EXACTECH | SHOULDER

Design Rationale

equinoxe®

PLATFORM SHOULDER SYSTEM

Preserve Stem

Exactech®

Surgeon focused. Patient driven.™

equinoxe®

Preserve Stem

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Design Team

Samuel Antuña, MD, specializes in trauma and orthopaedic surgery and deals specifically with the shoulder and elbow. Dr. Antuña received his Bachelor of Medicine and Surgery from Universidad de Oviedo and completed his residency in orthopaedic surgery at the Central Hospital of Asturias.

Kenneth Faber, MD, MHPE, FRCSC, is an associate professor in the department of surgery at the University of Western Ontario. Dr. Faber completed his fellowship in hand and wrist surgery at the Roth| McFarlane Hand and Upper Limb Centre, and a shoulder and sports medicine fellowship at Steadman-Hawkins Clinic. Dr. Faber also holds a master's in health professions education, and is the author of several book chapters, published articles and abstracts.

Pierre-Henri Flurin, MD, practices shoulder surgery at the Clinique du Sport in Bordeaux, France. Dr. Flurin has produced numerous scientific works and pioneered treatments such as arthroscopy of the musculotendinous cuff and shoulder arthroplasty due to degenerative osteoarthritis. He founded the Equinoxe® shoulder prosthesis program.

Howard Routman, DO, is the president of Atlantis Orthopaedics in Palm Beach Gardens, Fla., and directs the Palm Beach Shoulder Service. He completed his ASES fellowship in 2000, and has been actively involved in reverse shoulder replacement surgery and research since 2003. Dr. Routman is the immediate past president of the Association of Clinical Elbow and Shoulder Surgeons (ACESS), active member of the American Shoulder and Elbow Surgeons (ASES), past president of the shoulder and elbow section of the American Osteopathic Academy of Orthopedics (AOAO), and the president of the Palm Beach Shoulder and Sports Medicine Foundation, a nonprofit organization.

Thomas Wright, MD, one of the original Equinoxe design team members and world-renowned expert in shoulder surgery, specializes in the upper extremity at University of Florida College of Medicine. He completed his residency at University of Florida and his fellowship in hand and upper extremity surgery at the Mayo Clinic. Among many other accomplishments, Dr. Wright has earned more than a dozen grants and refereed more than 160 published works.

Joseph Zuckerman, MD, is professor and chairman of NYU Langone Health, department of orthopedic surgery, and surgeon-in-chief at NYU Langone Orthopedic Hospital. He completed his internship and residency at University of Washington, and fellowships at Brigham and Women's Hospital and the Mayo Clinic. Dr. Zuckerman is an industry thought leader and has traveled around the world educating surgeons on shoulder replacement. He is past president of the AAOS and an Equinoxe design team member.

Introduction

Founded by an orthopaedic surgeon and biomedical engineer, Exactech uniquely focuses on looking at clinical needs through the eyes of the surgeon. Driven by our passion for patient care and surgeon collaboration, the Equinoxe team is committed to creating new products that address real clinical problems and mitigate current complications in shoulder arthroplasty.

Exactech's Equinoxe System was designed to address a myriad of surgical complications, including scapular notching in rTSA. Our next effort examines current humeral stem designs and philosophies to further the understanding of the varied designs and outcomes to determine the application of a smaller humeral stem design.

There are many stem design features to analyze and how they may reduce radiographic loosening while improving function: in-lay to on-lay; round vs. flat; fluted vs. smooth; platform vs. non-platform (convertible vs. non) with varying lengths; and metaphyseal filling designs.

The Equinoxe System was designed to address native bone removal/preservation, loosening and revision, and the Preserve stem is its next generation.

Created from the collaborative efforts of our global surgeon thought leaders and world-class engineers, the Preserve stem was designed to preserve distal humeral bone while also achieving optimal stability and fixation. This platform stem is compatible with the Equinoxe shoulder system that uniquely focuses on anatomical replication, reverse shoulder arthroplasty and options for difficult glenoids and revisions.

Patient Selection

In a traditional stem procedure, the surgeon will ream to the cortical chatter, however in the Preserve stem procedure, the goal is to achieve rotational stability utilizing a distally bone preserving stem. Therefore, patient selection may be different. When choosing a patient, the surgeon will look for sufficient proximal bone support.

