. doi: 10.1016/j.hansur.2022.11.007. Epub 2022 Nov 17.

Scaphotrapeziotrapezoid joint loading during key pinch grip before and after trapeziometacarpal arthroplasty: a cadaver study

[L Athlani](#)¹, [D Motte](#)², [M Bergere](#)³, [J Mottet](#)⁴, [B Prandi](#)⁵

Affiliations + expand

PMID: 36403734 DOI: [10.1016/j.hansur.2022.11.007](#)

**La artrosis STT no es,
habitualmente, sintomática**

**La prótesis CMC no incrementa
la carga sobre la articulación STT**

**La ARTROSIS STT sin repercusión clínica
NO es una contraindicación para la
prótesis CMC**



CONTRAINDICACIONES



Artrosis STT sintomática



Calidad ósea insuficiente



Trabajadores manuales

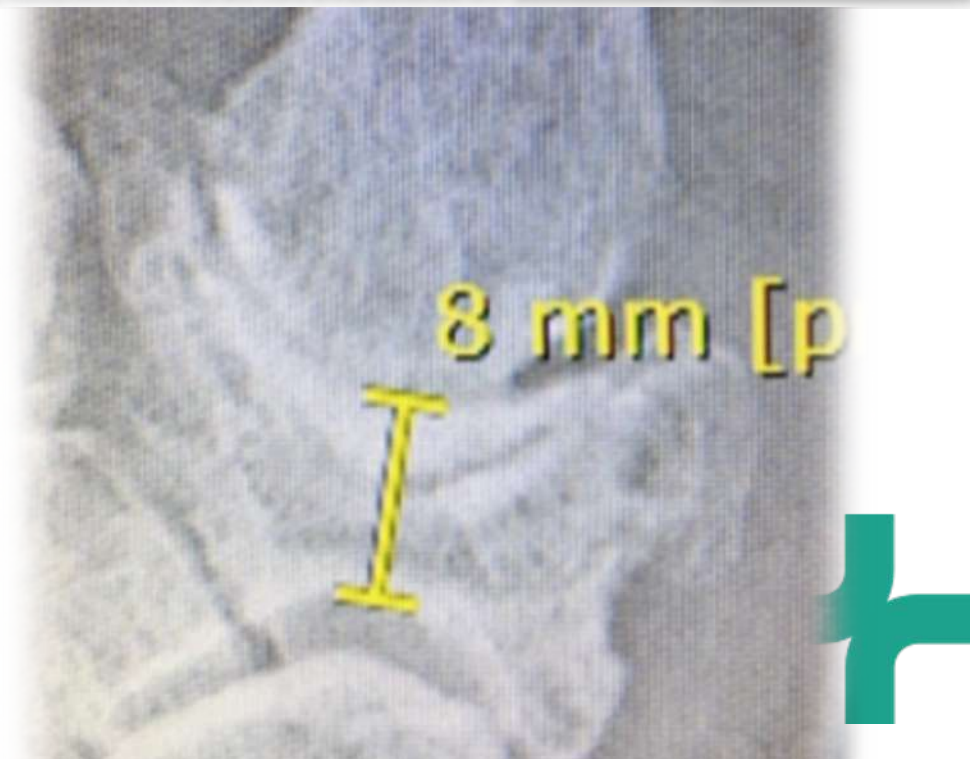
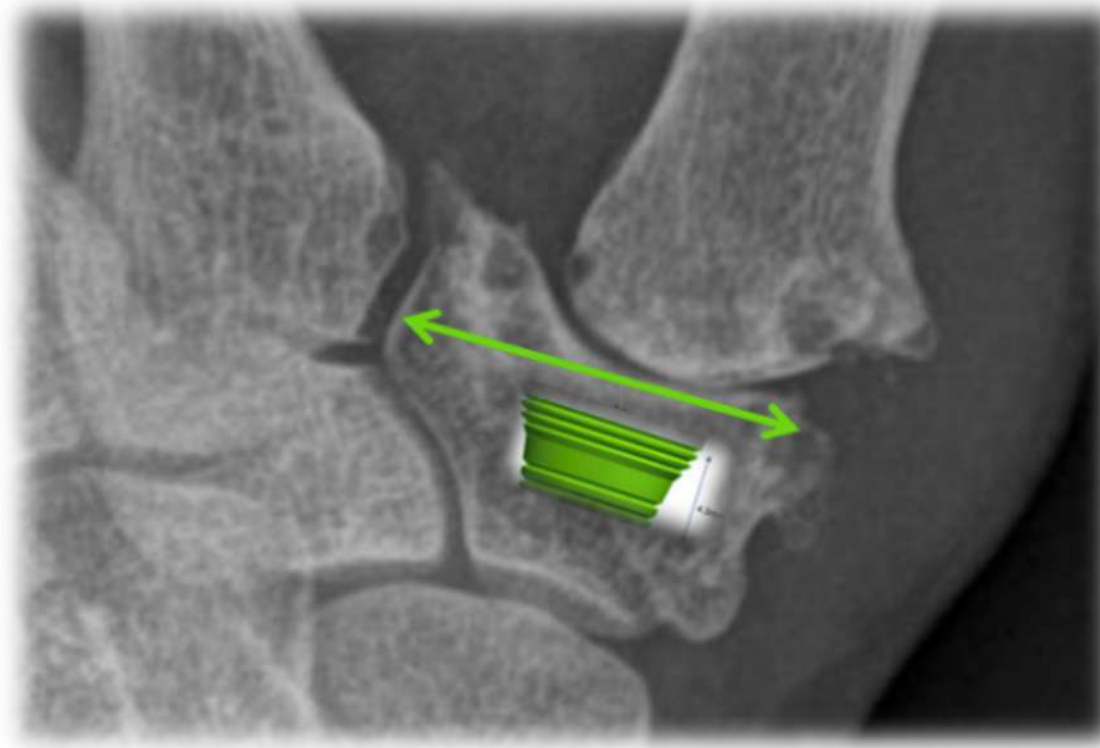


