

ROSA® ROBOTICS

Technology for
Shoulder Replacement

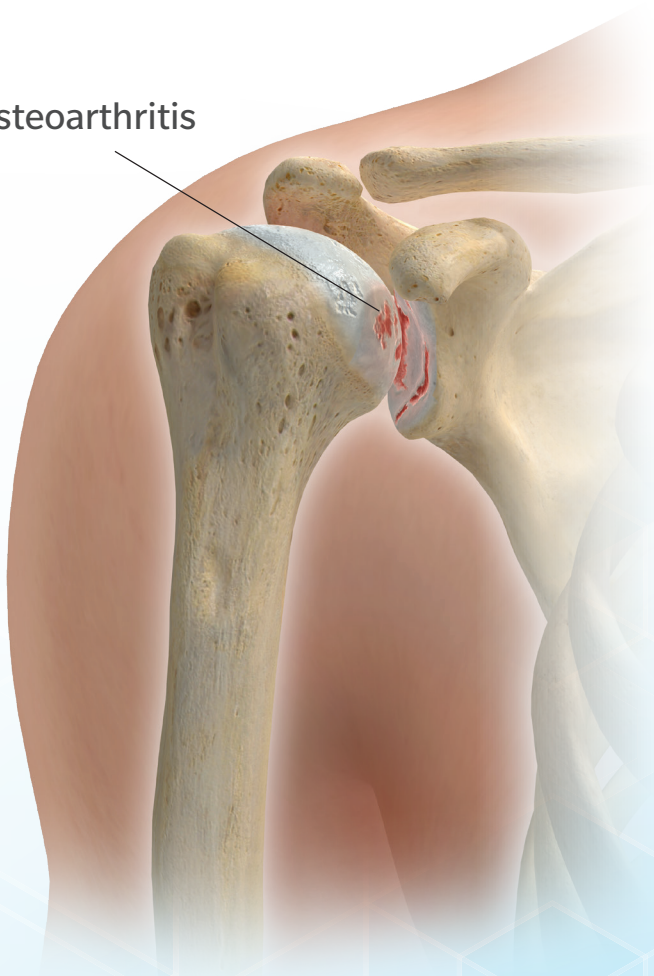


ROSA[®] Shoulder

UNDERSTANDING HOW YOUR SHOULDER WORKS

Your shoulder is a ball-and-socket joint made up of two bones. The ball portion of the joint is part of the upper arm bone (humerus), and the socket portion (glenoid) is part of the shoulder blade. The ball fits into the socket, allowing the shoulder to move. The surfaces of the ball and socket bones are very smooth and covered with a tough, protective tissue called cartilage. The cartilage prevents direct contact between these bones and allows them to move smoothly over each other, without friction or wear on the bone surfaces.

Osteoarthritis



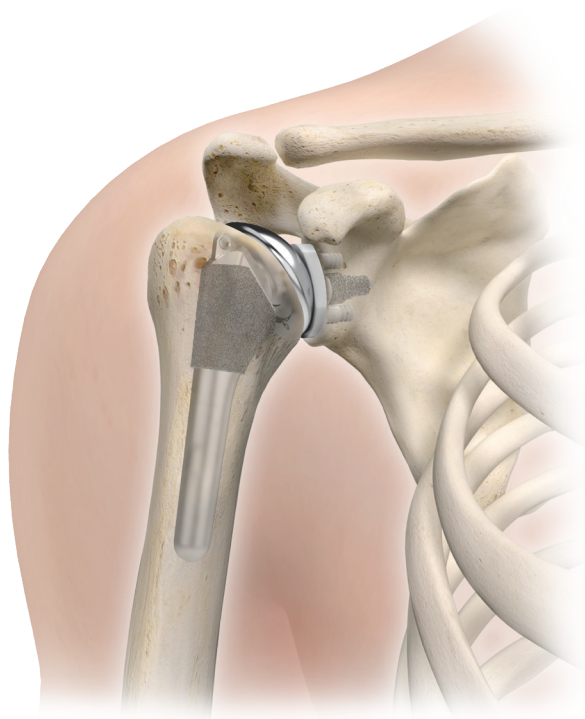
OSTEOARTHRITIS

A common cause of shoulder pain is osteoarthritis,¹⁻² a degenerative joint disease that causes the cartilage in your shoulder to break down. When that layer of cartilage—which is meant to cushion the joint and protect the surface of the bones—is damaged or worn away, your shoulder bones come in direct contact with each other, and that contact hurts. Eventually, the friction from bone-on-bone contact causes the bone surfaces to deteriorate.

If you're experiencing shoulder pain, talk with your doctor to see whether you're a candidate for robotic shoulder replacement with ROSA Shoulder.

TOTAL SHOULDER REPLACEMENT

Total shoulder replacement is for patients with arthritis and who have intact or repairable rotator cuff muscles. In total shoulder replacement surgery, the parts of the bones that rub together or have been broken are replaced with metal and plastic implants. The procedure is intended to restore range of motion and help alleviate painful bone-on-bone contact.



REVERSE SHOULDER REPLACEMENT

In a reverse shoulder, a small metal baseplate is attached to the glenoid (socket) with medical screws. This metal baseplate is coated with a special material that allows bone to grow into the implant, which is how it stays attached long term. After the metal baseplate is in place, a round sphere, called a glenosphere, is inserted onto it. This makes the socket side, which used to be “cup” shaped, now round.

The implant used typically lengthens the deltoid muscle. This helps compensate for an insufficient or torn rotator cuff.



