TOUCH® SCIENTIFIC PUBLICATIONS

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TOUCH® SCIENTIFIC PUBLICATIONS

1. DUAL MOBILITY TRAPEZIOMETACARPAL PROSTHESIS: A PROSPECTIVE STUDY OF 107 CASES WITH A FOLLOW-UP OF MORE THAN 3 YEARS

Lussiez B, Falaise C, Ledoux P. Dual mobility trapeziometacarpal prosthesis: a prospective study of 107 cases with a follow-up of more than 3 years. J Hand Surg Eur Vol. 2021 Nov;46(9):961-967.

Abstract

We report the results of a prospective study using a dual mobility trapeziometacarpal prosthesis (Touch®) in 107 patients with a minimum follow-up of 3 years.

One-hundred and two patients (95%) were very satisfied or satisfied with the functional outcomes and the mean pain intensity in visual analogue scale decreased from 7.4 to 0.8 ($p<0.001$). Thumb opposition (Kapandji score) index increased from an average of 8.0 to 9.4, while the mean QuickDASH score improved from 38 preoperatively to 20 at follow-up ($p<0.01$). Key-pinch strength improved from 3.5 kg (range 0.5–9.5) to 5.5 kg (range 3.0–11.5). There was a 4.6% rate of complications, including cup loosening and wear of polyethylene, which required revision, but no cases of prosthetic dislocation were seen.

Applying the dual mobility principle to trapeziometacarpal arthroplasty may significatively improve the stability of these prostheses. Radiolucent zones around the components of the prostheses are not systematic predictors of future loosening.

TOUCH® SCIENTIFIC PUBLICATIONS

2. TOUCH® DOUBLE MOBILITY ARTHROPLASTY FOR TRAPEZIOMETACARPAL OSTEOARTHRITIS: OUTCOMES FOR 92 PROSTHESES

Gonzalez-Espino P, Pottier M, Detrembleur C, Goffin D. Touch® double mobility arthroplasty for trapeziometacarpal osteoarthritis: outcomes for 92 prostheses. Hand Surg Rehabil. 2021 Dec;40(6):760-764.

Abstract

Trapeziometacarpal prostheses have been used in the treatment of first carpometacarpal joint osteoarthritis for many years. No studies have demonstrated statistical superiority over gold-standard trapeziectomy, but they have been proved to enable shorter convalescence, better pain relief and faster functional recovery. The aims of the present study were to report functional results in a large cohort treated with the Touch® new-generation dual mobility trapeziometacarpal prosthesis, with comparison to results in the literature. A retrospective study included 92 Touch® prostheses. Assessment comprised pre- and post-operative pain, QuickDASH score and satisfaction rate.

Mean follow-up was 1.33 ± 0.4 years. Pain significantly improved after surgery. Functional QuickDASH scores did not significantly differ from those reported in the age-matched general population. Return to work was fast, at 2.6 months. Satisfaction scores were high. There were no major complications such as dislocation, fracture or loosening, but the rate of De Quervain's tenosynovitis was higher than in other studies.

The Touch® prosthesis appeared to be a safe and stable implant, providing good satisfaction and very good functional scores and fast return to work and leisure activity. Considering the high rate of postoperative De Quervain's tenosynovitis, we suggest opening the first sheath of the extensors tendons while positioning the prosthesis.

TOUCH® SCIENTIFIC PUBLICATIONS

3. TOUCH® PROSTHESIS FOR THUMB CARPOMETACARPAL JOINT OSTEOARTHRITIS: A PROSPECTIVE CASE SERIES

Froschauer SM, Holzbauer M, Mihalic JA, Kwasny O. TOUCH® Prosthesis for Thumb Carpometacarpal Joint Osteoarthritis: A Prospective Case Series. J Clin Med. 2021 Sep 10;10(18):4090.

Abstract

The dual mobility concept currently represents the newest generation of thumb carpometacarpal prostheses. The aim of this study was to evaluate the short-term outcomes of TOUCH® prosthesis. From September 2019 to July 2020, 40 prosthesis were implanted in 37 patients suffering from symptomatic stage III osteoarthritis.

All included patients with a median age of 57.7 (IQR: 13.6) finished the systematic follow-up regimen (4, 8, 16 weeks, 6, and 12 months postoperatively). All parameters significantly improved ($p < 0.0001$) compared to the preoperative status. At 1 year follow-up, median DASH Scores decreased from 54 (IQR 22) to 12 (IQR 28) and pain levels improved from 8 (IQR 2) to 1 (IQR 2). Moreover, key-pinch strength increased from 3.8 (2.0) to 5.8 (2.5), while palmar abduction, radial abduction, and opposition also significantly improved. 35/37 patients were satisfied with the functional outcomes. We observed 10 complications, of which 6 were tendon-related issues, and 2 were due to an inappropriate choice of neck size. We could detect one dislocation but no evidence of cup loosening, tilting or subsidence in any patient.

Despite the occurrence of some complications, we recommend implantation of this prosthesis type due to favorable clinical and radiological performance.

TOUCH® SCIENTIFIC PUBLICATIONS

4. EARLY RESULTS OF DOUBLE MOBILITY TRAPEZIOMETACARPAL TOTAL JOINT ARTHROPLASTY: PROSPECTIVE SERIES OF 82 TOUCH PROSTHESIS

Van Melkebeke L, Caekebeke P, Duerinckx J. Early results of double mobility trapeziometacarpal total joint arthroplasty: prospective series of 82 Touch prosthesis. Minerva Orthop 2022;73:241-6.

Abstract

BACKGROUND: In trapeziometacarpal total joint arthroplasty, variable results have been described. Continuous advancements in implant design have improved outcome, but dislocation remains an important concern. For this reason, a new generation of prosthesis that is based on the concept of “double mobility” has been recently introduced. The goal of this study was to evaluate the short-term functional and radiological outcome of these new implants.

METHODS: Eighty-two double mobility trapeziometacarpal prosthesis (Kerimedical Touch, Geneva, Switzerland) were included. Follow-up averaged 11 months (3-22 months). Thumb range of motion, key pinch and grip strength were prospectively evaluated before surgery and at 6 weeks, 3 months and 1 year postoperatively. Pain during rest, pain during activity, hand function according to the Quick-DASH Score and patient satisfaction were assessed. Most recent radiographs of the implant of were evaluated. Patient charts were reviewed for complications related to the surgery.

RESULTS: Thumb motion and strength improved quickly and significantly after surgery. No dislocations occurred. Survival rate was 100%. No radiological signs of loosening or subsidence were observed. One year or later after surgery, 51% of patients had complete pain relief, mean qDASH Score was 9.3 and 93% of patients would have the same surgery again.

CONCLUSIONS: Early postoperative results after Touch double mobility (Kerimedical Touch) trapeziometacarpal total joint arthroplasty are promising.

5. METACARPOPHALANGEAL HYPEREXTENSION IN THUMB BASAL JOINT OSTEOARTHRITIS: RADIOLOGICAL STUDY AND IMPLICATIONS FOR TREATMENT

Ledoux P. Metacarpophalangeal hyperextension in thumb basal joint osteoarthritis: Radiological study and implications for treatment. Hand Surg Rehabil. 2023 Feb;42(1):56-60

Abstract

We report a series of 95 consecutive patients operated on for total trapeziometacarpal joint replacement, screening for radiological characteristics to differentiating patients with and without preoperative MCP hyperextension. Loss of thumb column length and metacarpal head circularity on lateral view were quantified. Statistically, a combination of reduced length and circular metacarpal head was a determining factor for MCP hyperextension. We therefore believe it is essential to restore thumb column length in surgery for trapeziometacarpal osteoarthritis and to avoid trapeziectomy in patients with a circular head on lateral view.

6. DUAL MOBILITY PROSTHESIS FOR TRAPEZIOMETACARPAL OSTEOARTHRITIS: RESULTS FROM A PROSPECTIVE STUDY OF 55 PROSTHESES

Falkner F, Tümkaya AM, Thomas B, Panzram B, Bickert B, Harhaus L. Dual mobility prosthesis for trapeziometacarpal osteoarthritis: results from a prospective study of 55 prostheses. J Hand Surg Eur Vol. 2023 Feb 28. Epub ahead of print.

