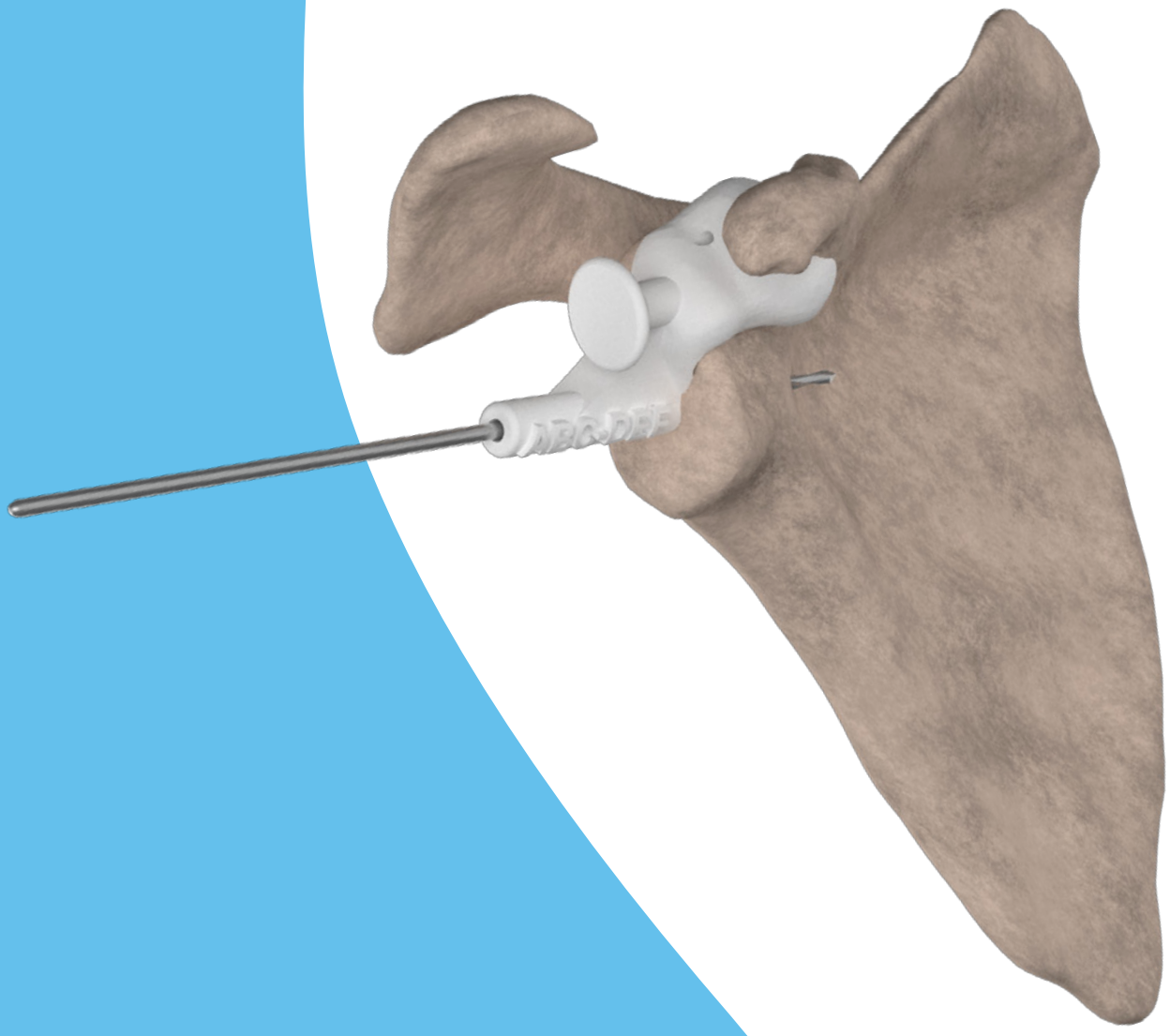
Smith+Nephew

ATLASPLAN◊

3D Planning and
Patient Specific Instrumentation

Surgical Technique



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Note Bena

The following technique is for informational and educational purposes only. It is not intended to serve as medical advice. It is the responsibility of treating physicians to determine and utilize the appropriate products and techniques according to their own clinical judgment for each of their patients. For more information on the product, including its indications for use, contraindications, and product safety information, please refer to the product's label and the Instructions for Use packaged with the product.

