



SHOULDER

INNOVATIONS

Strong Glenoid Fixation

Simple Surgical Technique

Published Results

DESIGN RATIONALE

ADVANCED GLENOID INNOVATION

More than 53,000 people in the U.S. have shoulder replacement surgery each year, and that number is growing faster than knee or hip replacements. But today's shoulder technologies don't yield the same patient satisfaction rates as the established knee and hip procedures.

Nonetheless, the demand is increasing, and this growth is driven by a dramatic expansion of the patient population through generational shifts, high activity levels and patient expectations at later stages in life.

In many instances, deficiency of the bone limits the size and options of replacement devices in the glenoid vault--the structural support for all shoulder replacement surgeries. This results in unreliable fixation of the glenoid implant, further damaging the bone structure, which causes glenoid failure and subsequent revision surgery.

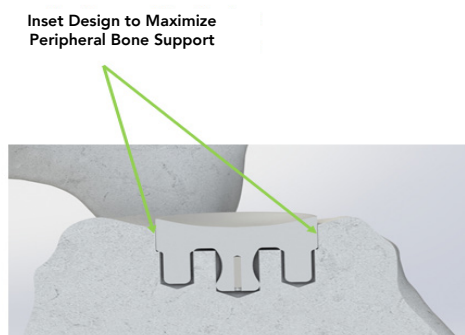


Fig. 1

Shoulder Innovations Total Shoulder Replacement System is the next generation of a safe, effective, glenoid implant, to reconstruct deficient bone when today's implants simply won't work.

Published results in an FEA and mechanical test model show improved implant stability of the Shoulder Innovations inset glenoid, with the FEA model demonstrating an 87% reduction in implant micro-motion as compared to conventional glenoid design.

Journal of Shoulder and Elbow Surgery,
(2012) 21,6, 795-803.

CLINICAL HISTORY

Ten years ago, Shoulder Innovations developed inset glenoid fixation technology.

The clinical team designed a revolutionary surgical technique intended to address two of the most significant issues in shoulder replacement; fixation in deficient glenoid bone and glenoid implant loosening. Furthermore, the team leveraged this technology to create a simple surgical approach, with the goal of reducing operative time and cost.

In order to maximize fixation and stability, the Shoulder Innovations glenoid is inset into a prepared shallow pocket below the articular bone surface, which results in peripheral support of the implant (Fig. 1)

The design incorporates a central post, peripheral pegs, and peripheral cement channels to optimize implant to bone cement fixation. (Fig. 2)

Because of the locking action of the peripheral pegs, the central peg can be shorter, to address fixation in patients with severe bone loss.

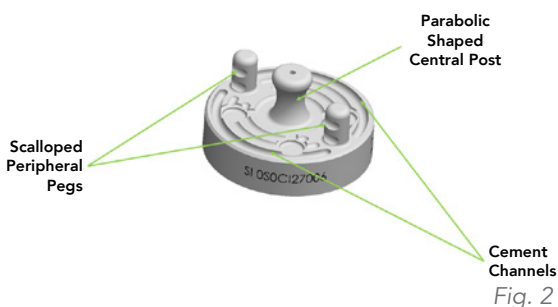


Fig. 2

INSET GLENOID DESIGN

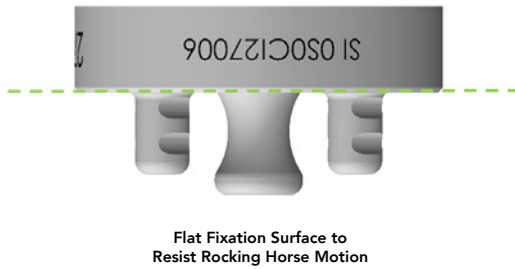


Fig. 3

Glenoid component failure is the most common complication of total shoulder replacement^{1,2,5}. Failures of prosthetic glenoid arthroplasty can be understood in terms of:

- failure of the component itself
- failure of seating
- failure of fixation
- failure of the glenoid bone

The leading cause of glenoid fixation failure is a mechanical condition called **"rocking horse motion,"** originally described by Frederick Matsen, MD.

Shoulder Innovations' technology is specifically created to improve the stability and longevity of the glenoid fixation interface. By countersinking the glenoid implant into the cortical bone, it is provided with strong support both on its sidewall, as well as the anchoring pegs.

Utilizing the inset technology, Finite Element Analysis models show that the Shoulder Innovations proprietary glenoid implant results in an approximately 87% reduction in edge displacement as compared to other solutions⁹.

- Inset design utilizes peripheral bony structure for stability.
- Contoured pegs and cement channels designed to enhance implant to bone cement fixation.
- Flat backside surface to address rocking horse effect.¹⁰ (Fig. 3)
- Complete glenoid to head compatibility for inter-operative flexibility.
- Contact area between the humeral head and glenoid is designed to reduce stress on the polyethylene. (Fig. 4)



