ShARC BITE

Screw vs Post in rTSA

Mission Statement

The Shoulder Arthroplasty Research Committee (ShARC) is a forward-looking global collaboration among research-focused surgeons of which the primary goal is to advance patient care. The ShARC Patient Registry is utilized to conduct patient monitoring, inform evidence-based implant design, and allow for the integration of novel technologies into clinical practice. Supported by Arthrex, the ShARC will continue to have tremendous influence on the advancement of shoulder arthroplasty through innovative research and a commitment to improve patient outcomes.

ShARC Bites are developed through registry data analysis and processing of the committee's preferences, cross-referenced with available ShARC and non-ShARC publications, to provide recommendations on current techniques and implants.

Summary Recommendation

The ShARC does not have a consensus for the use of a central screw or post fixation with nonaugmented baseplates in reverse total shoulder arthroplasty. Both can provide stabile fixation with excellent clinical outcomes and can therefore be chosen based on surgeon preference. To maximize baseplate stability, regardless of central fixation method used, the ShARC recommends increasing length with bicortical placement when possible in addition to using 3 to 4 peripheral screws.

Construct Comparison

Central Screws

Central Posts

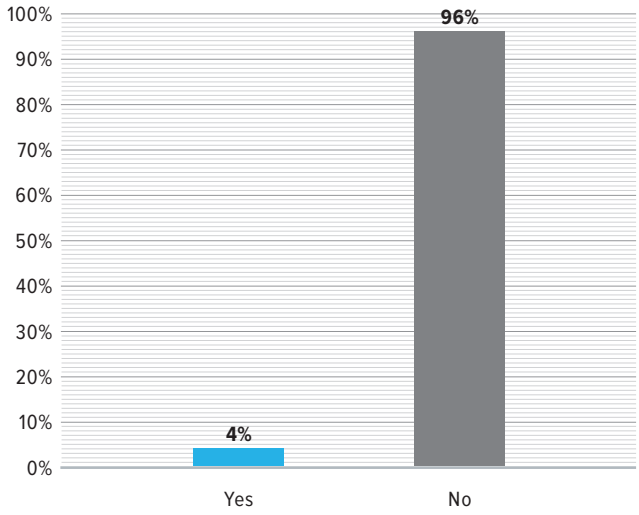
Background

Biomechanical analysis has shown that both central screw and post configurations provide adequate fixation with no significant difference in micromotion.[1] Similarly, clinical and radiographic outcomes at short-term follow-up are also equivalent.[2] Regardless of the central fixation method used, important considerations when performing reverse shoulder arthroplasty (RSA) include the length of central fixation, length of peripheral fixation, and type of peripheral fixation, which have all been shown to affect baseplate stability.[1-7] We conducted a ShARC surgeon survey to identify their fixation preferences and these are the results.[8]

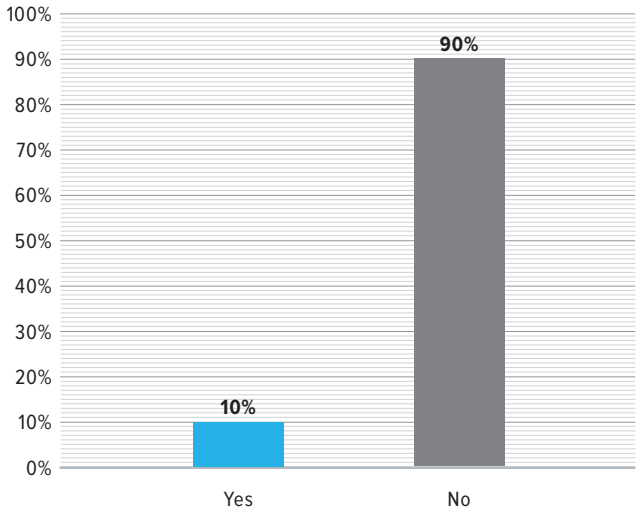
Central Screw vs Post Usage

When no significant glenoid deformity is present, **54% of ShARC surgeons prefer a central post, while 46% prefer a central screw**. Lateralizing the center of rotation does not affect the majority of surgeons' preferences for central fixation.

Does Lateralizing +2 Change Central Fixation Preference?



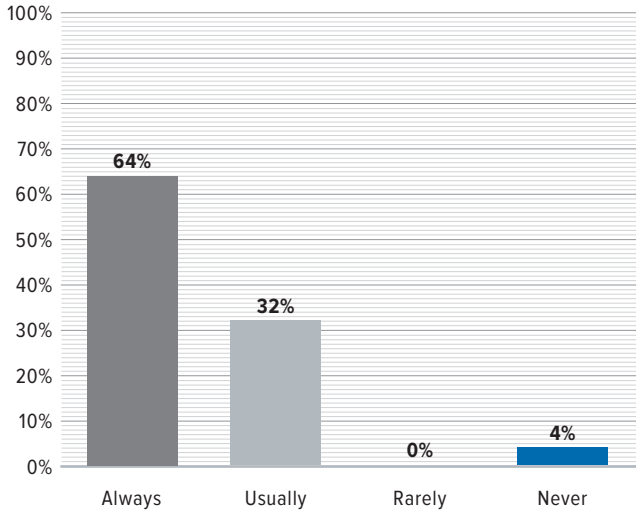
Does Lateralizing +4 Change Central Fixation Preference?