Relacionado con el trapecio:

con fuerza excesiva

CONTRAINDICACIONES DEL TRAPECIO

trapezial tilt = 135°



- ☐ <10mm profundidad (¿hasta 7-8mm?)
- ☐ <15mm anchura
- ☐ ¿Displasia del trapecio?

Total joint replacement for osteoarthritis of the carpometacarpal joint of the thumb: why and how?

Joris Duerinckx¹ and Frederik Verstreken²

¹Ziekenhuis Oost-Limburg, Genk, Belgium
²Monica Hospital, Antwerp, Belgium

Correspondence
should be addressed
to J Duerinckx
Email
joris.duerinckx@zol.be



Recuperación **precoz**



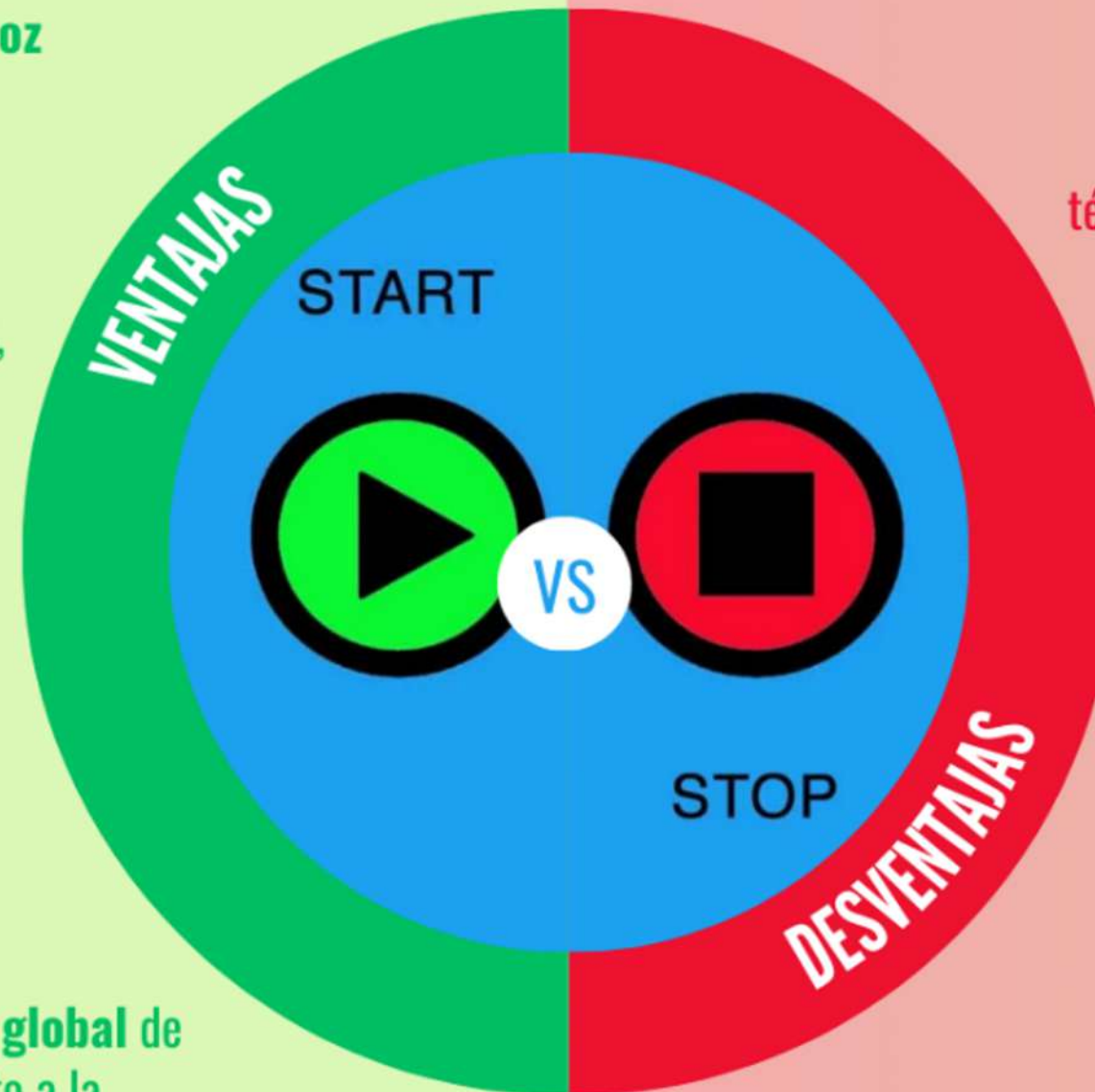
Restaurar **longitud** del 1ºMTC,
alineación y cosmética