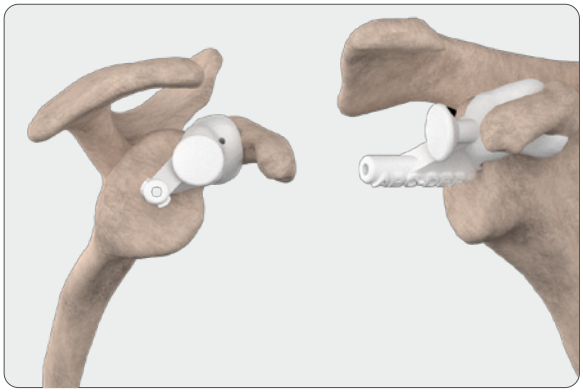

Figure 1

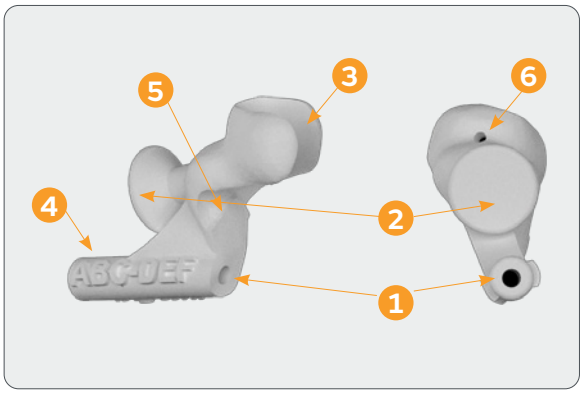

Figure 2

Surgical technique

Smith+Nephew does not provide medical advice and does not recommend this or any other surgical technique for use on a specific patient. The surgeon who performs any implant procedure is responsible for determining and using the appropriate techniques for implanting the device in each patient.

Preoperative planning – Humerus and Glenoid

The preoperative planning is carried out based on computer tomography (CT) images uploaded to the web-based planning. The preoperative plan can be consulted at any time in the web-based planner or through the patient-specific surgery report. (**Figure 1**)

ATLASPLAN◊ Guide

An ergonomically-designed glenoid guide, specific to the patient's anatomy that aims to provide accuracy of implant placement to improve alignment and surgical outcome. (**Figure 2**)

1. Central Drill Cylinder: Facilitates the planned center hole drilling when using the appropriate pilot wire.
2. Push or Directional Handle: Provides haptic or "sensorial touch" feedback and guide seating stability.
3. Coracoid Clip: Grips onto the base of coracoid.
4. Patient Specific Guide Identifier: Alphanumeric code that links the guide to the patient case.
5. Labrum Offset: Bridges between the coracoid clip and the lateral body of the guide to prevent soft tissue interference at the anterior-superior border of the glenoid surface.
6. 2.0mm K-wire Hole: Provides the option to pin a 2.0mm K-wire for added guide stability during drilling.

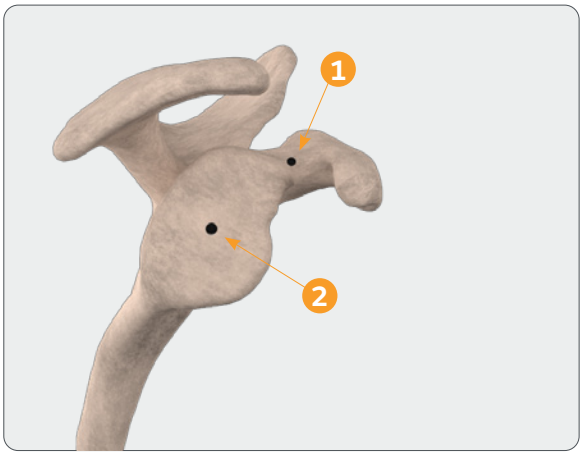

Figure 3

ATLASPLAN◊ Bone model

The bone model is a 3D replicate of the patient's anatomy that is used as a reference for implant placement or in conjunction with the ATLASPLAN Guide. (**Figure 3**)

1. Fixation K-wire Entry Hole: Matches and references the (optional) 2.0mm K-wire fixation and entry point.
2. Drill Entry Hole: Matches and references the planned glenoid pin hole position.

The Drill Cylinder and Drill Entry Hole diameters are different for the various systems:

- AETOS◊ Shoulder System (anatomic and reverse): 2.5mm
- TITAN Reverse Shoulder System: 2.0mm
- TITAN Total Shoulder System In-Line Glenoid: 2.0mm
- TITAN Total Shoulder System FIN-LOCK◊ Glenoid: 2.8mm

Preparation of Glenoid Face and Coracoid

Follow the appropriate AETOS Shoulder System, TITAN Total Shoulder or TITAN Reverse Shoulder Surgical Technique for patient positioning, surgical approach and exposure techniques leading up to the exposure of the glenoid.