Design Features

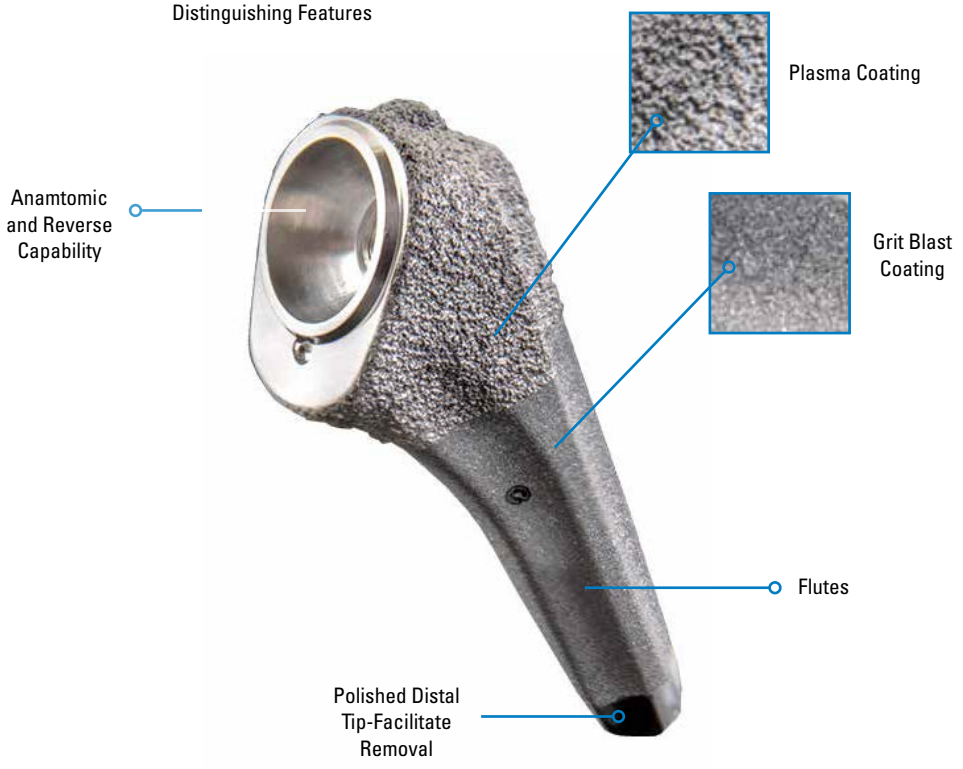
IMPLANT DESIGN

The Preserve stem provides several distinguishing features that differentiate it from other short, mini or micro stems currently available. As an Equinoxe platform design, the Preserve stem provides intraoperative flexibility to choose between an anatomic and reverse construct, as well as provide revision from anatomic to reverse without stem removal.

The Preserve stem has proximal plasma coating that allows for initial fixation with a press-fit application, in addition to grit blast coating designed for additional fixation. The tapered stem design was engineered to facilitate device insertion, a proximal-only press fit and to avoid distal fixation. By avoiding distal fixation, surgeons may potentially avoid bone resorption and loosening. The Preserve stem is designed with a fluted geometry for rotational stability.

If the device must be removed, the Preserve stem's polished distal tip is designed to facilitate implant removal. If revision to an Equinoxe press-fit stem is required, the surgeon can upsize the stem by 1mm assuming the patient's canal will allow for the chosen press-fit humeral stem size (please reference the Equinoxe Primary Reverse Operative Technique, 718-01-30).

Figure 1
Distinguishing Features



INSTRUMENT DESIGN

The Preserve stem broaches offer a tooth geometry designed to assist in cancellous bone compaction in order to provide a rotationally stable construct when trialling, potentially assisting in proper implant size selection.

TECHNIQUE

Designed as a broach-only system, the Preserve stem's approach is intended to reduce OR time and patient blood loss. The streamlined technique requires surgeons to broach to a size where the stem is rotationally stable. Once that size is determined, you can implant the definitive stem.

Meanwhile the instrumentation assists in aligning the stem to its proper orientation in the humerus. For optimal stem placement, it is recommended to use the starter reamer and extended 6mm broach prior to using the standard broaches. By using both instruments, it facilitates the point of entry and orientation.

The extended broach option is essentially a broach and starter reamer in one. This instrument contains a cylindrical distal feature which extends from the cutting flutes to assist in aligning the stem within the humeral canal. The Preserve stem broaches and extended broach can also be used as the stem trial. This system mates with the reverse tray trial adapter to perform trial reduction and range of motion assessment in reverse total shoulder arthroplasty.

Figure 2
Extended Broach
Tooth Geometry

References

Exactech, Inc. is proud to have offices and distributors around the globe. For more information about Exactech products available in your country, please visit www.exac.com

For additional device information, refer to the Preserve Stem–Instructions for Use for a device description, indications, contraindications, precautions and warnings. For further product information, please contact Customer Service, Exactech, Inc., 2320 NW 66th Court, Gainesville, Florida 32653-1630, USA. (352) 377-1140, (800) 392-2832 or FAX (352) 378-2617.

Exactech, as the manufacturer of this device, does not practice medicine, and is not responsible for recommending the appropriate surgical technique for use on a particular patient. These guidelines are intended to be solely informational and each surgeon must evaluate the appropriateness of these guidelines based on his or her personal medical training and experience. Prior to use of this system, the surgeon should refer to the product package insert for comprehensive warnings, precautions, indications for use, contraindications and adverse effects.

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