Abstract

This prospective study evaluated outcomes after trapeziometacarpal joint replacement with a dual mobility prosthesis (Touch®) in 55 thumbs (52 patients) with a mean follow-up of 25 months (range 12-36). Pre- and postoperative assessments included pain, range of motion, the Kapandji index, pinch- and grip strength, as well as functional scores and radiological parameters.

Mean preoperative metacarpophalangeal joint hyperextension of 19° (range 15°-28°) showed a significant correction after 1 year with a mean value of 2° (range 0°-5°). Mean Quick Disabilities of the Hand, Shoulder and Arm score was 14 (range 6-28), and Michigan Hand Questionnaire 82 (range 67-92).
No revisions due to infection, loosening, dislocation or material failure occurred during follow-up.

The dual mobility trapeziometacarpal joint prosthesis was a reliable treatment option to decrease pain, improve motion, strength and pre-existing metacarpophalangeal joint hyperextension at short-term follow-up.

7. LOW COMPLICATION RATE AND HIGH IMPLANT SURVIVAL AT 2 YEARS AFTER TOUCH® TRAPEZIOMETACARPAL JOINT ARTHROPLASTY

Herren DB, Marks M, Neumeister S, Schindele S. Low complication rate and high implant survival at 2 years after Touch® trapeziometacarpal joint arthroplasty. J Hand Surg Eur Vol. 2023 Jun 13. Epub ahead of print.

Abstract

We analysed complications, revision surgeries, and patient-reported and clinical outcomes 2 years after trapeziometacarpal joint implant arthroplasty using the Touch® prosthesis.

Of 130 operated patients with trapeziometacarpal joint osteoarthritis, four had to be revised owing to implant dislocation, loosening or impingement, leading to an estimated 2-year survival rate of 96% (95% confidence interval: 90 to 99). Of 101 patients available for the 2-year follow-up, complications occurred in 17, with the most frequent being de Quervain stenosing vaginosis (n = 6) and trigger thumb (n = 5).

Pain at rest decreased significantly from a median value of 5 (interquartile range [IQR]: 4 to 7) before surgery to 0 (IQR: 0 to 1) at 2 years. Key pinch strength increased significantly from 4.5 kg (IQR: 3.0 to 6.5) to 7.0 kg (IQR: 6.0 to 8.0).

We recommend surgery with the Touch® prosthesis as the standard procedure for patients with isolated trapeziometacarpal joint osteoarthritis because of the high survival rate and promising outcomes at 2 years.

8. SHORT-TERM RECOVERY AFTER IMPLANT VERSUS RESECTION ARTHROPLASTY IN TRAPEZIOMETACARPAL JOINT OSTEOARTHRITIS

Herren DB, Marks M, Neumeister S, Schindele S. Short-term recovery after implant versus resection arthroplasty in trapeziometacarpal joint osteoarthritis. J Hand Surg Eur Vol. 2023 Jul 21. Epub ahead of print.

Abstract

We compared the short-term recovery of patients treated with trapeziometacarpal joint (TMJ) implant arthroplasty versus resection-suspension-interposition (RSI) arthroplasty.

Implant patients (n=147) had a better 3-month postoperative brief Michigan Hand Outcomes Questionnaire (MHQ) score (mean 82) compared to RSI patients (n=127), who had a mean score of 69. Key pinch strength at 3 months was also higher in the implant group compared to the RSI group (6.8 kg vs. 3.1 kg). At 1 year, both groups had similar brief MHQ scores, but key pinch remained higher in the implant group (7.0 kg vs. 3.9 kg [RSI]). After implant arthroplasty, employed patients returned to work after a mean of 44 days, which was significantly faster than the 84 days for RSI patients.

Patients after TMJ implant arthroplasty recover significantly faster in the first 3 postoperative months compared to RSI patients. However, 1-year postoperative outcomes are similar for both cohorts, with key pinch strength remaining higher for patients with TMJ implant arthroplasty.

9. INTERPOSITION ARTHROPLASTY VERSUS DUAL CUP MOBILITY PROSTHESIS IN TREATMENT OF TRAPEZIOMETACARPAL JOINT OSTEOARTHRITIS: A PROSPECTIVE RANDOMIZED STUDY

Guzzini M, Arioli L, Annibaldi A, Pecchia S, Latini F, Ferretti A. Interposition Arthroplasty versus Dual Cup Mobility Prosthesis in Treatment of Trapeziometacarpal Joint Osteoarthritis: A Prospective Randomized Study. Hand (N Y). 2023 Jul 23. Epub ahead of print

Abstract

Background: Osteoarthritis (OA) of the trapeziometacarpal (TMC) joint is a common cause of pain and functional disability of the hand and is the second most frequent site in the hand of OA. This prospective randomized study analyses and compares the outcomes and global assessment of 2 different surgical techniques for rhizarthrosis treatment: trapeziectomy with tendon interposition arthroplasty and total joint replacement with Touch® (KeriMedical; Geneva, Switzerland) TMC prosthesis.

Methods: The enrolled patients were randomly divided into 2 groups: group A included 71 patients (75 hands) treated with tendon interposition arthroplasty, while group B included 65 patients (72 hands) treated with total joint replacement. Clinical and radiological outcomes were collected before surgery and at 1, 3, 6, 12, and 24 months of follow-up.

Results: Although the values of all clinical tests performed during follow-up demonstrated statistically significant improvement over preoperative ones in both groups, patients treated with prosthesis showed faster improvement, especially in tests of strength and range of motion, which showed better results than patients treated with trapeziectomy and tendon interposition arthroplasty throughout the follow-up.

Conclusions: Our study suggests that joint replacement should be preferred to interposition arthroplasty as the treatment of rhizarthrosis, choosing the latter in case of prosthetic replacement complications or scaphoid-trapezium-trapezoid OA.

10. TIME TO RETURN TO WORK AFTER TOTAL TRAPEZIOMETACARPAL PROSTHESIS

Tchurukdichian A, Delgove A, Essid L, Moris V, di Summa PG, Camuzard O, Ornetti P, Zwetyenga N, Guillier D. Time to return to work after total trapeziometacarpal prosthesis. Hand Surg Rehabil. 2023 Sep;42(4):347-353

Abstract

Objectives: This study assessed return to work and prosthesis survival after trapeziometacarpal prosthesis surgery.

Material and methods: A multicenter retrospective study was carried out on patients operated on between 2002 and 2020. All working patients who had undergone trapeziometacarpal prosthesis surgery were included. Return to work was defined as resuming the same full-time position. Postoperative events and their specific treatment and failure to return to work were reported.

Results: 240 prostheses in 211 patients were included. The complications rate was 7.5%, with 97% prosthesis survival. 94.3% of patients returned to work, at a mean 48 days (range, 29-210 days; SD, 22.7 days), with no significant difference according to age. Twelve patients did not return to work, half of whom because of prosthetic complications.

Conclusion: Trapeziometacarpal arthroplasty enables most patients to return to work within 6 weeks. In this series, the prosthetic survival rate was 97%.

To be noted: prostheses used Ivory®, Moovis®, Touch®

11. [SHORT-TERM OUTCOMES OF TOUCH® PROSTHESIS FOR THUMB CARPOMETACARPAL JOINT]

Filuś D, Pavličný R. [Short-term Outcomes of Touch® Prosthesis for Thumb Carpometacarpal Joint]. Acta Chirurgiae Orthopaedicae et Traumatologiae Cechoslovaca. 2023 ;90(4):277-282. Language: CZE

Abstract

PURPOSE OF THE STUDY: Rhizarthrosis, a degenerative condition of the carpometacarpal joint of the thumb, affects mainly women. Surgical treatment is indicated once the non-operative treatment fails. Thumb carpometacarpal joint total arthroplasty constitutes one of the surgical treatment options. This study aims to evaluate the short-term functional and radiological outcomes of Touch® prosthesis with a minimum follow-up period, namely two years after surgery.