No requiere de injerto o
plastia tendinosa



Mayor **satisfacción global** de
los pacientes respecto a la
trapeziectomía



Procedimiento
técnicamente **demandante**



Mayor tasa de **complicaciones**



Coste incrementado



STUDY PROTOCOL

Open Access

Cost-effectiveness and cost-utility
of the ball-and-socket trapeziometacarpal
prosthesis compared to trapeziectomy
and ligament reconstruction: study protocol
for a randomized controlled clinical trial

Serafín Lirio-Palmero^{1*}, Guillem Salva-Coll¹, Aina María Yáñez-Juan² and Eduardo Sánchez-Iriso³



RESULTADOS

Randomized Controlled Trial > J Hand Surg Eur Vol. 2023 Oct;48(9):884-894.

doi: 10.1177/17531934231185245. Epub 2023 Jul 17.

Total joint arthroplasty versus trapeziectomy in the treatment of trapeziometacarpal joint arthritis: a randomized controlled trial

Tjeerd R de Jong¹, Elske E D J Bonhof-Jansen², Sander M Brink³, Ramon P de Wildt⁴, Jeroen H van Uchelen⁵, Paul M N Werker⁶

1 Mejoría en fuerza y balance articular

No superioridad en Michigan Questionnaire al año

2 Mejores resultados clínicos

Cirugía de elección en rizartrosis sin artrosis STT

3 Mejores resultados a las 6 semanas

No diferencias a los 6 meses o 1 año



Randomized Controlled Trial > Hand (N Y). 2024 Nov;19(8):1260-1268.

doi: 10.1177/15589447231185584. Epub 2023 Jul 23.

Interposition Arthroplasty versus Dual Cup Mobility Prosthesis in Treatment of Trapeziometacarpal Joint Osteoarthritis: A Prospective Randomized Study

Matteo Guzzini¹, Leopoldo Arioli¹, Alessandro Annibaldi¹, Stefano Pecchia¹, Francesca Latini¹, Andrea Ferretti¹

Acta Orthopaedica 2023; 94: 224–229

224

Total joint arthroplasty versus resection-interposition arthroplasty for thumb carpometacarpal arthritis: a randomized controlled trial

Sebastian M KLIM^{1,a}, Reingard GLEHR^{2,a}, Armin GRAEF¹, Florian AMERSTORFER¹, Andreas LEITHNER¹, and Mathias GLEHR¹



Acta Orthopaedica

Total joint arthroplasty for thumb carpometacarpal joint osteoarthritis: a systematic review and meta-analysis of randomized controlled trials

Rasmus LIUKKONEN ¹, Venla-Linnea KARJALAINEN ¹, Reetta KVIST ², Matias VAAJALA ¹, Ville PONKILAINEN ², and Teemu KARJALAINEN ^{2,3}

