

Davis TR, Brady O, Dias JJ. Excision of the Trapezium for Osteoarthritis of the Trapeziometacarpal Joint: A Study of the Benefit of Ligament Reconstruction or Tendon Interposition. J Hand Surg 2004;29A:1069-1077.

Design: Randomized clinical trial

Population/sample size/setting:

- 162 women (mean age 59) operated on for trapeziometacarpal osteoarthritis (Eaton-Littler grades 2-4) in a university orthopedics department in the UK

Main outcome measures:

- 183 procedures were done on the 162 women; the 21 women with bilateral surgery had the operations done at different times
- Randomization was done after induction of anesthesia by opening a sealed envelope specifying one of 3 procedures: trapeziectomy (T) only (n=62), trapeziectomy and palmaris longus interposition (PL, n=59), or trapeziectomy with ligament reconstruction and tendon interposition (LRTI, n=62)
- Postoperatively the K-wire was removed at 4 weeks thumb and wrist were splinted for 6 weeks in all 3 groups; there was no routine physiotherapy but patients were shown thumb exercises when the splint was removed
- Follow-up assessments at 3 and 12 months were done by the surgeons who had operated on the patient, and included subjective pain and stiffness scores, pinch/grip strengths, and radiographs of thumb (x-ray data not reported)
- Preoperatively, most patients had restricted use of the hand due to pain; at 3 months, all groups had substantial improvement in pain, which improved further at 12 months; there were no differences between groups
- Thumb strength improved equally in all three groups between time of surgery and 1 year follow-up
- Complications of surgery were reported less frequently in T group than in PL and LRTI groups at 3 months and at 1 year
- At 3 months, there were 25 complications in the T group, 33 in the PL group, and 43 in the LRTI group
- At 12 months, there were 9 complications in the T group, 14 in the PL group, and 19 in the LRTI group
- At 1 year, radial or median nerve dysfunctions accounted for 8 of the 9 complications in the T group, 7 of the 14 in the PL group, and 6 of the 19 in the LRTI group
- At 1 year, flexor carpi radialis (FCR) or PL pulling accounted for 0 of the 9 complications in the T group, 6 of the 14 in the PL group, and 8 of the 19 in the LRTI group
- Although moderate scar tenderness was reported in 4 patients at 1 year (1 in the PL group and 3 in the LRTI group), there was no evidence of neuroma

Authors' conclusions:

- Rate of recovery 1 year after trapeziectomy is not improved by PL interposition or by LRTI

- Trials with longer follow-up periods are necessary to elucidate whether PL or LRTI are better than T for prevention of subluxation and degenerative changes at the site of excision of the trapezium
- Although strength measurements were not blinded, the measurements were performed in a standardized manner with the same meters and were probably not influenced by bias
- Placement of a K-wire in the T group with 6 week immobilization, done in order to standardize the rehabilitation process, is a departure from common practice for simple trapeziectomy, and may have stabilized the pseudarthrosis more than would happen with standard trapeziectomy
- Neither ligament reconstruction nor tendon interposition is required for trapeziometacarpal OA; excision of the trapezium is the vital part of the surgery

Comments:

- Although only women were admitted to the study, the other inclusion and exclusion criteria are not specified
- The use of the K-wire for the trapeziectomies makes them not comparable to operations in which the trapezium is excised without a K-wire, which was the procedure in other studies
- It is reported that the LRTI technique at Nottingham was different before and after 1994, but the number for each technique is not reported; since Nottingham had most of the cases, this omission leaves it unclear whether the newer technique might have had fewer complications
- The commonest complication of PL and LRTI was FCR/PL “pulling,” but the criteria for determining this and the functional consequences of the pulling are not reported
- Similarly, the functional consequences of the other complications are not clear; it is not reported whether the patients with tendon pulling had more pain or less strength
- Lack of blinding of follow-up would not be a large influence on the subjective reports of pain and stiffness, but could have influenced the assessment of tendon pulling, for which the criteria are not clearly specified

Assessment: Adequate for evidence statement that simple trapeziectomy has fewer short-term complications than LRTI, but the functional significance of these is not clear; adequate for evidence statement that LRTI is not superior to trapeziectomy in the first year after the operation