MATERIAL AND METHODS: The study presents the outcomes of a group of 56 endoprostheses implanted in 48 patients. The dual mobility Touch® prosthesis is evaluated. The group consisted of 41 women and 7 men, with the median age of the patients being 62 years. The patients were indicated for surgery after the non-operative treatment had failed. All of them suffered from stage II - IV osteoarthritis according to the Eaton-Littler classification. The range of motion - the opposition was assessed using the Kapandji score. The function and the pain were evaluated with the DASH questionnaire preoperatively and at 3 months, 6 months, 1 year and 2 years postoperatively.

RESULTS: After 24 months, 91.1% (51 patients) were satisfied with the surgical outcome. Altogether 8.9% of patients (5 patients) experienced postoperative exercise-induced pain, limitation of movement of the CMC joint or hand weakness. No dislocation or endoprosthetic loosening occurred in the evaluated group. Primary wound healing was reported in all patients and no superficial or deep infection was observed. The mean DASH score was 65.3 points preoperatively; at the 2-year follow-up, the mean score decreased to 10.8 points. The pain assessed in question 24 of the DASH questionnaire decreased from the mean value of 4.45 points to 1.2 points. After two years, the range of motion of all patients was 10/10 according to Kapandji.

DISCUSSION: There are plenty of surgical techniques to manage rhizarthrosis. All types of surgery have their pros and cons. Most endoprostheses used nowadays show good short-term, mid-term, and some of them even long-term outcomes in terms of survival. The Touch® prosthesis, characterized by dual mobility, is the 3rd generation thumb CMC prosthesis and in our study achieves comparable short-term outcomes to those reported by international literature. The use of the dual mobility design appears to be effective in reducing the dislocation rate.

CONCLUSIONS: The Touch® thumb CMC prosthesis achieves very good short-term functional and radiological outcomes. We can recommend the prosthesis provided the patients are followed-up for more than two years after surgery.

12. EXPERIENCE IN MAJOR COMPLICATIONS WITH TOTAL TRAPEZOMETACARPAL PROSTHESES

Sánchez-Crespo MR, Couceiro-Otero J, Del Canto-Alvarez FJ, Ayala-Gutiérrez H, Holgado-Fernández M. Experience in major complications with total trapezometacarpal prostheses. Rev Esp Cir Ortop Traumatol. 2023 Oct 31:S1888-4415(23)00225-4.

Abstract

Introduction: The treatment of rhizarthrosis using trapeziometacarpal prostheses (TMP) is increasing. Complications may lead to loss of the implant and result in salvage surgery. Our aim was to assess major complications with the use of some TMP models and their rescue.

Material and method: Retrospective study on TMP implanted between 2006 and 2021. Models studied: Arpe®, Elektra®, Ivory®, Maïa®, Isis® and Touch®. Demographic data were assessed, implant placement by radiographic study, technical data, complications, salvage surgeries and final survival.

Results: Review of 224 TMP, 45 Arpe® (95.5% survival, rate follow-up [R] 6-16 years), 5 Elektra® (80% survival, R 13-14), 14 Ivory® (92.8% survival, R 9-11), 7 Maïa® (100% survival, R 8-9), 115 Isis® (99.1% survival, R 1-8), 38 Touch® (100% survival, R 1-4). The medial angle of the dome with the proximal articular surface of the trapezium in the lateral plane, was: Arpe®: 8.85°, Elektra®: not assessable, Ivory®: 6.6°, Maïa®: 14.4°, Isis®: 3.8°, and Touch®: 5.95°. The Isis® was placed 100% with scopic guidance presenting a significantly lower angle respect to the medial angle of the dome with the proximal articular surface of the trapezium. As main complications, we observed 3.5% of dislocations and 4% of mobilisations, with the Elektra® being responsible for 47% of these. Nineteen salvage surgeries were performed, with 3% of the implants being lost.

Conclusions: Dislocation and mobilisation are the most observed complications, the Elektra® responsible for almost half of them. Correct placement and implant design appear to be crucial to avoid them in the short and long term.

13. DOES TRAPEZIUM REMODELING CORRELATE WITH CUP SHAPE?

Van Hove B, Caekebeke P, Duerinckx J. Does trapezium remodeling correlate with cup shape? Hand Surg Rehabil. 2024 Feb;43(1):101618.

Abstract

We investigated whether trapezium bone reaction was different following implantation of a trapeziometacarpal total joint replacement with a hemispheric or a conical cup. Fifty-three Keri Medical Touch implants with hemispheric cup and 53 with conical cup were prospectively followed up radiographically. We compared radiographs taken immediately and one year after surgery for cup subsidence, tilt, heterotopic ossification and loosening. Cup subsidence of at least 1 mm was detected in 4% of cases for both cup types. Additive bone reaction around the cup of more than 1 mm was present in 62% of conical cups and 47% of hemispheric cups. These were minor and there were no large ossifications with risk of impingement. Minor radiolucency was seen superficially at the implant-bone interface of 13% of the hemispheric cups and 9% of the conical cups. None of these bone reactions differed significantly according to cup design.

TOUCH® SCIENTIFIC PUBLICATIONS

14. FAILURE RATE AND EARLY COMPLICATIONS OF THUMB CARPPOMETACARPAL JOINT REPLACEMENT – A MULTICENTER RETROSPECTIVE STUDY OF TWO MODERN IMPLANT DESIGNS*

Farkash U, Sakhnini M, Dreyfuss D, Tordjman D, Rotem G, Luria S. Failure Rate and Early Complications of Thumb Carpometacarpal Joint Replacement-A Multicenter Retrospective Study of Two Modern Implant Designs. J Clin Med. 2023 Dec 25;13(1):121

Abstract

Joint replacement arthroplasty for the treatment of thumb osteoarthritis is gaining popularity as recent studies have demonstrated better pinch and grip strength and faster rehabilitation. Our aim was to identify early complications in modern implant designs using a multicenter study. A total of 381 patients who underwent thumb carpometacarpal replacement surgery in six participating hospitals were enrolled.
The complications included were fractures, dislocations, infections, tendon and nerve injuries, and complex regional pain syndrome. Major complications were defined as a failure to implant the prosthesis, revision surgery to remove the implant, and any other need for further surgical intervention. The secondary outcomes were any other complications treated non-surgically and the timing of the complications. Eleven procedures failed, and these patients were treated with trapeziectomies. Twelve other patients required repeat surgical interventions. Minor adverse events occurred in 25.4% of the cases, and transient irritation of the superficial radial nerve and De Quervain tendinopathy were the most prevalent complications.
Although this cohort depicted the learning curves of multiple surgeons, our study demonstrated low short-term failure rates. An inability to achieve primary stability of the cup in the trapezium was the leading cause of failure. Dislocations and other major complications with modern implants were very few.

**Two modern implants: Touch® and Maïa™*

15. MANAGEMENT OF THE CAPSULE IN TRAPEZIOMETACARPAL JOINT IMPLANT ARTHROPLASTY: RESECTION VERSUS REPAIR

Reischenböck V, Marks M, Imhof J, Schindele S, Herren DB. Management of the capsule in trapeziometacarpal joint implant arthroplasty: resection versus repair. J Hand Surg Eur Vol. 2024 Jan 31:17531934241227788

Abstract

We compared the effects of capsule resection versus capsule suturing in patients treated with a dual-mobility trapeziometacarpal joint prosthesis. We included 131 patients with capsular resection and 57 patients with repair.
The mean scores for pain and the brief Michigan Hand Outcomes Questionnaire were similar between the groups preoperatively and at 6 weeks and 1 year postoperatively. Mean key pinch strength was also similar in both groups before surgery and at 1 year, but higher in the capsular resection than in the suture group at 6 weeks. The incidence of complications reported throughout the 1-year postoperative period was not significantly different between the groups. One implant in the capsular resection group was revised for reasons most likely unrelated to capsule management.
We conclude that the capsule can be safely resected during trapeziometacarpal joint implant arthroplasty.