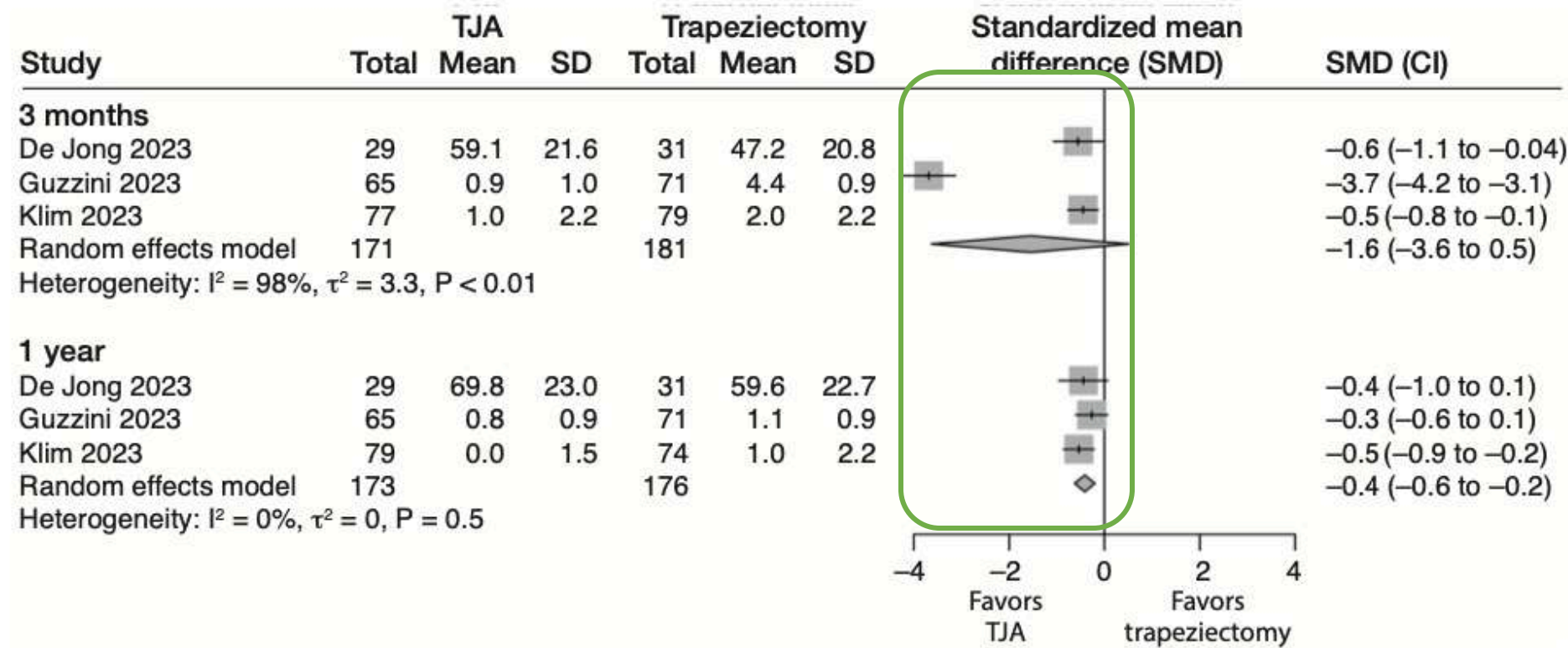


Figure 2. Forest plot for pain. Results are reported separately after 3-month and 1-year follow-up. TJA = total joint arthroplasty, SD = standard deviation, CI = confidence interval.

DOLOR

Conclusion — Transient benefit in hand function for TJA implies that it could be a preferable option over trapeziectomy for people who consider fast postoperative recovery important. However, current evidence fails to inform us if TJA carries long-term higher risks of revisions compared with trapeziectomy.

Beneficio transitorio para la prótesis sobre la trapezectomía
Opción preferente en el paciente que desea recuperación rápida

Sin evidencia actual sobre los riesgos de revisión a largo plazo respecto a trapezectomía

