Introduction

Rotator cuff injuries are the most common tendon injury in the adult population affecting nearly 30% of adults over the age of 60 years. Upwards of 35% of patients experiencing a rotator cuff tear will develop substantial pain and may not be able to perform basic daily tasks. Treatment of rotator cuff injuries can be complex as several factors must be considered, such as tear thickness, size, and morphology. However, it has been consistently shown in the literature that surgical intervention, specifically rotator cuff repair (RCR), results in greater long-term patient outcomes compared to conservative treatment.

Another common pathology among older adults is obstructive sleep apnea (OSA). OSA is a condition that is characterized by repeated episodes of respiratory pathway obstruction throughout a period of sleep. These continuous bouts of upper airway obstruction result in irregular sleep patterns that leave the individual experiencing excessive daytime sleepiness, often combined with morning headaches and fatigue.2 The reported prevalence of OSA in higher income countries such as the United States has increased over time (Figures 1 and 2).

Due to the increasing prevalence of OSA rates in higher income countries, combined with the overall prevalence of sleep apnea, the combination of the two in relation to post-operative healing and rehabilitation is likely intertwined as well as highly relevant to orthopedists treating rotator cuff injuries. There remains a scarcity in the literature as to how obstructive sleep apnea affects post-operative healing and rehabilitation following rotator cuff repair.

Methods

- Included patients completed STOP-BANG surveys in which scores greater than 3 were considered high risk for OSA as per standard guidelines (Chung 2016). Five mixed model repeated measures ANCOVAs were performed for five different outcome measures: VAS pain scores, SANE scores, VR-12 mental and physical scores, and total ASES scores measured pre-operatively, 3 months, 6 months, and 1 year post-operatively.

Results

There was a significant group by time interaction for the VR-12 mental scores (F = 3.66, p = 0.012): scores consistently increased over time for patients at high risk of OSA, while patients at low risk of sleep apnea did not exhibit a significant difference post-operatively. There was a significant group effect, time effect (F = 56.59, p < 0.001), group by time interaction, and effect of BMI on the VR-12 physical scores. Patients at high risk of OSA had an average lower scores by 3.35 points (F = 7.27, p < 0.01). While scores increased on average over time for patients at low risk and high risk of OSA, patients at low risk showed a quicker and greater improvement overall (F = 4.36, p < 0.05), while patients with a higher BMI performed significantly worse (F = 1.96, p = 0.01).

Discussion

RCR in patients at high risk of OSA can expect similar improvements in PROs of shoulder function and shoulder pain; while in some cases, greater improvements in mental health at 1 year post-operatively, compared to their low-risk counterparts. In addition, patients at high risk of OSA may not improve as rapidly in terms of shoulder function as their low-risk counterparts. However, in contrast to their low-risk counterparts, our results suggest that patients at high risk of OSA cannot expect similar improvements in physical health one-year post-RCR. Hence, orthopedists should take into consideration that while high-risk OSA group at the pre-operative stage. Taken together, further research is needed to determine if improvements in sleep quality are achievable even in patients with undiagnosed or untreated OSA.

Conclusion

Our findings suggest that RCR in patients at high risk of OSA can expect similar improvements in PROs of shoulder function and shoulder pain; while in some cases, greater improvements in mental health at 1 year post-operatively, compared to their low-risk counterparts. However, in contrast to their low-risk counterparts, our results suggest that patients at high risk of OSA cannot expect similar improvements in physical health one-year post-RCR. Hence, orthopedists should take into consideration that while high-risk OSA group at the pre-operative stage. Taken together, further research is needed to determine if improvements in sleep quality are achievable even in patients with undiagnosed or untreated OSA.