16. COMPARATIVE ANALYSIS OF PROSTHETIC (TOUCH) AND ARTHROPLASTIC SURGERIES FOR TRAPEZIOMETACARPAL ARTHROSIS: FUNCTIONAL OUTCOMES AND PATIENT SATISFACTION WITH A 2-YEAR FOLLOW-UP

Eleonora Piccirilli, Priscilla di Sette, Michele Rampoldi, Matteo Primavera, Chiara Salvati, Umberto Tarantino, Comparative Analysis of Prosthetic (Touch) and Arthroplastic Surgeries for Trapeziometacarpal Arthrosis: Functional Outcomes and Patient Satisfaction With a 2-Year Follow-Up, Journal of Hand Surgery Global Online, 2024.

Abstract

Purpose: Trapeziometacarpal (TMC) joint prosthesis poses its own challenges for the treatment of TMC arthrosis, especially when compared with the present gold standard, arthroplasty. The aim of this study was to highlight possible outcome differences and patients' satisfaction regarding the treatment of TMC arthrosis.

Methods: We evaluated 100 patients with TMC arthrosis treated in two centers and divided into two groups: group A received TMC prosthesis (Touch), whereas group B was treated with arthroplasty, with a 2-year follow-up period.

Results: In a comparative analysis, findings revealed group A's superiority in the shortened disabilities of the arm, shoulder and hand questionnaire scores at 1 and 6 months, with significant differences: 34.6% vs 67.1% and 2% vs 9.1%, respectively ($P < .0001$). Although group A also showed lower the shortened disabilities of the arm, shoulder and hand questionnaire scores at 3 months, this was not statistically significant. Notably, at 1 and 2 years, group A demonstrated better scores without statistical significance. The Kapandji score differed significantly at 6 months: 9.8 vs 9.1 ($P = .029$). Although the visual analog scale showed generally lower values for the prosthesis group, no statistical differences emerged. Additionally, the M1/M2 ratio became significant postoperatively, favoring group A ($P < .05$).

Conclusions: Trapeziometacarpal prosthesis shows promise for TMC arthrosis, enhancing function, thumb length, and patient recovery, warranting further research and x-ray guidance.

17. SWISS SGH CONGRESS 2022

17.1 Thumb carpometacarpal implant arthroplasty: does the success continue in the mid-term?

Vanessa Reischenböck[1], Miriam Marks[1], Sara Neumeister[1], Stephan Schindele[1], Daniel Herren[1] ([1] Zürich)

Objective: The aim was to analyse the outcomes 2 years after thumb carpometacarpal (CMC I) implant arthroplasty with the focus on revisions and complications.

Methods: Patients treated with an implant arthroplasty (Touch®, KeriMedical, Switzerland) who were prospectively documented in a registry were included. Revisions up to 2 years postoperatively and complications were recorded. Before surgery and 2 years thereafter, all patients had their hand function assessed with the brief MHQ (score 0-100) and rated their pain during daily activities on a Numeric Rating Scale (NRS; 0-10). Key pinch strength was measured with a pinch gauge. Two-year implant survival was estimated using the Kaplan–Meier method. We used a two-sided t-test to analyse for differences between baseline and 2 years.

Results: Currently, we have 232 CMC I implants in our registry, 67 of whom were operated on 2 years ago or earlier and were therefore suitable for this analysis. Three out of these 67 implants had to be revised 14-24 months after implantation, leading to an estimated 2-years survival rate of 95% (95% Confidence interval [CI]: 84% to 98%). The reason for revision was cup loosening in one case, mispositioning of the cup in another case and impingement due to suboptimal cup positioning and a too short head/neck component in the third case. Further complications that required additional conservative therapy and/or steroid injection and/or soft-tissue surgery include tenosynovitis de Quervain (n=2), tenosynovitis stenosans at the operated thumb (n=2), connective tissue nodule at the EPL tendon (n=1), intraoperative trapezium fracture (n=1) and thumb stiffness (n=1).

At two years, 54 patients were available for follow-up. The brief MHQ score increased from mean 46 (CI:42-51) at baseline to 87 (CI:83-92) at 2 years ($p \leq 0.001$) and pain during activities decreased from 7.2 (CI:6.8-7.7) to 1.4 (CI:0.8-1.9) at 2 years ($p \leq 0.001$). Key pinch strength was 4.8kg before surgery and 7.2kg at final follow-up ($p \leq 0.001$).

Conclusions: The 2-year survival rate of 95% of the Touch® implant is acceptable and better than for other CMC I implants reported in the literature. A careful surgical technique, especially in the placement of the cup in the trapezium, is needed and the learning curve of the surgeon has to be considered.

17.2 Thumb carpometacarpal implant arthroplasty: The fast track back to work

Nora Huber[1], Miriam Marks[1], Sara Neumeister[1], Stephan Schindele[1], Daniel Herren[1] ([1] Zürich)

Objective: The aim was to investigate if patients treated with a thumb carpometacarpal (CMC I) implant arthroplasty recover significantly faster than patients after resection-suspension-interposition (RSI) arthroplasty, regarding the number of days they went back to work.

Methods: This study comprised two cohorts: (1) Patients treated with an implant arthroplasty (Touch®, KeriMedical, Switzerland) who were prospectively documented in a registry and (2) RSI patients from a previous clinical trial. Before surgery, 3 months and 1 year thereafter, all patients noted the number of days until they returned to work post-surgery. Hand function was assessed with the brief MHQ (score 0-100) and pain during daily activities was measured on a Numeric Rating Scale (NRS; 0-10). Key pinch strength was measured with a pinch gauge.

Results: In the implant group, 125 patients with a mean age of 63 (±8) years were available and their 1-year outcomes were compared to 127 RSI patients with a mean age of 65 years (±9). In the implant group, 70 patients were employed and 39 in the RSI group. After implant arthroplasty, patients returned to work after a mean time of 44 days (95% confidence interval [CI]:27-61), which was significantly faster than the mean time of 68 days (CI:41-96) for the RSI group ($p \leq 0.05$). Moreover, patients with an implant had a significantly better 3-month postoperative brief MHQ score (83, CI:80-86) than those after RSI (69, CI:65-72) ($p \leq 0.001$, figure 1).

Pain at 3 months was also significantly lower in the implant than RSI group (1.9 (CI:1.6-2.3) versus 3.2 (CI:2.9-3.6), p≤0.001). Key pinch at three months was significantly higher in the implant than RSI group (6.9kg (CI:6.3-7.6) versus 3.1kg (CI:2.8-3.4), p≤0.001). At one year, patients in both groups had similar outcomes, except for key pinch, that was still significantly higher in the implant group.

Conclusion: Patients after CMC I implant arthroplasty return almost twice as fast to work and also show significantly faster recovery of hand function than patients after RSI. One year after the surgery, there is only a difference between both groups in strength but not in the other outcomes.

17.3 Lessons learned after 80 Touch trapeziometacarpal prosthesis

Elvira Bodmer[1], Urs Hub[1] ([1] Luzern)

Introduction
Despite the satisfactory outcomes of RSI-Arthroplasty, the Touch prosthesis has become an excellent alternative in recent years. Due to their double mobility concept, the third generation prostheses show significantly better 5-year results than the second generation prostheses. The aim of this study was to retrospectively analyse not our results but our complications in order to assess our learning curve and its consequences in a hand surgery teaching unit.

Methods
We are using Touch prosthesis since 2019. To date (May 2022), 80 patients have been operated on by two surgeons. We have recorded our complications in a retrospective analysis. On the basis of clinician and patient reported outcomes, postoperative X-rays and the prosthesis components used, we have tried to identify technical challenges and to draw learning effects from them. We used the spherical cup in 76 % of cases.

Results
We analysed 80 Touch prosthesis in 76 patients. Mean age was 62 years, 16 men and 60 women. A total of 6 complications (4.8%) were detected in 6 different patients: 2 cup dislocations, 2 instabilities of the metacarpo-phalangeal (MCP) joint, 1 ossification and 1 de Quervain's tenosynovitis. All 6 patients had to be reoperated: 2 re-positionings of the cup, 2 MCP fusions, 1 resection of the ossification and change to a bigger size of the neck and finally 1 synovectomy in the first extensor compartment.