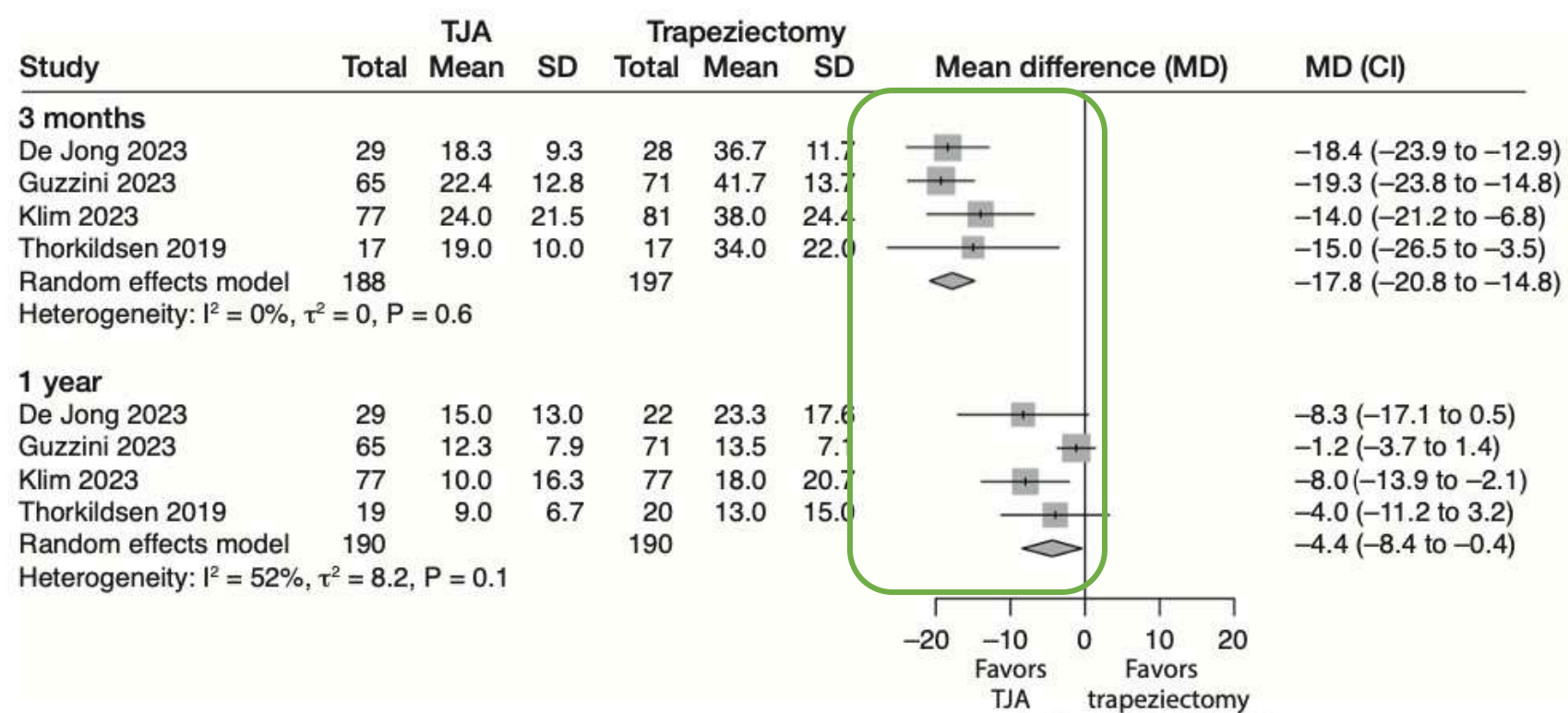


Figure 3. Forest plot for DASH score. Results are reported separately after 3-month and 1-year follow-up. DASH = Disabilities of the Arm, Shoulder, and Hand. See legend to Figure 2 for further abbreviations.

DASH SCORE

COMPLICACIONES



Inestabilidad



Fractura



Aflojamiento



Fallo de



Desgaste PE



Higher complication rate

Compared to resection arthroplasty, the complication rate of TJA is higher. Most complications are the consequence of poor planning or poor surgical technique and can be avoided.

Abstract

In this retrospective study, we report a series of 80 Arpe prostheses for trapeziometacarpal osteoarthritis in 63 patients. Twenty-seven prostheses (20 patients) were lost to follow-up. Twenty-one were revised, eight of them during the first year after operation. The calculated cumulated implant survival rate was 85% at 10 years but could be lower due to the lack of information on the patients lost to follow-up. The number of complications due to technical errors was high; but after we had done 30 cases, the number of early revisions decreased markedly. At follow-up, 23 of 32 thumbs were totally free of pain, and the patients were satisfied with 31 thumbs. We conclude that the implant survival declines progressively in the long run, with a survival

LUXACIÓN PROTÉSICA

- ✓ Errores técnicos
 - Suelen ocurrir en el postoperatorio inmediato o temprano
- ✓ Dos razones principales
 - Pobre orientación de la cúpula en el trapecio
 - Resección incompleta de los osteofitos
- ✓ Luxaciones tardías
 - Suelen ser secundarias a traumatismos o desgaste del PE



COLOCACIÓN DE LA CÚPULA

- 1 **Inclinación dorsal**
Incrementa el riesgo de luxación
- 2 **Inclinación medial o lateral**
Mayor a 20° incrementa el riesgo
- 3 **Posición**
Debe ser **CENTRAL** y **PARALELA** a la línea articular proximal

Full Length Article

JHS(E)

The effect of cup orientation on stability of trapeziometacarpal total joint arthroplasty: a biomechanical cadaver study

Journal of Hand Surgery
(European Volume)
0[0] 1-6
© The Author(s) 2019
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/1753193419851775
journals.sagepub.com/home/jhs
SAGE

