GLOBAL™ APG
GLOBAL™ STEPTECH®

ANCHOR PEG GLENOID

Design Rationale

DePuy Synthes
THE ORTHOPAEDICS COMPANY OF Johnson & Johnson

GLOBAL™ APG

SHOULDER SYSTEM

The modular shoulder system that provides surgeons adaptability in the Operating Room without compromise.

GLOBAL UNITE™
Platform Shoulder System

GLOBAL ICON®
Stemless Shoulder System

GLOBAL™ APG
GLOBAL™ STEPTECH®
ANCHOR PEG GLENOID

The GLOBAL™ Anchor Peg Glenoid Implant System and the GLOBAL™ STEPTECH are part of the DePuy Synthes GLOBAL Implant Family. They are compatible with both GLOBAL UNITE™ and the stemless GLOBAL ICON®.

GLOBAL™ APG
ANCHOR PEG GLENOID

The patented GLOBAL Anchor Peg Glenoid Implant System is addressing the need for long-term implant fixation and stability, based on a proven design:

100%
survivorship at an average of 34 months[1]

69%
reduced risk of revision with GLOBAL APG at 11 years[2]

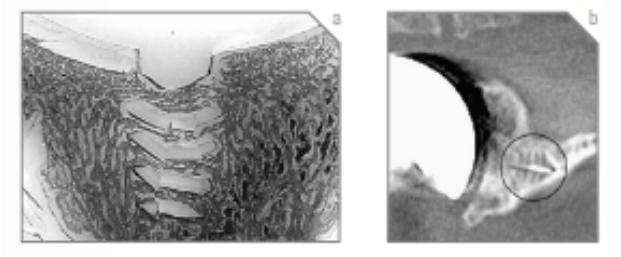
4%
GLOBAL APG cumulative percentage revision at 10 years versus 13.4% all other stemmed shoulders[2]

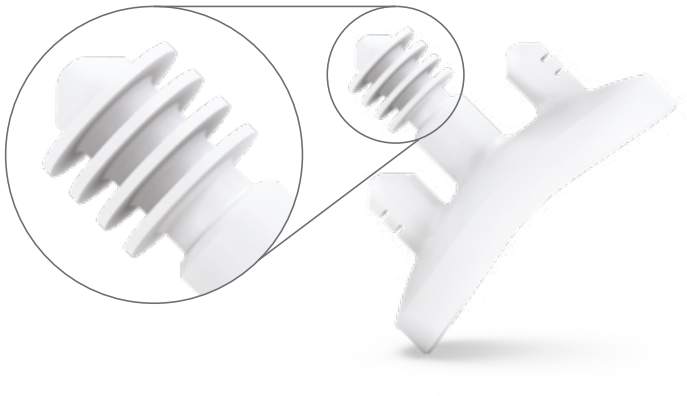
Less primaries revised due to loosening with GLOBAL APG compared to all other stemmed shoulders[2]

Addressing glenoid fixation

Proven design

- Fluted central peg facilitates bony integration around the flutes[3]
- Cemented pegs are able to lessen glenoid loosening and resist shear forces at the bone-cement-implant interface[4]
- Three cemented peripheral pegs are designed to provide immediate stability in the bone[3]
- 5 sizes ranging from 40-56 in 4 mm increments





Advanced biomechanics

The APG glenoid is designed to create a 6 mm mismatch between the glenoid and the humeral head component.[5] As demonstrated in a cadaveric study, this promotes a more natural range of motion by emulating the anatomic biomechanics of a shoulder.[6] Mismatched designs have shown to have less surface damage, less radiolucency and less impingement and edge abrasion compared to conforming designs.[7]

Advantages of all-polyethylene PREMIERON X-Linked Polyethylene glenoids

- Decreased rate of particle generation and wear-particle induced osteolysis[4]
- Potential for improved implant survival and clinical outcomes[4]
- Optimized material property for multidirectional wear, improved wear performance[8]

GLOBAL™ STEPTECH®

ANCHOR PEG GLENOID

Addressing glenoid erosion in TSA

The stepped, augmented glenoid is a modification of the all-polyethylene pegged GLOBAL™ Anchor Peg Glenoid featuring the cemented peripheral pegs and the fluted central peg, designed to provide long-term fixation through an interference fit and bony ingrowth. It is designed to compensate for posterior glenoid erosion or bone deficiency, removing the need for bone grafting and reducing the need for asymmetric reaming, hence streamlining the surgical procedure. Patients who have Type B1 or B2 glenoids may benefit most from this device.