Conclusion
Five out of 6 complications (83%) were among the first 19 patients (24%). The 2 cup dislocations were due to incorrect cup placement and/or insufficient resection of trapezium osteophytes. Periarticular ossification in 1 thumb caused stiffening of the prosthesis and was probably caused by insufficient resection of trapezial and metacarpal osteophytes. Persistent MCP joint instability after any procedure at the osteoarthritic trapeziometacarpal joint is a common problem in literature. It's debatable if this entity should be called "complication". In literature, de Quervain's tenosynovitis following Touch prosthesis is well described. In our series it was only once a real problem, so we don't see the need to address first extensor compartment routinely.

In conclusion, our lessons learned are:

- complete resection of hemicircular capsule and complete release of metacarpal base to get enough mobility for cup positioning
- proper resection of osteophytes
- invest enough time for optimal cup positioning
- use of machine drill for conical cup if possible

18.1 CMC thumb replacement with Touch implant, case series of first 65 cases, 2-4 years follow-up

Ajmal Ikram, Wikus De jager, Cameron Anley, Haroun Ahmed (University of Stellenbosch, Tygerberg Hospital, Cape Town – South Africa)

Aims of study: Assess the functional and radiological results of thumb CMC joint replacement done at Tygerberg Hospital and Private clinic, a case series of first 65 cases.

Method: Patients who had presented with CMC arthritis (Eaton Stage III disease) and failed conservative treatment (splint & LASI), with high demand were enrolled in this case series. CMC thumb replacement was done with dorsolateral approach between APL and EPB, capsular release was done L or T shaped and it was later repaired. Joint replacement was done with un-cemented stem to the metacarpal after preparation of the trapezium the cup was inserted, and bipolar head was used for articulation. Capsular repair was performed, and thumb Spica back slab was applied for two weeks. At follow-up short splint was given for another two weeks and mobilization was started. The patients were followed up at 6 weeks, 3 months, 6 months,1 year, 2 years and 4 years. The radiological parameters like implant position and height was checked and functional outcomes was assessed by means of DASH score.

Results: We currently have done 65 patients with CMC implant arthroplasty and at 2-4 years post-surgery radiological results show good position of components with one dislocation after 4 months of surgery. Functional results of CMC arthroplasty are good with better ROM and pinch grip strength was doubled the contra-lateral side.

Conclusion: CMC implant arthroplasty has better range of movements, earlier return to function and pinch strength almost same as normal side and double the excision arthroplasty side done on contra-lateral side previously.

18.2 What to expect from thumb carpometacarpal joint implant arthroplasty in younger patients?

Vanessa Reischenböck, Michael Oyewale, Miriam Marks, Stephan Schindele, Daniel B. Herren (Schulthess Klinik, Zurich, Switzerland)

Background: With higher functional demands, patients younger than 60 years of age are expected to achieve greater benefit from total joint arthroplasties, which are known to enhance range of motion (ROM) and thumb carpometacarpal (CMC I) joint strength. Nonetheless, it remains unknown whether total joint arthroplasties yield similar results in younger patients as they do in older patients.

Objective: We compared the 1-year outcomes of CMC I joint arthroplasty using the Touch® (KeriMedical) prosthesis between younger and older patients.

Methods: Patients who were prospectively recorded in our registry completed the brief Michigan Hand Outcomes Questionnaire (brief MHQ; score 0-100), reported their pain levels during activities of daily living (Numeric Rating Scale; 0-10), and had their key pinch strength assessed. For this analysis, patients were allocated either into the younger (< 60 years) or older (≥ 60 years) aged patient group. Statistical analyses included the Mann-Whitney U test to compare between-group differences and the Wilcoxon signed-rank test to compare baseline with 1-year outcomes.

Results: 86 patients (mean 63 [±8] years) with a follow-up of at least 1 year underwent an implant arthroplasty for CMC I osteoarthritis. 35 patients (42%) were younger than 60 years of age (56 [±4] years) at the time of surgery. The brief MHQ scores at baseline increased from mean 46 (±18) to 88 (±18) after 1 year in the younger patients ($p \leq 0.05$) and from 45 (±12) to 82 (±19) in the older patients ($p \leq 0.05$), which indicates significantly better hand function for the younger patients after 1 year ($p \leq 0.05$). Baseline pinch strength increased from 5.5

kg (±3.5) to 7.5 kg (±2.5) by 1 year in the younger patients (p≤0.05) and from 5 kg (±2.5) to 6.5 kg (±1.5) in the older patients (p≤0.05). Baseline pain levels decreased from 7.5 (±2.0) to 1.5 (±2.0; p≤0.05) after 1 year in both groups. There were no between-group differences after 1 year for pinch strength and pain. In the first year after surgery, we had to revise 1 implant in a 77-year-old man due to implant dislocation 2 weeks after the initial surgery. The prosthesis stem and neck were both changed to a larger size and the cup was cemented.

Conclusion: These findings confirm that, independent of age, patients recover well after Touch® CMC I total arthroplasty. Younger patients seem to have better overall hand function than older patients, although the levels of pain and pinch strength do not differ 1 year after surgery. Long-term results are necessary before conclusions can be drawn on the revision rate in both groups.

19. FRENCH GEM CONGRESS 2022

19.1 Interposition arthroplasty versus dual cup mobility prosthesis in treatment of trapeziometacarpal joint osteoarthritis: a prospective randomized study

Leopoldo Arioli, Matteo Guzzini (Roma, Italie)

This prospective randomized study analyses and compares the outcomes and global assessment of two different surgical techniques for treatment of rhizarthrosis: trapeziectomy with tendon interposition arthroplasty and total joint replacement with Touch (KeriMedical) TMC prosthesis.

Enrolled patients were randomly divided into two groups: group A included 71 patients (75 hands) treated with tendon interposition arthroplasty, while group B included 65 patients (72 hands) treated with total joint replacement. Clinical and radiological outcomes were collected before surgery and at 1, 3, 6, 12 and 24 months of follow-up.

Although the values of all clinical tests performed during follow-up demonstrated statistically significant improvement over preoperative ones in both groups, patients treated with prosthesis showed faster improvement, especially in tests of strength and range of motion, which showed better results than patients treated with trapeziectomy and tendon interposition arthroplasty throughout the follow-up.

Although interposition arthroplasty is still popular and has a low revision rate, there are several weaknesses associated with this technique: it has a prolonged recovery period, and it is an invasive technique because it relies on the excision of the trapezius, which negatively affects the biomechanics of the thumb and leads to loss of hand strength. Both surgical procedures described are subject to surgical risks; however, the prosthetic replacement has most significant complications, such as aseptic loosening, wear, dislocation, and fracture of the trapezius, but the survival rate of these prostheses, even over long periods, has been described as high as 97%.

Our study suggests joint replacement should be preferred to interposition arthroplasty as the treatment of rhizarthrosis, choosing the latter in case of prosthetic replacement complications or scaphoid-trapezium-trapezoid osteoarthritis.

20.1 Total trapeziometacarpal arthroplasty with dual mobility prosthesis: preliminary results of long-term monitoring

Ferruccio Paganini, Federico Tamborini, Alessandro Fagetti, Andrea Minini, Francesco Locatelli, Anna Brandolini, Julien Teodori, Emanuele Mascherpa, Leonardo Garutti, Elisa Bascialla, Sara Matarazzo, Luigi Valdatta, Mario Cherubino (University of Insubria, Circolo Hospital and Macchi Fundation, Varese, Italy)

Background and objectives
Rhizarthrosis is one of the main chronic diseases affecting the hand and leading to long-term disability. Still under discussion is what is the best type of treatment. The aim of this study is to report the long-term results of total trapeziometacarpal arthroplasty by monitoring functional recovery and implant stability over time.

