

Functionality of the PowerRasp™ Device vs an Oval Burr for Arthroscopic Acromioplasty Procedures

Arthrex Research and Development

Objective

To verify the efficacy of the new 5.5 mm Arthrex PowerRasp device for acromioplasty procedures and compare its functionality to that of a 5.5 mm oval burr.

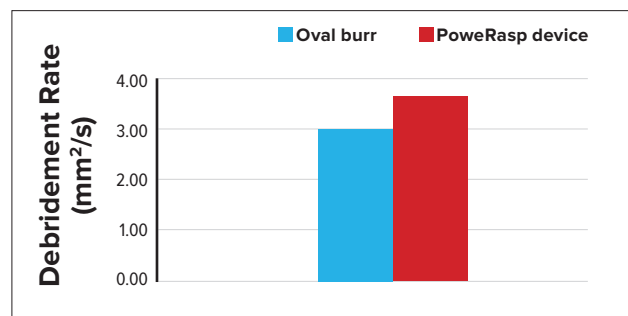
Methods and Materials

Five matched pairs of cadaveric shoulders (ScienceCare) were used for this testing. Experienced orthopedic surgeons were recruited to perform arthroscopic acromioplasties on 1 pair of shoulders each. All participants were familiar with the oval burr, but only 3 of the 5 had previously used the PowerRasp device. Prior to the acromioplasty, a graduated arthroscopic probe was used to measure the medial-lateral and anterior-posterior dimensions of the inferior aspect of the acromion. Surgeons were instructed to perform an acromioplasty procedure using the 5.5 mm oval burr on one shoulder and the newly released 5.5 mm PowerRasp device on the contralateral shoulder. Both devices were run on forward direction settings at a speed of 5000 rpm. A digital stopwatch was used to record the duration of each procedure, which was considered complete at the surgeon's declaration. Again, the medial-lateral and anterior-posterior dimensions were measured. The rate of debridement for each device was calculated by the area of debrided bone divided by the procedure time. The results were compared using a matched-pair *t*test. Arthroscopic photos of the debrided acromion surfaces were taken for visual comparisons of the procedures.

Results

The average debridement rate was 2.96 ± 0.93 mm²/s for procedures performed with the burr and 3.73 ± 1.13 mm²/sec mm²/s for the PowerRasp device with a burr ($P = .081$, $P = .427$). The results are shown graphically in Figure 1. No significant difference was found between the 2 groups, although the test is underpowered due to the small sample size.

Figure 1. Debridement rate for each device.



Images of the acromion after the procedures revealed that the PowerRasp device consistently provided a smoothly debrided surface, as shown in Figure 2, while use of the oval burr sometimes resulted in a “scalloped” appearance to the surface, as shown in Figure 3.

Discussion and Conclusions

The PowerRasp device provides a viable option for debridement of bony tissues and did so without a significant difference in operative time. Several surgeons in this study had no prior experience with the PowerRasp, yet no significant difference in operative time was seen. With experience, the PowerRasp may potentially decrease the overall operative time. Furthermore, the surface debrided using the PowerRasp device is smoother than that using a burr, as can be visually confirmed arthroscopically.

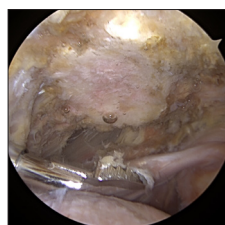


Figure 2. Debrided acromion after a PowerRasp procedure.

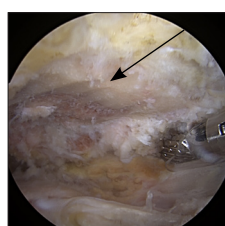


Figure 3. Debrided acromion after an oval burr procedure, showing scalloped surface.