The ATLASPLAN Guide is designed to match uniquely to the patient's glenoid anatomy and the neck of the coracoid process. The mating surface of the glenoid face and the coracoid neck should be cleared of soft tissue and dried as much as possible to ensure a stable guide fit.

Note: Do not remove osteophytes or alter the glenoid bony anatomy before securing the ATLASPLAN Guide. Do not damage the bony surface where the ATLASPLAN Guide makes contact with the patient's glenoid anatomy. Do not remove cartilage.

Since the guide fits around the coracoid and anterior glenoid face, avoid placing anterior retractors immediately around the coracoid. Place an anterior glenoid retractor at the lower half of the glenoid so as to not interfere with the access to the coracoid. Perform a 360° glenoid release by releasing the glenohumeral ligaments, capsule, and labrum necessary to gain complete visualization of the glenoid.

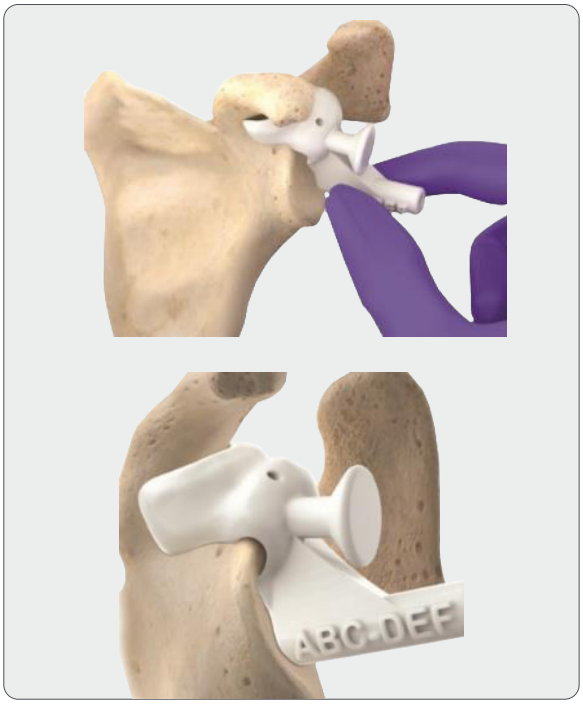

Figure 4

ATLASPLAN◊ Guide placement

Secure the guide onto the patient's glenoid anatomy by seating the coracoid clip on the base of the coracoid and verify that the base of the glenoid pin cylinder is contacting or seated on the glenoid face. (**Figure 4**) There is approximately 1-2mm of clearance between the bottom of the labrum offset on the guide and the superior glenoid rim. Avoid excessive downward pushing of the ATLASPLAN Guide. Make sure critical anatomic structures are not damaged during the guide attachment.

Verify that full surface contact is achieved between the ATLASPLAN Guide and the underlying glenoid anatomy with the exception of the 2mm offset over the superior glenoid ridge. Check for gaps between the guide and the glenoid anatomy to ensure a proper fit. Compare the fit and position of the drill guide to the planned fit and position on the patient's glenoid anatomy. The guide's fit and position on the bone model should match its fit and position on the patient's glenoid anatomy.

Note: Do not use the ATLASPLAN Guide if it is not possible to place the guide in a stable position on the patient's glenoid anatomy as the instability can negatively impact the guide's ability to transfer the preoperative plan. In the event the guide cannot be used, please follow the standard surgical technique outlined in the AETOS◊ Shoulder System, TITAN Total Shoulder or TITAN Reverse Shoulder.

Do not alter the ATLASPLAN Guide before use. Doing so could generate debris which could contaminate the operating region. In addition, altering the guide could compromise its fit to the patient's glenoid anatomy.