Materials and Methods
We performed 36 total trapeziometacarpal joint arthroplasties by implanting a dual mobility (Touch) prosthesis in a total of 33 patients from 2019 to 2022. Grade 2 and 3 rhizarthrosis cases without STT involvement were treated. Pre- and post-operative changes in pain (VAS), function (Kapandji, radial abduction, Jamar test, key and 2-finger pinch test) and quality of life (QuickDASH) were assessed. Radiographic evaluation was performed pre-operatively, at 1 month and then annually.

Results
We had a statistically significant improvement (Wilcoxon test and Student t) of all investigated values, both functional and pain: VAS : z= -3.2958; p= 0.00096 (<0.05); Kapandji z= -3.2958; p-value 0.00096 (<0.05); radial abduction t-Score: 7.0124 p-Value: <0.00001 (<0.05); Jamar z= -2. 9701; p-value= 0.00298 (<0.05); key z= -3.1099; p-value 0.00188 (<0.05); 2 finger pinch z= -2.7954; p-value 0.00512 (<0.05); t-Score: 7.9853 p-Value: 0.00000219564 (<0.05). These improvements proved to be stable and did not present an involution in the currently available follow-up time. All patients stated that they would repeat the intervention and subjectively attested an improved hand function.

Conclusions
These preliminary results make the trapeziometacarpal dual mobility prosthesis a good therapeutic alternative in our opinion. It remains to be monitored over time for implant reliability, secondary non-decomposition, maintenance of results and best cost/benefit in the long term.

20.2 Mid-term results with double-mobility total thumb arthroplasty

Enrico Carità, Mara Laterza, Alberto Donadelli (San Francesco Clinic Verona, Italy)

Introduction
Osteoarthritis of basal thumb is a common condition seen in hand clinics which increases with age and is seen predominantly in postmenopausal women. The present retrospective study shows mid-term outcomes in patients with thumb carpometacarpal osteoarthritis treated with dual mobility prosthesis TOUCH® (Kerimedical, Route des Acacias, Les Acacias, Switzerland).

Materials and Methods
We enrolled 75 patients (78 thumbs) treated at our centre for primary basal thumb osteoarthritis with dual mobility prosthesis TOUCH® between December 2018 and June 2022. Inclusion criteria were Eaton/Littler stage 3 osteoarthritis, no previous surgery, no concomitant rheumatic arthritis and no history of trauma. We assessed patient demographics, pain (VAS), grip strength of the thumb using pinch dynamometer, range of motion using Kapandji and DASH score. Radiographs were taken pre operative, immediate post operative and at 1, 3, 6, 12 and 24 months after surgery. All occurring complications were recorded.

Results

Average follow-up period was 21 months (1,5 – 45 months). The mean VAS was 8,36 preoperatively and 0,9 postoperatively. The mean preoperative Kapandji opposition score was 7,7; postoperative the score was 9,2. The mean grip strength switched between 2,7 before surgery to 5,8 after surgery. The mean DASH was 47,9 preoperatively and 10,5 postoperatively. The overall complication rate was 2,6% (2 cases): one cup collapse and one aseptic cup loosening. No cases of infection or dislocation were reported.

Conclusions

Total joint arthroplasty with a dual mobility prosthesis TOUCH® appears to be a satisfactory solution in our series, giving the patients the opportunity to return quickly to work or manual hobby. Therefore, randomized studies with long-term follow-up are needed to verify sustainability of these prostheses.

20.3 Trapezium bone remodelling after trapeziometacarpal total joint arthroplasty: radiological comparison of spherical and conical cups

Bram Van Hove [1,3,4], Joris Duerinckx [1,2] ([1] Department of Orthopaedic Surgery and Traumatology, Ziekenhuis Oost-Limburg, Genk, Belgium; [2] Hasselt University, Department of Rehabilitation Sciences, Diepenbeek, Belgium; [3] Department of Orthopaedic Surgery and Traumatology, Regionaal Ziekenhuis Heilig Hart Leuven, Leuven, Belgium; [4] Department of Orthopaedic Surgery and Traumatology, Universitair Ziekenhuis Brussel, Jette, Belgium)

Total joint replacement is a surgical treatment option for painful trapeziometacarpal osteoarthritis. Problems around the trapezium cup (loosening, fracture and ossifications) are common indications for revision surgery. There are two different cup designs: spherical and conical. Although there are theoretical differences between both cup types, it is unclear if they are clinically relevant.

The goal of this study is to radiographically compare trapezial bone remodeling one year after implantation of a spherical or conical cup. We want to identify bone changes around the cup that might lead to implant failure.

We retrospectively evaluated radiographs of 100 patients at 1 year after trapeziometacarpal total joint replacement (Touch, Kerimedical, Geneva), operated between 2019 and 2021. Patients were selected to include 50 spherical and 50 conical cups. We evaluated the radiographs for bone resorption around the trapezium implant, subsidence, fracture, and heterotopic ossifications.

Our research demonstrates that conical cups are more prone to produce bone resorption changes and heterotopic ossifications. We hypothesize this is due to the difference in stress distribution between both cup shapes, with the spherical cup having a more uniform load distribution. This warrants further long term follow up regarding the use of both cup designs.

20.4 Thumb carpometacarpal implant arthroplasty: The fast track back to work

Xenia Startseva, Miriam Marks, Sara Neumeister, Stephan Schindele, Daniel B. Herren (Schulthess Klinik, Zurich, Switzerland)

Objectives

The aim was to investigate whether patients treated with thumb carpometacarpal (CMC I) implant arthroplasty recover significantly faster than patients after resection-suspension-interposition (RSI) arthroplasty, particularly regarding the number of days required to return to work.

Methods

This study comprised two cohorts: (1) Patients treated with a CMC I implant (Touch®, KeriMedical, Switzerland) who were prospectively documented in a registry and (2) RSI patients from a previous clinical trial. At the 3-month and 1-year postoperative follow-ups, all patients noted the number of days until they returned to work. Hand function was assessed with the brief Michigan Hand Outcomes Questionnaire (MHQ,

score 0-100) and pain during daily activities was measured on a Numeric Rating Scale (NRS; 0-10). Key pinch strength was measured with a pinch gauge. Between-group differences of continuous outcomes were analysed with an independent two-sided t-test and ordinal data were compared using Fisher's Exact test.

Results

In the implant group, 147 patients with a mean age of 63 (±8) years were available and their 1-year outcomes were compared to 127 RSI patients with a mean age of 65 years (±9). In the implant group, 80 patients were employed and 39 in the RSI group. After implant arthroplasty, patients returned to work after a mean time of 44 days (95% confidence interval [CI]:29-59), which was significantly faster than the mean time of 84 days (CI:50-117) for the RSI group (p≤0.01). Moreover, patients with an implant had a significantly better 3-month postoperative brief MHQ score (82, CI:80-85) than those after RSI (69, CI:65-72) (p≤0.001). Pain at 3 months was also significantly lower in the implant than RSI group (2.0 (CI:1.7-2.4) versus 3.2 (CI:2.9-3.6), p≤0.001). Key pinch at three months was significantly higher in the implant than RSI group (6.8 kg (CI:6.2-7.4) versus 3.1 kg (CI:2.8-3.4), p≤0.001). At one year, both groups had similar outcomes of function and pain, although key pinch remained significantly higher in the implant group (7.0 kg versus 3.9 kg). One implant and 2 RSI joints had to be revised in the first postoperative year (p=0.59). Other complications included significantly more cases of de Quervain tenosynovitis in the implant group (n=8 vs. n=0, p≤0.01) and a significantly higher incidence of complex regional pain syndrome (n=0 vs. n=7, p≤0.01) and tendinitis or rupture of the flexor carpi radialis tendon (n= 0 vs. n=5, p=0.02) in the RSI group.

Conclusion

Patients after CMC I implant arthroplasty return almost twice as fast to work and their hand function recovers significantly faster over patients after RSI. One year after the surgery, both implant and RSI arthroplasty patients do achieve similar outcomes, yet the former continue to have greater pinch strength.

