



Demographic trends in arthroscopic and open biceps tenodesis across the United States

Evan E. Vellios, MD^a, Alireza K. Nazemi, MS^b, Michael G. Yeranorian, MD^a, Jeremiah R. Cohen, BS^a, Jeffrey C. Wang, MD^c, David R. McAllister, MD^a, Frank A. Petrigliano, MD^{a,*}

^aDepartment of Orthopaedic Surgery, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA

^bDepartment of Bioengineering, UCLA, Los Angeles, CA, USA

^cDepartment of Orthopaedic Surgery, Keck School of Medicine of USC, Los Angeles, CA, USA

Background: The purpose of this study was to evaluate trends in procedures and to report on demographic data of patients undergoing arthroscopic vs. open biceps tenodesis.

Methods: A retrospective review of a commercially available database (PearlDiver) was conducted to identify cases of arthroscopic and open biceps tenodesis performed between 2007 and 2011 with concurrent diagnoses of commonly associated shoulder disorders. Each record provided the patient's age, gender, and region within the United States, and statistical significance was determined with respect to each of these demographics.

Results: There were 9011 patients who underwent arthroscopic biceps tenodesis and 11,678 patients who underwent open biceps tenodesis between 2007 and 2011. The number of biceps tenodesis cases increased from 2007 to 2011 (2047 to 5832; $P = .015$). Both arthroscopic and open biceps tenodesis procedures were performed most commonly in the 30- to 59-year-old age group (76.3% and 76.1%; $P < .00001$). Men underwent arthroscopic or open biceps tenodesis more commonly than women did (66.1% and 71.9%; $P < .00001$). Rates of both open and arthroscopic biceps tenodesis varied significantly among the Midwest, South, Northeast, and West regions ($P = .009$; $P = .007$); 49.8% of arthroscopic and 44.6% of open biceps tenodesis cases were associated with rotator cuff tears, whereas 14.4% of arthroscopic and 16.2% of open cases were associated with biceps tendon disorders.

Conclusion: Both arthroscopic and open biceps tenodesis cases increased annually from 2007 to 2011. The majority of biceps tenodesis cases were performed in men aged 30 to 59 years, and the South had the highest overall number of cases. Further studies are required to evaluate the efficacy of these procedures with and without concomitant pathologic processes.

Level of evidence: Epidemiology Study, Large Database Analysis.

© 2015 Journal of Shoulder and Elbow Surgery Board of Trustees.

Keywords: Arthroscopic; open; biceps tenodesis; demographics; retrospective

Institutional Review Board approval was not required for this study.

*Reprint requests: Frank A. Petrigliano, MD, Department of Orthopaedic Surgery, David Geffen School of Medicine at UCLA, #33-55 PVUB, 10945 Le Conte Ave, Los Angeles, CA 90095, USA.

E-mail address: fpetrigliano@mednet.ucla.edu (F.A. Petrigliano).

Anterior shoulder pain and loss of forward flexion are common symptoms of lesions related to the long head of the biceps brachii (LHB).¹³ The anatomy of this region causes it to often be affected by disease of the rotator cuff

(RTC) and subacromial space.^{1,2,12,13,21,25} Previous studies have shown that close to 90% of patients with biceps tendinitis suffer from concomitant RTC or superior labral anterior-posterior (SLAP) tears, especially in the dominant upper extremity.^{5,11,17} The two most common surgical treatments for lesions of the LHB are tenotomy and tenodesis, with some studies suggesting that tenodesis provides a lower incidence of weakness, biceps discomfort, and cosmetic deformity.^{1,11,24,27} Tenodesis is performed most commonly to treat a partial-thickness tear of >50% diameter or a medial subluxation of the tendon in association with an RTC tear.^{14,21,25} Whereas tenodesis has historically been performed through an open approach, arthroscopic methods have become more popular as novel instrumentation has facilitated the ease of this procedure.²⁶ The purpose of this study was to evaluate the trends in procedures, to report on the demographic and regional data of patients undergoing arthroscopic vs. open biceps tenodesis, and to describe the concomitant shoulder disorders commonly associated with the contemporary utilization of biceps tenodesis.