Annelien Brauns, Pieter Caekebeke and Joris Duerinckx

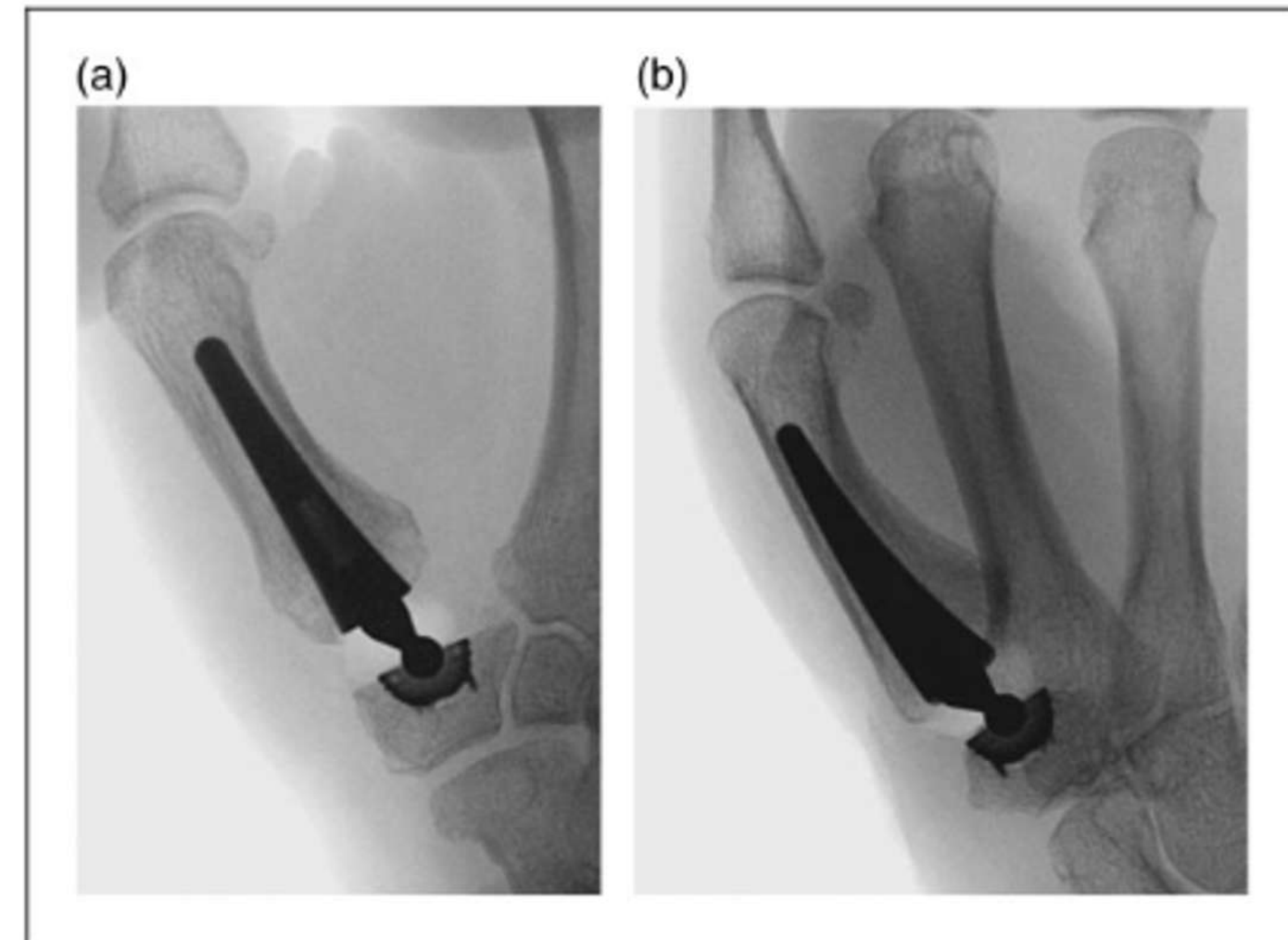


Figure 4. Radiographs showing correct cup placement in the trapezium, parallel with the proximal articular surface of the trapezium on both the posteroanterior and lateral views.

TASA DE LUXACIÓN ANTES DE LA DOBLE MOVILIDAD...



+ 8%

> [Chir Main.](#) 2005 Feb;24(1):24-8. doi: 10.1016/j.main.2004.11.003.

[Results of the ARPE trapezometacarpal prosthesis: a retrospective study of 37 cases]

[Article in French]

[P Jacoulet](#) ¹

Affiliations + expand

PMID: 15754707 DOI: [10.1016/j.main.2004.11.003](#)

+ 4.5%

> [Hand Surg Rehabil.](#) 2016 Jun;35(3):190-198. doi: 10.1016/j.hansur.2016.02.005.

Epub 2016 May 31.

Complications and failures of the trapeziometacarpal Maia[®] prosthesis: A series of 156 cases

[M Bricout](#) ¹, [J Rezzouk](#) ²

Affiliations + expand

PMID: 27740461 DOI: [10.1016/j.hansur.2016.02.005](#)

+ 7.3%

> [J Hand Surg Eur Vol.](#) 2020 Jun;45(5):458-464. doi: 10.1177/1753193419899843.

Epub 2020 Jan 28.

Results of 110 IVORY[®] prostheses for trapeziometacarpal osteoarthritis with a minimum follow-up of 10 years

[Alain Tchurukdichian](#) ^{1 2}, [David Guillier](#) ¹, [Vivien Moris](#) ¹, [Leslie-Ann See](#) ¹, [Yvan Macheboeuf](#) ¹

Affiliations + expand

PMID: 31992116 DOI: [10.1177/1753193419899843](#)

+ 5%

> [Chir Main.](#) 2010 Dec;29(6):360-5. doi: 10.1016/j.main.2010.09.025. Epub 2010 Oct 21.

[Results of the treatment of basal thumb osteoarthritis by Rubis II prosthesis after more than 5 years. A retrospective study of 118 cases]

[Article in French]

[C Maes](#) ¹, [J-L Dunaud](#), [M Moughabghab](#), [S Benaissa](#), [L Henry](#), [F Guériat](#)

Affiliations + expand

PMID: 21075665 DOI: [10.1016/j.main.2010.09.025](#)