20.5 Dual mobility prosthesis in treatment of trapeziometacarpal osteoarthritis: a prospective study of 97 patients

Matteo Guzzini, Leopoldo Arioli, Andrea Ferretti (Sant'Andrea University Hospital, Rome, Italy; Sapienza University of Rome, Italy)

The Touch® prosthesis is a dual mobility total implant used to treat carpometacarpal thumb osteoarthritis. This prospective study reports outcomes and the global assessment of 97 implanted prostheses with a mean follow-up of 2.2 years (range, 1.7-2.8 years).

There were 91 patients enrolled (17 male and 74 female), with an average age of 68.1 years (range, 58-79 years) and 65 dominant and 32 non-dominant operated hands. Patients were totally satisfied with surgery in 91 cases (93.8%), and the mean VAS scale decreased from 7.2 to 0.7. The mean DASH score improved from 49.8 to 13.2, and the mean Kapandji score from 7.9 to 9.6. Strength tests showed that the average Hand grip increased from 19.3 to 31.5 kg, the Key pinch from 3.8 to 6.6 kg and the Tip pinch from 1.8 to 4.2 kg. All the tests showed a statistically significant improvement ($p<0.05$) compared to the preoperative values.

There was no dislocation, postoperative fracture, implant loosening or infection. De Quervain's disease occurred in 4 cases (4.1%) and transient dorsal thumb paresthesia in 6 patients (6.2%). In only one case did an intraoperative fracture of the trapezium occur, and surgical conversion to suspension arthroplasty was necessary.

In conclusion, this study shows our preliminary results with dual mobility Touch® prosthesis, which allows rapid recovery of strength, range of motion and function, with no incidence of early prosthetic dislocations. In any case, the prosthesis avoids trapeziectomy, which can still be performed in case of implant failure.

20.6 2-year outcomes of thumb carpometacarpal implant arthroplasty

Vanessa Reischenböck, Miriam Marks, Sara Neumeister, Stephan Schindele, Daniel B. Herren (Schulthess Klinik, Zurich, Switzerland)

Objectives

The aim was to analyze 2-year outcomes after thumb carpometacarpal (CMC I) implant arthroplasty with the focus on revisions and complications.

Methods

Patients who were treated with an CMC I implant (Touch®, KeriMedical, Switzerland) and prospectively documented in a registry were included. Revisions and complications were recorded up to 2 years post-surgery. Before surgery (baseline) and 2 years thereafter, all patients had their hand function assessed with the brief Michigan Hand Outcomes Questionnaire (MHQ, score 0-100) and rated their pain during daily activities on a Numeric Rating Scale (NRS; 0-10). Key pinch strength was measured with a pinch gauge. Two-year implant survival was estimated using the Kaplan–Meier method. We used a two-sided t-test to analyze differences between the baseline and 2-year time points.

Results

Currently, we have data from a total of 268 CMC I implants in our registry, 105 of which were fitted 2 years ago or earlier and eligible for this analysis. Four of the 105 implants had to be revised between 1 and 24 months after implantation, which is equivalent to an estimated 2-year survival rate of 95% (95% Confidence Interval [CI]:88% to 98%). The reasons for revision were cup loosening (n=1), mispositioning of the cup (n=1), impingement due to suboptimal cup positioning and a too short head/neck component (n=1) and head dislocation in the fourth case. Further complications that required additional conservative therapy and/or steroid injection and/or soft-tissue surgery were de Quervain tenosynovitis (n=5), trigger finger at the operated thumb (n=4), connective tissue nodule at the extensor pollicis longus tendon (n=1), intraoperative trapezium fracture (n=1), thumb stiffness (n=1), carpal tunnel syndrome (n=1) and painful cup migration after trauma (n=1).
At two years, 81 patients were available for follow-up. The mean baseline brief MHQ score increased from 46 (CI:43 to 50) to 89 (CI:85 to 92) at 2 years (p≤0.001) and mean baseline pain during activities decreased from 7.5 (CI:7.0 to 7.9) to 1.3 (CI:0.8 to 1.7) at 2 years (p≤0.001). Key pinch strength was 5.0 kg (CI:4.3 to 5.7) before surgery and 7.2 kg (CI:6.6 to 7.8) at final follow-up (p≤0.001).

Conclusions

The 2-year survival rate of 95% of the Touch® implant is acceptable and better compared to other currently available CMC I implants. Clinical and patient-reported outcomes are very good with notably high key pinch strength. Also, the fast rehabilitation in contrast to resection arthroplasty is astonishing. Most implant failures arose from insufficiencies in technical skill. Therefore, careful planning and execution of the surgical technique, particularly of cup placement, is necessary; the learning curve of the surgeon also needs to be considered.

20.7 12 patients treated bilaterally with dual mobility prosthesis and trapeziectomy with suspension arthroplasty for trapeziometacarpal osteoarthritis: a multicenter study with 2-year follow-up

Matteo Guzzini [1], Leopoldo Arioli [1], Enrico Carità [2], Matilde Caracciolo [1], Alberto Donadelli [2], Andrea Ferretti [1] ([1] Sant'Andrea University Hospital, Sapienza University of Rome, Italy; [2] San Francesco Clinic, Verona, Italy)

TOUCH® SCIENTIFIC PUBLICATIONS

This study analyses and compares the outcomes and global evaluations at a 2-years follow-up of 12 patients with bilateral trapeziometacarpal osteoarthritis, treated on one hand with trapeziectomy and Altissimi tendon suspension arthroplasty, and on the contralateral hand with the implantation of the Touch® dual mobility prosthesis.

The patients, operated at the Sant'Andrea University Hospital of Rome or the San Francesco Clinic of Verona, were 2 males and 10 females with an average age of 61.5 years (range, 47 - 83 years). The operated hands were 24: 7 dominant and 5 non-dominant with the prosthesis and 5 dominant and 7 non-dominant with the suspension arthroplasty.

In the hands treated with trapeziectomy and suspension arthroplasty, the mean VAS scale improved from 7.6 to 1.8, the mean DASH from 52.0 to 10.4, the mean Kapandji from 7.6 to 9.3, and the mean Pinch test from 2.1 to 2.7 Kg. In the hands treated with Touch® prosthesis, the mean VAS scale reduced from 8.7 to 0.3, the mean DASH from 48.9 to 4.3, and the mean Kapandji increased from 7.3 to 9.5, and the mean Pinch test from 2.2 to 3.8 Kg. Both techniques demonstrated significant improvement ($p < 0.05$) over preoperative assessments in almost all tests, except for the Pinch test of the patients treated with arthroplasty. The comparison between the two techniques demonstrated better ($p < 0.05$) recovery of mean DASH and Pinch test in the hands treated with the prosthesis.

In conclusion, the dual mobility prosthesis demonstrated faster pain relief, the gain of function and range of motion, and better recovery of strength and function than tendon suspension arthroplasty with trapeziectomy. In addition, the prosthesis spares the trapezius, reserving trapeziectomy in case of implant failure.

21. ASSESSMENT OF TRAPEZIAL PROSTHETIC CUP MIGRATION: A BIOMECHANICAL STUDY

Athlani L, Motte D, Bergere M, Mottet J, Beaulieu JY, Moissenet F. Assessment of trapezial prosthetic cup migration: A biomechanical study. Hand Surg Rehabil. 2021 Dec;40(6):754-759

Abstract:

We performed a biomechanical study using 60 Sawbones® rigid foam blocks of two simulated densities (osteoporotic, n = 30 and non-osteoporotic, n = 30) and 10 cadaveric trapezium bones from fresh-frozen, unembalmed adult cadaver hands to assess the trapezial prosthetic cup migration with progressively greater compression loads (10-40 kg). Two cups from the Touch® prosthesis were compared: 9-mm conical cup and 9-mm spherical cup. Uniaxial compression tests were carried out using an MTS Criterion® Series 40 Electromechanical Testing System. Cup migration was measured in millimeters (mm) at 10, 20, and 40 kg of compression load. Median cup migration values were similar in the cadaveric trapezium bones and Sawbones® non-osteoporotic blocks, and higher in the Sawbones® osteoporotic blocks.