Materials and methods

A retrospective review of the PearlDiver patient records database (www.pearldiverinc.com; PearlDiver, Inc., Fort Wayne, IN, USA) was performed. This is a commercially available database searchable by both *Current Procedural Terminology* (CPT) and *International Classification of Diseases, Ninth Revision* (ICD-9) codes. It contains records for approximately 20 million patients with orthopedic diagnoses obtained from an insurance company, United Healthcare (Decatur, IL, USA). The database was queried for all cases of arthroscopic biceps tenodesis (CPT-29828) and open biceps tenodesis (CPT-23430, CPT-23440) that were performed between 2007 and 2011 with concurrent diagnoses of commonly associated shoulder disorders ([Appendix](#)). The codes were searched to exclude the same code's being counted more than once for the same patient (see [Appendix](#) for complete CPT and ICD-9 code descriptions). Each record provided the patient's age, gender, and region within the United States. In reporting results, percentages of arthroscopic or open tenodesis were calculated from the total number of cases performed during the specified time interval and categorized according to year, gender, age group, and region.³³ Furthermore, the percentage of individuals undergoing arthroscopic or open biceps tenodesis with their associated primary diagnosis was determined and again stratified according to year, gender, age group, and region.

Statistical analysis

For statistical analysis, patients were categorized into 3 age groups: 0 to 29 years, 30 to 59 years, and >60 years. χ^2 analysis was used to assess the statistical significance of variations between regions. Poisson regression analysis was used to determine statistical significance of variations between age groups and genders. Linear regression was used to determine the significance of differences in the data from year to year. Binomial analysis with

Table I Age breakdown of arthroscopic and open tenodesis cases, 2007-2011

Age group (years)	Arthroscopic cases	Open cases
0-29	195 (2.2%)	329 (2.8%)
30-59	6876 (76.3%)	8884 (76.1%)
>60	1940 (21.5%)	2465 (21.1%)
Total	9011 (100%)	11,678 (100%)

Poisson regression analysis: $P < .00001$. The difference in the performance of arthroscopic and open biceps tenodesis was statistically significant for each of the 3 age groups.

Bonferroni adjustment was used to determine the significance of differences in the performance of arthroscopic and open biceps tenodesis in relation to the primary diagnosis coded. Eight of the 20 primary diagnosis codes used in this study were incorporated into this analysis ([Appendix](#)). Significance level was set at $P < .05$.

Results

Arthroscopic tenodesis

A total of 9011 patients underwent arthroscopic biceps tenodesis between 2007 and 2011. Arthroscopic tenodesis was most common in the 30- to 59-year-old age group ([Table I](#)). Approximately two thirds of the total patients undergoing arthroscopic tenodesis between 2008 and 2011 were men and one third were women ($P < .00001$; [Table II](#)). Of the cases of arthroscopic tenodesis, 23.7% were performed in the Midwest region, 9.8% in the Northeast region, 50.2% in the South region, and 16.3% in the West region ([Fig. 1](#)). The differences in these percentages were statistically significant compared with one another ($P = .009$). From 2007 to 2011, the percentage of total cases of biceps tenodesis performed arthroscopically increased from 0.15% to 48.5% ($P < .00001$; [Table III](#)). Furthermore, the overall number of cases of arthroscopic biceps tenodesis increased annually from 3 in 2007 to 2831 in 2011 ([Table III](#) and [Fig. 2](#)).

Open tenodesis

A total of 11,678 patients underwent open biceps tenodesis between 2007 and 2011. The age stratification for patients undergoing open tenodesis was as follows: 2.8% in the 0- to 29-year age group, 76.1% in the 30- to 59-year age group, and 21.1% in the >60-year age group ([Table I](#)). Of the total patients undergoing open tenodesis, 71.9% were male and 28.1% were female ($P < .0001$; [Table IV](#)). Of the cases of open tenodesis, 25.5% were performed in the Midwest region, 9.2% in the Northeast region, 43.5% in the South region, and 21.8% in the West region ([Table V](#)). These

Download English Version:

<https://daneshyari.com/en/article/6211033>

Download Persian Version:

<https://daneshyari.com/article/6211033>

[Daneshyari.com](https://daneshyari.com)