Does Activity Level Correlate With Glenoid Component Radiolucencies? A Study of Anatomic Total Shoulder Arthroplasty at a Minimum 4-year Follow-Up

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INTRODUCTION:

Introduction: Aseptic, "rocking-horse" loosening of the glenoid component is a concern in anatomic total shoulder arthroplasty (TSA), particularly in patients with high activity levels who may place a higher demand on the component than more sedentary patients. While this concern is intuitive, there has been little study into the effect of overall activity and participation in specific activities on radiographic lucencies around the glenoid component. The objective of this study was to investigate if overall activity and participation in specific activities correlate with radiolucency around the glenoid component at minimum 4-year follow-up.

METHODS:

Methods: Patients who underwent TSA with minimum 4-year radiographic follow-up were identified from a prospectively maintained institutional database. Each patient completed a questionnaire that asked how frequently (0 = less than once per month, 1 = once per month, 2 = once a week, 3= more than once per week, 4 = daily) they performed four activities:

- swinging (i.e. tennis, golf)
- weight training involving the shoulder
- lifting objects > 25 lbs.
- activities involving shoulder impact (contact sports, chopping wood, etc.).

For analysis, frequency was grouped into low (0-2, or less than once per week) and high (3-4, or more than once per week) frequency. Minimum 4-year radiographs were evaluated for radiolucencies around the peripheral and central pegs. A "loose" glenoid was defined as a complete radiolucency around two or more peripheral pegs (Lazarus grade 3 or higher) or around only the central peg (type A central peg osteolysis).

RESULTS:

Results: 43 patients met inclusion criteria, of which 53% were male and the mean age was 65 ± 9 years. The mean follow-up was 7±2 years. Overall, 31 (72%) glenoids were considered "not loose" and 12 (28%) "loose." The frequency of participation in each activity is shown in **Figure 1**. The percentage of patients with "loose" glenoids was evaluated based on frequency of participation in each of the four activity types (**Figure 2**):

- High frequency participation in impact activities was associated with a higher percentage of loose glenoids (66%) than with low-frequency participation (38%); p = 0.104)
- High frequency participation in swinging activities was associated with a similar percentage of loose glenoids (33%) in comparison to low frequency participation (25%) p = 0.337)
- High frequency participation in weight training was associated with a similar percentage of loose glenoids (27%) in comparison to low frequency participation (28%) p = 0.955)
- High frequency participation in lifting more than 25lbs was associated with a similar percentage of loose glenoids (29%) in comparison to low frequency participation (28%) p = 0.945)

Patients with loose glenoids did not have worse Simple Shoulder Test Scores in comparison to those without loose glenoids.

DISCUSSION AND CONCLUSION:

Discussion: Frequent participation in swinging, weight training or lifting > 25 lbs. were not associated with a higher frequency of radiolucency around the glenoid component at a minimum 4-year and mean 7-year follow-up. However, patients who participated in impact activities did have a higher frequency of high-grade radiolucency around the glenoid component.

Figure 1: Frequency of participation in each activity. Frequency was graded as: 0 = less than once per month, 1 = once per month, 2 = once a week, 3= more than once per week, 4 = daily.

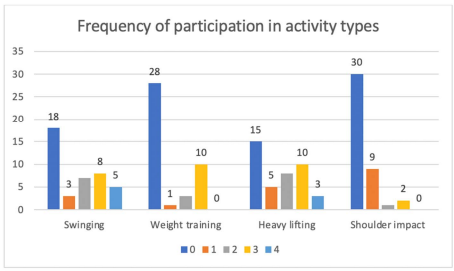

Figure 2: Frequency of radiolucency around glenoid component based on activity.