DOBLE MOVILIDAD

Mismo concepto de doble movilidad que en la PTC

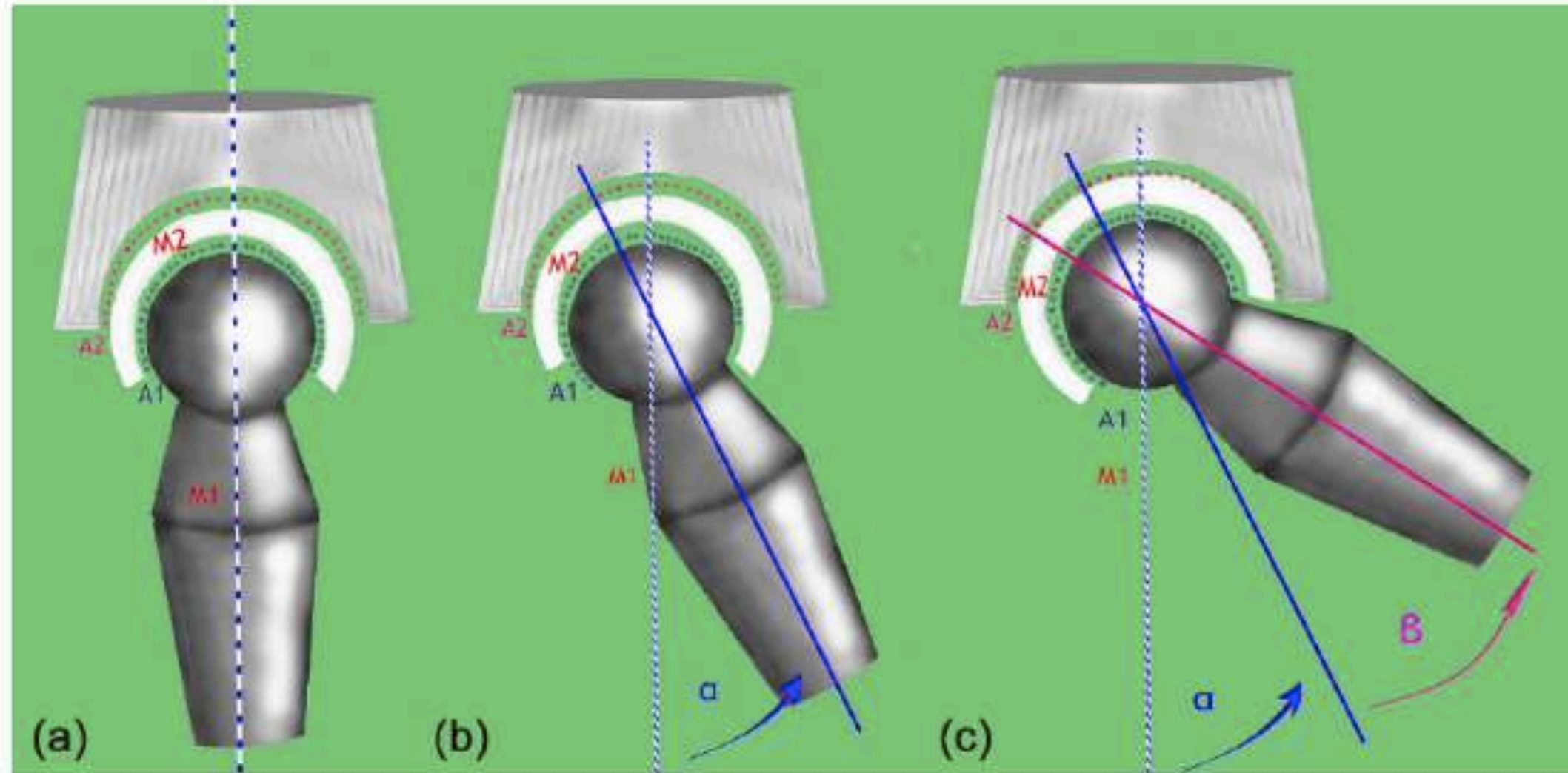


Figure 1. Dual mobility concept.

Note. (a) M1 = neck extremity, M2 = PE cup, A1 = articulation M1/M2, A2 = articulation M2/trapezoidal implant. (b) A1 is mobilized when the neck comes up to the PE cup at an "alpha" angle. (c) Up to this "alpha" angle, only A2 is moving at a "beta" angle. PE = polyethylene.



TASA DE LUXACIÓN **DESPUÉS** DE LA DOBLE MOVILIDAD...



Review > J Hand Surg Eur Vol. 2024 Oct 28;17531934241292249.

doi: 10.1177/17531934241292249. Online ahead of print.

Outcomes of dual-mobility trapeziometacarpal arthroplasties: a systematic review

+ 0%

Lucy Maling ^{1 1}, Aaron Rooney ^{1 1}

Affiliations + expand

PMID: 39465886 DOI: 10.1177/17531934241292249

> J Hand Surg Eur Vol. 2023 Jun;48(6):566-574. doi: 10.1177/17531934231156280.

Epub 2023 Feb 28.

Dual mobility prosthesis for trapeziometacarpal osteoarthritis: results from a prospective study of 55 prostheses

+ 0,6%

Florian Falkner ^{1 2}, Arman Mahmut Tümkaya ^{1 2}, Benjamin Thomas ^{1 2}, Benjamin Panzram ³,
Berthold Bickert ^{1 2}, Leila Harhaus ^{1 2}

Affiliations + expand

PMID: 36855785 DOI: 10.1177/17531934231156280

Literature review

Dual mobility trapeziometacarpal prosthesis: A review of the current literature



+ 0%

Eleonora Villari ^a, Laura Langone ^{a,*}, Federico Pilla ^a, Ilaria Chiaramonte ^b, Laura Ramponi ^a,
Cesare Faldini ^a

^a 1st Orthopaedic, Traumatologic Clinic, IRCCS Istituto Ortopedico Rizzoli, Via G.B. Pupilli, 1, 40136, Bologna, Italy

^b Ospedale Degli Infermi Faenza, Viale Stradone, 9, 48018 Faenza, Italy

FRACTURA DEL TRAPECIO



- + Inmovilización con férula
- + Osteosíntesis
- + Trapezectomía



AFLOJAMIENTO

Ojo con la calidad ósea en la planificación preqx

> J Hand Surg Eur Vol. 2021 Feb;46(2):146-153. doi: 10.1177/1753193420963255.
Epub 2020 Oct 20.