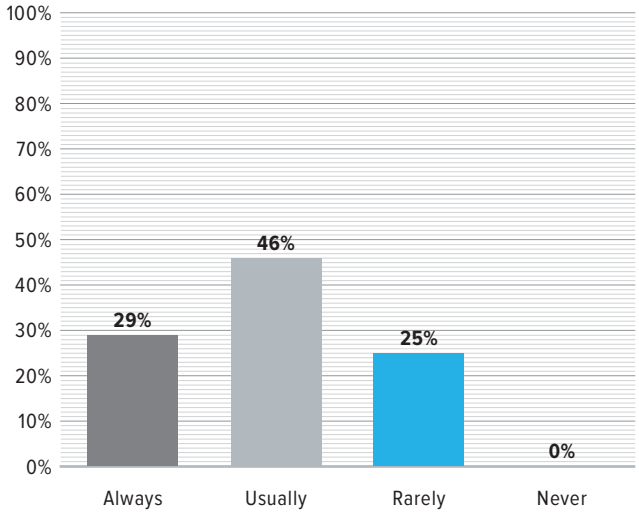
Central Fixation Length

Whether using a post or screw, **the majority of ShARC surgeons aim for bicortical fixation**. With central screw fixation, 96% of surgeons always or usually go bicortical. When using a central post, 75% of surgeons always or usually go bicortical.

Bicortical Central Screw Placement



Bicortical Central Post Placement



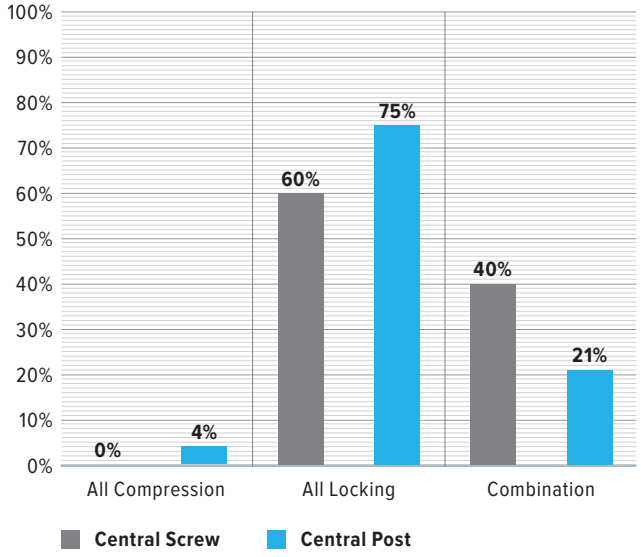
Bicortical fixation preference increases to >90% with increasing lateralization through the baseplate. This is consistent with literature suggesting that longer central screw or post length and bicortical fixation increases baseplate stability.[1,3,4]

Peripheral Screw Usage

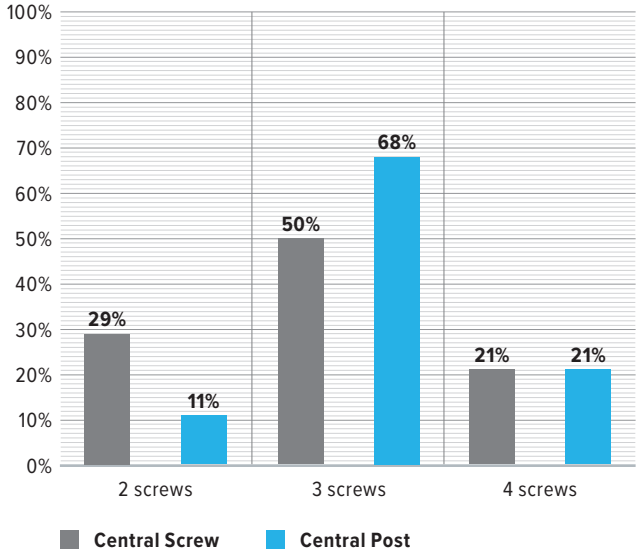
Regardless of central fixation method used, ShARC surgeons routinely use either a combination of compression and locking screws or all locking screws for peripheral fixation. Whether using a central screw or post, the majority prefer to use all locking screws. The use of at least 1 peripheral locking screw is preferred. Using a combination of compression and locking screws provides stable baseplate fixation; however, increasing the number of locking screws decreases micromotion and increases consistency.[5]

All ShARC surgeons routinely use a minimum of 2 peripheral screws for added stability. The majority routinely prefer 4 peripheral screws when sufficient bone stock allows, but more often use 3 screws 50%-68% of the time depending on the central fixation. Stable fixation has been reported with the use of 2 screws, but most studies have reported on medialized designs.[6,7]

Peripheral Screw Usage



Number of Peripheral Screws



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