Fig. 4

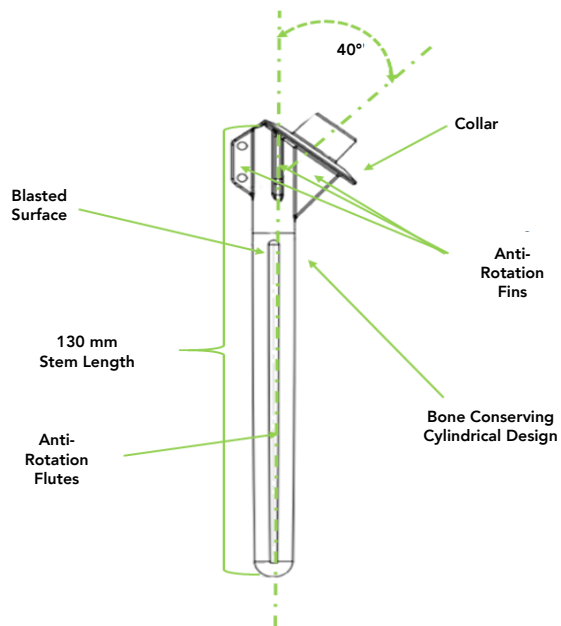


Fig. 5

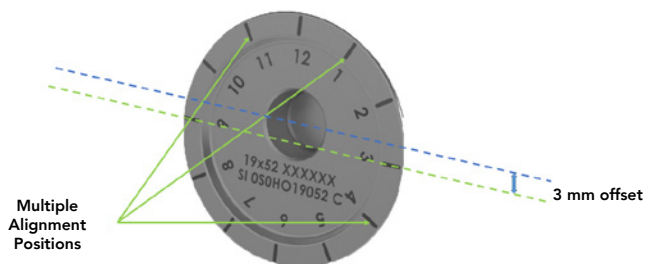


Fig. 6

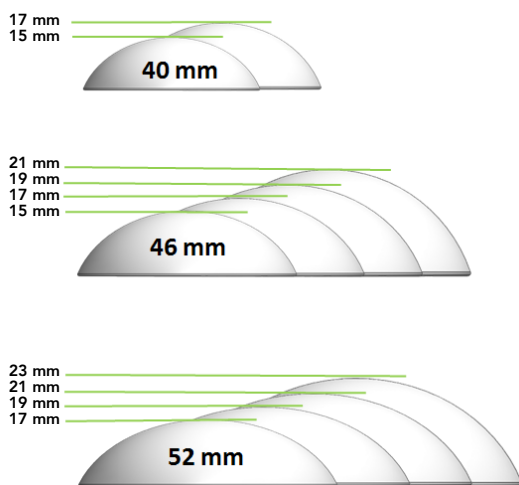


Fig. 7

BONE CONSERVING DESIGN

Shoulder Innovations Total Shoulder Replacement System utilizes best-in-class humeral stem and head implant technology for a design that is familiar to orthopedic surgeons.

The unique countersunk head design allows the head to rest securely on the cut surface, eliminating any visible gap on x-ray. Furthermore, the robust and proven humeral system design is implanted with a simple technique and minimal instrumentation.

With this approach, paired with decades of clinical experience, Shoulder Innovations is working to improve shoulder replacement through better devices and reduced surgical steps.

- The cobalt chrome stem is cleared for use with and without bone cement.
- Proximal fins, distal flutes and a distal taper are designed to address axial and rotational stability. (Fig. 5)
- Each head contains 3 mm of offset to allow for anatomic head location and coverage. (Fig. 6)
- A recessed taper design allows the collar to sit within the underside of the humeral head to eliminate the need for a secondary milling operation.
- Variable humeral head diameters and heights are designed to match patient anatomy and maximize shoulder stability. (Fig. 7)

ADDRESSING PROCEDURAL COSTS

The design goal of the Shoulder Innovations Primary Shoulder System is to reduce the number of instruments, cases and trays to offer the surgeon, surgical staff and hospital central sterilization team a simple, efficient and reproducible surgical approach.

This was accomplished primarily by evaluating each and every step of the procedure and identifying where instruments could be designed to serve a multi-purpose.



The Shoulder Innovations System requires three simple steps and is designed to allow for improved access to the glenoid vault. The system also eliminates any secondary reaming for preparation of the humerus bone, typical in conventional arthroplasty. All instrumentation of the Shoulder Innovations' system is delivered in one instrument case, which means less storage, handling, cleaning and sterilization. This is intended to result in fewer costs, while increasing back table efficiency and surgical approach.

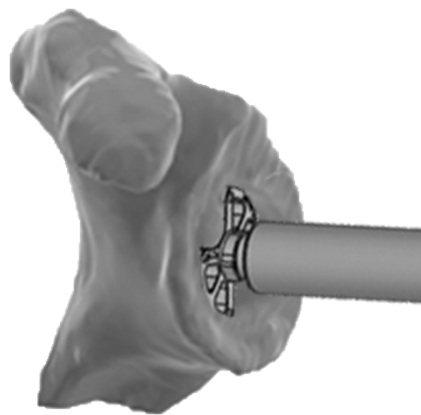
GLENOID PREPARATION

To better understand this simplified process, the fully cannulated approach to the glenoid allows for precise and reproducible preparation and placement of the inset glenoid component in three steps.

Glenoid Reaming and Preparation of Pegs



1. Glenoid Sizing



2. Glenoid Reaming



3. Peripheral Peg Preparation

CONTACT US

Shoulder Innovations brings a renewed focus on the number one issue in Primary Shoulder Replacement--glenoid loosening--and combine it with a simple, efficient and reproducible surgical approach.

Contact us to see if this design is right for you and your patients.



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