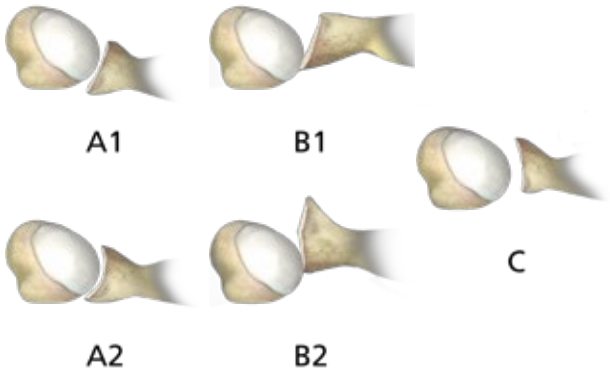
Posterior glenoid bone loss is a common finding in advanced glenohumeral arthritis and failure to address this bone loss during TSA will likely lead to suboptimal results. Re-establishing ideal glenoid version during TSA can be challenging in presence of significant posterior glenoid wear and literature suggests retroversion greater than 10° should be corrected.[9] Glenoid bone loss and increased retroversion are significantly associated with glenoid component loosening.

Addressing the clinical need

Posterior Glenoid Erosion – B2 Glenoid

Asymmetric wear can lead to increased reduction of the posterior surface of the glenoid fossa. Studies show asymmetric wear can result in increased retroversion in osteoarthritic patients.[10]

Augmented glenoid components offer a solution to this difficult pathology. All-polyethylene augmented glenoid components with a posterior step performed favorably compared to traditional methods (reaming or grafting).[11]



Product Overview

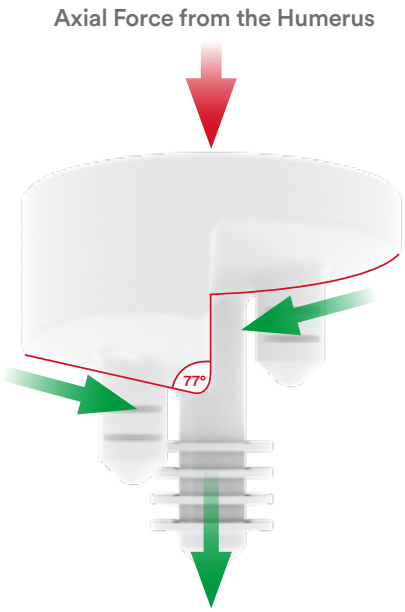
Step Height	Version Correction (approximate)
+3 mm	5°
+5 mm	10°
+7 mm	15°

- Designed to restore glenoid version and to offset posterior glenoid bone loss[11] without need for medialization, reaming and implant under sizing or bone grafting
- The amount of correction is managed by the heights (+3, +5 or +7 mm) of the posterior step built into the component.
- Supports the need to place the component in an optimal version position
- Same peg fixation design and implant range (40-56 mm) as the APG
- These features work together to decrease the shear stresses at the bone/implant and bone/cement interface, thereby increasing implant stability as demonstrated by computational modeling.[11]

Addressing anterior glenoid liftoff

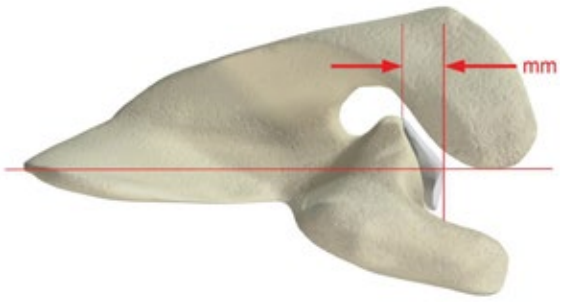
Different augmented glenoid designs vary in their resistance to loosening in mechanical testing. Results from these tests show that Steptech is the only augmented glenoid design that does not have a higher degree of lift-off than the standard APG for the central peg after performance testing, which may make it more likely to maintain long-term fixation.

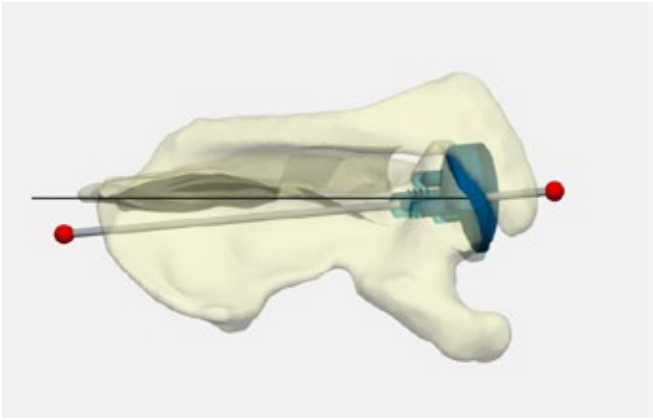
As seen in the image, the posterior step is 77° to perpendicular. As shown in mechanical testing, this design counteracts posterior loading.[12] Augmented component with a surface that articulates with the prepared bone surface to be perpendicular to the vector of joint loading provides better mechanical properties.[12]



TRUMATCH®

PERSONALIZED SOLUTIONS SHOULDER SYSTEM





The TRUMATCH Personalized Solutions Shoulder System, enables surgeons to analyze the patient's glenohumeral anatomy in multiple dimensions and perform pre-surgical planning in a 3D environment. The 3D Reconstruction of the glenoid can be used to help plan for which implant step height and amount of needed correction will be needed.

References:

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