The mechanical fixation of a cementless conical cup in cortical versus cancellous trapezial bone: an experimental study

Janni K Thillemann ^{1 2}, Lene Dremstrup ¹, Torben B Hansen ^{1 2}, Maiken Stilling ^{2 3}

Affiliations + expand

PMID: 33079604 DOI: [10.1177/1753193420963255](https://doi.org/10.1177/1753193420963255)

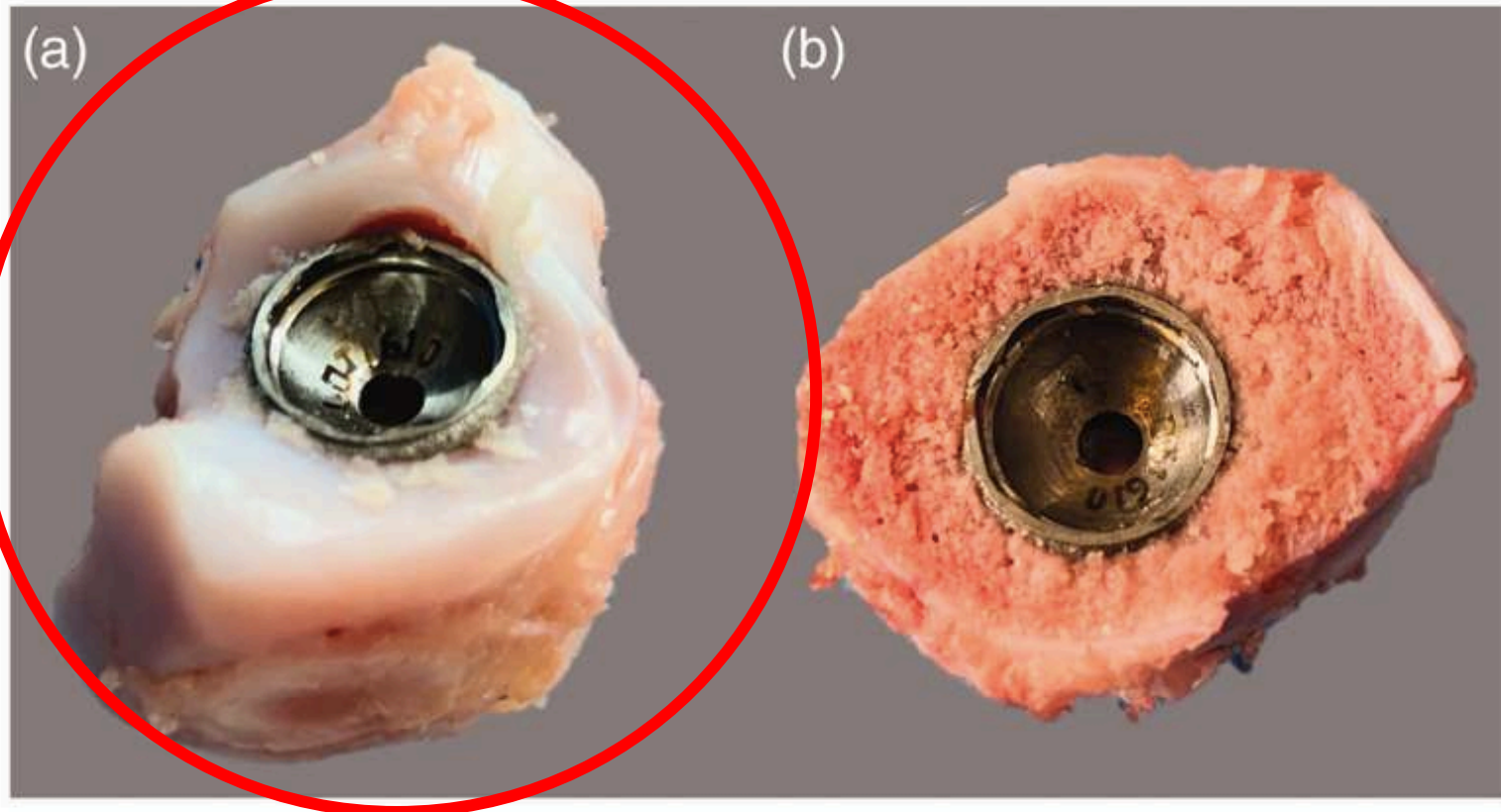


Figure 2. The Konos cup inserted in a saddle-shaped pig bone by (a) cortical bone fixation and in (b) cancellous bone.



PARA LLEVAR A CASA...



1

Resultados clínicos prometedores

Mejores datos en el postoperatorio temprano respecto a la trapezectomía

2

La doble movilidad, gold standard

Ha reducido drásticamente la tasa de luxación

3

Ausencia de estudios a largo plazo

No existen estudios prospectos aleatorizados de nivel I a medio o largo plazo

4

¿Relación coste-efectividad?

Ausencia de estudios coste-utilidad y coste-efectividad en comparación con la trapezectomía

¡MUCHAS GRACIAS!