UNDERSTANDING ROBOTIC TECHNOLOGY FOR SHOULDER REPLACEMENT

You're unique, and so is your individual anatomy. That's why Zimmer Biomet offers ROSA Shoulder Robotic Technology. ROSA, which stands for Robotic Surgical Assistant, is designed to help your surgeon tailor the placement of your shoulder implant just for you. It uses data collected before and during surgery to inform your surgeon of many details of your shoulder anatomy that may affect how your implant fits. By using this data to make more informed decisions, your surgeon can plan for and perform a personalized surgery based on your individual needs.

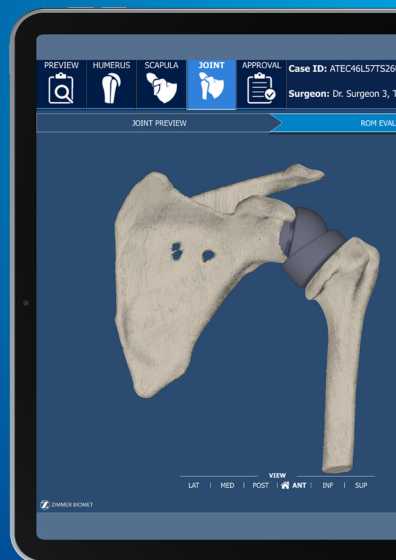
HOW IT WORKS:



1

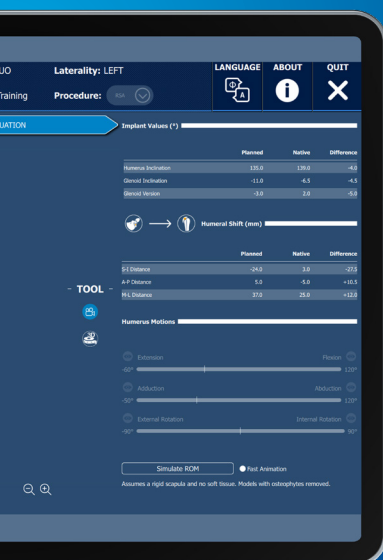
SCAN

A CT scan is used to create a 3D model of your shoulder. Your CT scan allows your surgeon to evaluate your anatomy and bone disease state.



2

PLAN



3 PRECISE PLACEMENT³

The 3D model enables your surgeon to plan your shoulder replacement surgery based on your unique anatomy.

During your surgery, the ROSA Shoulder robot uses a camera and optical trackers to know exactly where your shoulder is in space. This helps ensure that your plan is executed as intended. ROSA Shoulder provides your surgeon with helpful information to support accurate implant placement, with the goal of lowering the risk of complications related to implant positioning.⁴⁻⁷



THE DECISION TO HAVE SURGERY CAN BE DIFFICULT.

Getting a precise implant fit is important to your comfort, recovery and overall experience following shoulder replacement surgery. ROSA Shoulder technology uses data that helps your surgeon execute a personalized surgery, allowing for an optimal implant fit based on your needs.

WHAT TO EXPECT FROM A ROSA ROBOTIC SHOULDER REPLACEMENT

BEFORE SURGERY EXPERIENCE

Your experience before surgery will be like that of most shoulder replacement patients. A CT scan will be used to create a 3D model of your shoulder anatomy. This 3D model will enable your surgeon to plan many specifics of your shoulder replacement before your surgery.

DURING SURGERY

During your procedure, the ROSA Shoulder robot utilizes a camera and optical trackers to know exactly where your shoulder is in space. Think of it like a very detailed global positioning system (GPS) that you might use in your car. If your shoulder moves even a fraction of an inch, the robot can tell and adjust accordingly. This helps ensure that the plan your surgeon put into place is executed as intended. Throughout your surgery, the ROSA Shoulder robot provides your surgeon with data about your shoulder. This information, combined with your surgeon's skill, helps them know how to position your implant based on your unique anatomy.

EXPECTATIONS AFTER SURGERY

Following surgery, you may return home the same day or remain in the hospital for one to three days, depending on the recovery plan your surgeon decides is best for you. Recovery time varies, but most people should be able to drive after six to twelve weeks.⁸ Your surgeon will guide you on when and what activities you can return to and what activities to avoid.

BENEFITS OF ROSA SHOULDER TECHNOLOGY



Designed to support improved accuracy and implant positioning³

DOES THE ROSA SHOULDER ROBOT OPERATE BY ITSELF?

The surgical procedure using the ROSA Shoulder robot is similar to traditional shoulder replacement, but with a robotic assistant. Your surgeon has been specially trained to use the robot to personalize the surgical approach for your unique anatomy. It's important to understand that the robot does not operate on its own. That means it does not move unless your surgeon prompts it to. Your surgeon is still in the operating room the entire time and is making all of the decisions throughout your surgery.



WHAT RISKS ARE INVOLVED WITH SHOULDER REPLACEMENT SURGERY?

It is important to understand the risks involved with shoulder replacement surgery. There are potential complications both during and after surgery. Generally, these include infection, blood clots, pneumonia, implant loosening, nerve damage, bone fracture and implant breakage; any of which can require additional surgery. While joint replacement is generally successful in lowering pain levels and increasing mobility, some patients will continue to experience pain and your doctor may permanently restrict certain activities that could damage and wear out your new shoulder parts. Ask your doctor to explain all of the surgery risks.



For more information, resources and tools to support your joint health journey, please visit **TheReadyPatient.com**.

References

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Important Note: This is intended to provide an overview of shoulder replacement surgery and should be reviewed with your doctor. It does not include all of the information needed to determine eligibility for shoulder replacement or the proper use and care of artificial shoulder replacements. Please consult your surgeon for more information. Individual results may vary. Your results will depend on your personal circumstances. How long a shoulder replacement will last varies from patient to patient. It depends on many factors, such as the patient's physical condition, activity level and body weight, and the surgical technique. The people shown are not actual doctors or patients.

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