In the cadaveric trapezium bones and the Sawbones® non-osteoporotic blocks, migration values were less than or equal to 0.1 mm for 10 and 20 kg loads; it was 0.2 mm for 40 kg load. In the Sawbones® osteoporotic blocks, migration values were less than or equal to 0.3 mm for 10 and 20 kg loads; it was 0.4-0.5 mm for 40 kg load. There was no significant difference between the two cup shapes in both cadaveric trapezium bones and Sawbones® non-osteoporotic blocks. In Sawbones® osteoporotic blocks, the largest difference between the two cup shapes was 0.1 mm for loads up to 40 kg, which corresponded to our measurement accuracy.

Our findings indicate that the trapezial component of total trapeziometacarpal joint arthroplasty undergoes very weak migration for axial compression loads up to 40 kg, presumably below the threshold of clinical relevance. The cup shape did not have an obvious influence; however, low bone mineral density may result in greater cup migration.

22. COMPARISON OF SIMULATED KEY PINCH AFTER THREE SURGICAL PROCEDURES FOR TRAPEZIOMETACARPAL OSTEOARTHRITIS: A CADAVER STUDY

Athlani L, Motte D, Martel M, Moissenet F, Mottet J, Beaulieu JY. Comparison of simulated key pinch after three surgical procedures for trapeziometacarpal osteoarthritis: a cadaver study. J Hand Surg Eur Vol. 2021 Dec;46(10):1088-1095.

Abstract:

We performed a cadaver study using 18 fresh-frozen adult forearms and hands to compare the tendon loads required to generate progressively greater key pinch (0.5 kg to 2 kg) after three different surgical procedures to treat trapeziometacarpal osteoarthritis: isolated trapeziectomy, trapeziectomy followed by ligament reconstruction with tendon interposition and total joint arthroplasty using a Touch® implant. Thumb pinch was simulated by loading the main actuator tendons involved in the key pinch. Six specimens were randomly assigned to each of the three surgical procedure groups. Measurements were made before and after the joint surgery.

Specimens that underwent trapeziectomy with or without ligament reconstruction with tendon interposition required significantly higher tendon loads than those with the implant to achieve the same pinch force. There was no significant difference between the isolated trapeziectomy and ligament reconstruction groups. Using the implant resulted in similar median tendon loads compared with those of the intact sample.

Total joint arthroplasty with a Touch® prosthesis may yield a superior biomechanical profile in which the tendon loads needed to achieve a certain key pinch force are lower and better distributed between the actuator muscles compared with trapeziectomy with or without ligament reconstruction.

23. SCAPHOTRAPEZIOTRAPEZOID JOINT LOADING DURING KEY PINCH GRIP BEFORE AND AFTER TRAPEZIOMETACARPAL ARTHROPLASTY: A CADAVER STUDY

Athlani L, Motte D, Bergere M, Mottet J, Prandi B. Scaphotrapeziotrapezoid joint loading during key pinch grip before and after trapeziometacarpal arthroplasty: a cadaver study. Hand Surg Rehabil. 2023 Feb;42(1):45-50

Abstract:

In a previous cadaver study, we directly measured the load acting on the trapeziometacarpal joint for increasingly greater key pinch forces. We noted that the joint load ranges from 2 kg to 4 kg during progressively greater key pinch from 0.5 kg to 1.5 kg. Using the same experimental approach, the aim of the current study was to measure and compare the load acting on the scaphotrapeziotrapezoid joint for the same levels of isometric key pinch force, and how it changes after trapeziometacarpal arthroplasty. We performed a cadaver study using 7 fresh-frozen, unembalmed adult forearms and hands (2 right and 5 left). Thumb pinch was simulated by loading the main actuator tendons involved in the key pinch grip (i.e., adductor pollicis, flexor pollicis longus, extensor pollicis longus, extensor pollicis brevis and abductor pollicis longus tendons). Measurements were made inside the joint using a force-sensing resistor sensor (Tekscan® FlexiForce™ force sensor).

Before the trapeziometacarpal joint surgery, median load values recorded in the scaphotrapeziotrapezoid joint were 1.2 kg (IQR, 1.0-1.4), 1.6 kg (IQR, 1.6-2.5) and 2.4 kg (IQR, 2.3-3.4) during 0.5 kg, 1 kg and 1.5 kg key pinch, respectively. After the trapeziometacarpal arthroplasty, median joint contact forces did not change significantly relative to the original configuration.

Our findings indicate that the loads measured in the scaphotrapeziotrapezoid joint during a simple key pinch are in fact lower than those measured inside the trapeziometacarpal joint. After trapeziometacarpal arthroplasty, the values are similar with no increase in load, suggesting that clinically asymptomatic scaphotrapeziotrapezoid radiographic involvement may not be a contraindication to arthroplasty.

24. DE QUERVAIN TENDINITIS AFTER TOTAL TRAPEZIOMETACARPAL JOINT ARTHROPLASTY: BIOMECHANICAL EVALUATION OF TENDON EXCURSION IN THE FIRST EXTENSOR TENDON COMPARTMENT

Philips T, Van Melkebeke L, Popleu L, Van Hove B, Caekebeke P, Duerinckx J. De Quervain tendinitis after total trapeziometacarpal joint arthroplasty: Biomechanical evaluation of tendon excursion in the first extensor tendon compartment. Hand Surg Rehabil. 2024 Apr 5:101686

Abstract:

De Quervain's tenosynovitis is the most common complication after total trapeziometacarpal joint replacement. Etiology is unclear. Implantation of a ball-in-socket implant changes the biomechanics of the normal trapeziometacarpal saddle joint and increases its range of motion. The present study demonstrates that this procedure also significantly increases excursion of the abductor pollicis longus and extensor pollicis brevis tendons during thumb flexion-extension, and not during thumb abduction-adduction.

Increased tendon gliding under the retinaculum of the first extensor tendon compartment could predispose to the development frictional tenosynovitis and play a role in the development of de Quervain's syndrome after total trapeziometacarpal joint replacement.

25. COMPUTER-SIMULATED TOUCH PROSTHESIS CUP MALPOSITION AND SOLUTIONS

Knappe K, Schonhoff M, Jaeger S, Bickert B, Harhaus L, Panzram B. Computer-simulated TOUCH prosthesis cup malposition and solutions. Hand Surg Rehabil. 2024 May 1:101712

Abstract:

Introduction: Total joint replacement has become significantly more common as a treatment for advanced trapeziometacarpal joint osteoarthritis in recent years. The latest generation of prostheses with dual-mobility designs leads to very good functional results and low rates of loosening and dislocation in the short and medium term. Biomechanical studies showed that central placement and parallel alignment of the cup with respect to the proximal articular surface of the trapezium are crucial for both cup stability and prevention of dislocation. Despite correct positioning of the guidewire, incorrect placement or tilting of the inserted cup may occur, requiring immediate intraoperative revision.

Methods: The existing spherical and conical cup models in sizes 9 mm and 10 mm were transferred to a computer-aided design dataset. Depending on the intraoperative complication (tilting or incorrect placement), the revision options resulting from the various combinations of cup type and size were simulated and analyzed according to the resulting defect area and bony contact area.

Results: In well centered cups, a size 9 conical cup could be replaced by a size 9 spherical cup and still be fixed by press-fit. Conversely, a size 9 spherical cup could not be replaced by a size 9 conical cup, but only by a size 10 cup, of whatever shape. When a size 9 conical cup was tilted up to 20 °, the best revision option was to resect the sclerotic margin and insert a size 10 conical cup deeper into the cancellous bone, to achieve the largest contact area with the surrounding bone. When a size 9 cup of whatever shape was poorly centered (misplaced with respect to the dorsopalmar or radioulnar line of the trapezium), placement should be corrected using a size 10 cup, combined with autologous bone grafting of the defect. Again, the size 10 conical cup showed the largest bony contact area.

Conclusion: Our computer-based measurements suggested options for intraoperative cup revision depending on cup shape and size and on type of misalignment with resulting bone defects. These suggestions, however, need to be confirmed in anatomic specimens before introducing them into clinical practice.