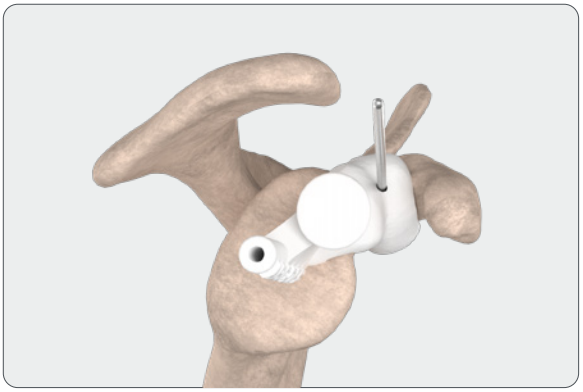

Figure 5

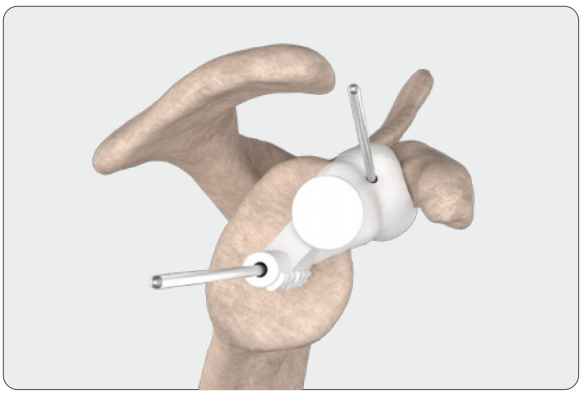

Figure 6

Guide wire placement

Apply and maintain pressure on the push handle of the ATLASPLAN◊ Guide to keep contact between the guide and underlying glenoid anatomy during drilling. Verify that the correct glenoid pin diameter is being used which corresponds to the guide's glenoid pin cylinder diameter:

- AETOS◊ Shoulder System (anatomic and reverse): 2.5mm
- TITAN Reverse Shoulder System: 2.0mm
- TITAN Total Shoulder System In-Line Glenoid: 2.0mm
- TITAN Total Shoulder System FIN-LOCK◊ Glenoid: 2.8mm

Optional: Prior to placing the glenoid pin, a 2.0mm K-wire can be used to affix the ATLASPLAN Guide using the fixation K-wire hole. (**Figure 5**)

Note: Make sure the drill guide maintains its position on the fitting surface during drilling. Verify that the correct drill diameter is being used which corresponds to the guide's drill diameter. Do not modify the drill direction by drilling through the drill cylinder's surface.

Once the ATLASPLAN Guide is seated properly, apply pressure to the push handle and drill the central glenoid pin using the appropriate pin diameter. (**Figure 6**) During drilling, irrigate to reduce heat and any debris generated. Confirm the guide fit prior to and after drilling for added measure.

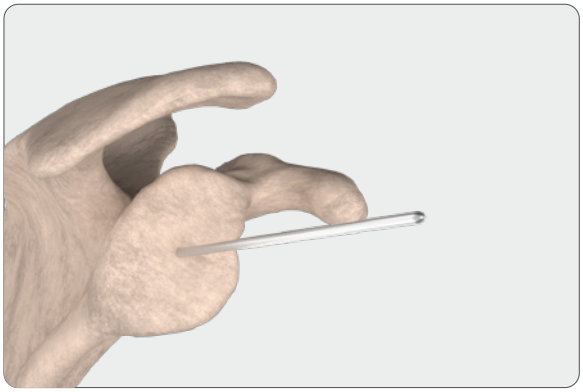

Figure 7

Removal of Guide

Do not remove the central glenoid pin from the bone. If the guide was initially positioned using the 2.0mm stabilizing K-wire, remove the K-wire prior to removing the guide while leaving the central guide wire in place. The guide can then slide over the central glenoid pin. (**Figure 7**) Take care not to alter the direction of the central glenoid pin while removing the guide.

Should it be too difficult to remove the guide over the central glenoid pin without modifying the direction of the central glenoid pin, remove the central glenoid pin, then remove the guide and finally reinsert the central glenoid pin very carefully in the pre-drilled hole in the bone.

Follow the appropriate surgical technique to complete the steps required to finalize the glenoid preparation for the prosthesis: AETOS◊ Shoulder System, TITAN Total Shoulder or TITAN Reverse Shoulder.

Note: During reaming, do not violate a substantial amount of subchondral cortical bone as this has been shown to be associated with subsidence of the glenoid component.

ATLASPLAN◊
TITAN Shoulder Systems

Reference Number	Description
SHC-IN01-00-01	Guide and Bone Model for Reverse Shoulder Arthroplasty - TITAN
SHC-IN02-00-01	Guide and Bone Model for Total Shoulder Arthroplasty - TITAN

AETOS
Shoulder System

Reference Number	Description
SHC-IN03-00-01	Guide and Bone Model for AETOS Reverse Shoulder Arthroplasty
SHC-IN04-00-01	Guide and Bone Model for AETOS Anatomic Shoulder Arthroplasty

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