Zhang Q, Zhou J, et al. Tenotomy or tenodesis for long head biceps lesions in shoulders with reparable rotator cuff tears: a prospective randomised trial. Knee Surg Sports Traumatol Arthrosc 2013 DOI 10.1007/s00167-013-2587-8.

Design: Randomized clinical trial

Study question: In patients older than 55 with reparable rotator cuff tears and lesions of the long head of the biceps (LHB), are there differences in outcomes between tenotomy and tenodesis?

Population/sample size/setting:

- 151 patients (71 men, 80 women, mean age 61) treated for LHB lesions with reparable rotator cuff tears in a university orthopedics department in Shangahi
- Eligibility criteria were age over 55 with physical and imaging (MRI, sonogram, 3D CT) diagnosis of rotator cuff tears and LHB tendon lesions
- Exclusion criteria were previous surgery on the affected surgery, radiographic evidence of glenohumeral arthritis, and disability at the contralateral arm

Main outcome measures:

- 204 patients underwent arthroscopic examination at which the condition of the rotator cuff and LHB was assessed
    - At the time of the arthroscopic exploration, rotator cuff tears judged to be irreparable were excluded from the study
    - In addition, lesions of the LHP tendon judged to require only simple debridement were debrided, but the patients were also excluded from the study
- After the intraoperative exclusions were done, 160 patients remained in the study had rotator cuff repair, bursectomy, and acromioplasty or distal clavicular resection depending on what was found during the procedure; the management of the LHB lesion was randomized to either tenotomy (n=80) or to tenodesis (n=80)
    - Tenotomy was done by cutting the LHB tendon as close as possible to the labrum
    - Tenodesis was done by a suture anchor inserted into the intertubercular groove
    - Acromioplasty was done in 17 tenotomy patients and in 14 tenodesis patients
    - Distal clavicle resection was done in 6 tenotomy and 5 tenodesis patients
    - After some attrition in both groups, there were 77 tenotomy and 74 tenodesis patients analyzed for a median of 25 months after surgery
    - The mean operative time for tenotomy was 40 minutes; for tenodesis it was 50 minutes

- Postoperative rehabilitation was done the same in both groups, except that the tenotomy group had immobilization of the elbow joint for one week; the rehabilitation program consisted of passive ROM active ROM and strength training 6 weeks postoperatively; unrestricted use of the biceps muscle was not allowed until 16 to 20 weeks after the operation
- The principal outcome was the Constant score, on which both groups experienced substantial and equal improvement
    - The tenotomy group mean Constant score went from 52.3 to 95.6; the tenodesis group score went from 52.8 to 96.5
- For the first two weeks, the tenotomy group had less pain than the tenodesis group, but after 4 weeks, the pain scores were equal
- Satisfaction was also about equal in both groups; in the tenotomy group, 65 rated their satisfaction as excellent or good, and 12 rated it as fair; in the tenodesis group, 60 were excellent or good; 13 were fair, and 1 was poor
- Strength of forearm supination and elbow flexion was tested and in both groups, these were on average 90% of the strength of the contralateral extremity
- A Popeye sign was exhibited in 9 patients: 7 in the tenotomy group and 2 in the tenodesis group; no patients were bothered by it, and any associated cramps were mild and had abated within 2 months of the operation

Authors' conclusions:

- Tenotomy and tenodesis of the LHB yield equally satisfactory outcomes 2 years after being done in association with rotator cuff repair
- Tenotomy takes less operative time and has earlier abatement of pain than tenodesis
- The followup time is too short to assess long-term effects of tenotomy and tenodesis, such as biomechanical changes at the glenohumeral joint
- Even though tenotomy and tenodesis have different theoretical advantages and disadvantages, tenotomy may be more suitable for patients over 55 who require rotator cuff repair

Comments:

- Most aspects of the trial are well-reported and conducted with appropriate examiner blinding of outcomes such as strength
- A couple of points are somewhat unclear; the randomization appears to have been done before surgery but after enrollment, and it is more likely than not that the requirement of allocation concealment was met, and that selection bias was avoided
- The variable "d-constant" in Table 2 is not explained, but presumably refers to the Constant score obtained at baseline
- The sample size is sufficient to support the hypothesis that tenotomy and tenodesis have equivalent benefits on pain and function 24 months after the operation is done

Assessment: High quality study providing good evidence that in patients over 55 with reparable rotator cuff tears and lesions of the long head of the biceps, tenotomy and tenodesis at the intertubercular groove provide equal functional and symptomatic benefits two years after surgery