# synthes radial head replacement technique guide

**synthes radial head replacement technique guide** provides a detailed, step-by-step overview of the surgical procedure used to treat complex radial head fractures with the Synthes radial head prosthesis. This guide covers essential aspects such as patient selection, preoperative planning, surgical approach, implant sizing, and postoperative care. Understanding the nuances of the Synthes radial head replacement technique ensures optimal implant placement, restoration of elbow stability, and improved functional outcomes. The article also highlights potential complications and troubleshooting tips to aid orthopedic surgeons in achieving successful results. This comprehensive resource is designed for trauma and orthopedic surgeons seeking to refine their skills in radial head arthroplasty using Synthes implants. Below is a structured outline of the topics covered in this article, facilitating easy navigation through the critical components of the technique.



## Patient Selection and Preoperative Planning

Appropriate patient selection is crucial in the success of the Synthes radial head replacement technique guide. Candidates typically include patients with comminuted radial head fractures that are not amenable to fixation, chronic radial head arthritis, or cases with associated ligamentous injuries requiring elbow stability restoration. Preoperative imaging, including standard anteroposterior and lateral elbow radiographs, supplemented by computed tomography (CT) scans, assists in assessing fracture pattern, bone stock, and joint congruency.

### Indications for Synthes Radial Head Replacement

The primary indications encompass irreparable radial head fractures classified as Mason type III or IV, complex elbow trauma involving ligamentous disruption, and failed previous fixation. The objective is to restore the radial column's length and alignment to maintain elbow kinematics and prevent instability or stiffness.

## Preoperative Imaging and Planning

Detailed imaging evaluation aids in selecting the appropriate implant size and length. Measurements of the radial head diameter and medullary canal diameter are essential. Planning also involves determining the surgical approach and anticipating any concomitant procedures, such as ligament repair or ulnar osteotomy.

# Surgical Approach and Exposure

The surgical approach must provide adequate visualization of the radial head and proximal radius while minimizing soft tissue disruption. The most commonly utilized approaches include the lateral (Kocher) and anterolateral (Kaplan) approaches, each offering distinct advantages depending on fracture characteristics and surgeon preference.

## Kocher Approach

The Kocher approach involves an incision between the anconeus and extensor carpi ulnaris muscles, providing direct access to the radial head without risking injury to the posterior interosseous nerve. This approach facilitates efficient implant placement and management of associated injuries.

## Kaplan Approach

The Kaplan approach uses the interval between the extensor carpi radialis longus and the extensor digitorum communis muscles, offering enhanced exposure of the radial head's anterior aspect. This approach is favorable for addressing anterior fractures and associated soft tissue repair.

# Implant Selection and Sizing

Correct implant selection is a cornerstone of the Synthes radial head replacement technique guide, directly impacting postoperative elbow function. The Synthes radial head prosthesis is available in various diameters and stem lengths, allowing customization to the patient's anatomy.

## Determining Radial Head Diameter

Accurate measurement of the native radial head diameter is performed intraoperatively using sizing tools included in the Synthes instrumentation set or preoperatively via imaging. The chosen implant should closely match the radial head dimensions to restore joint congruity.

## Stem Length and Fixation

The stem length is selected based on the medullary canal length and bone quality. The prosthesis can be either cemented or press-fit, with press-fit fixation preferred in cases with good bone stock. Proper stem length selection ensures stable fixation and prevents implant loosening or subsidence.

# Step-by-Step Surgical Technique

The Synthes radial head replacement technique guide follows a systematic surgical workflow to optimize outcomes. The technique emphasizes anatomical restoration, secure fixation, and soft tissue preservation.

1. **Patient Positioning:** Position the patient supine or lateral decubitus with the arm on a hand table, allowing free elbow movement.
2. **Incision and Exposure:** Perform the chosen surgical approach (Kocher or Kaplan) to expose the radial head and neck adequately.
3. **Radial Head Resection:** Remove the fractured radial head fragments while preserving as much proximal radial neck as possible to support the implant.
4. **Canal Preparation:** Ream the radial neck medullary canal incrementally to accommodate the prosthetic stem.
5. **Trial Sizing:** Utilize trial implants to determine the correct diameter and length, assessing elbow stability and range of motion intraoperatively.
6. **Implant Insertion:** Insert the definitive Synthes radial head prosthesis, ensuring a press-fit or cemented fixation as planned.
7. **Soft Tissue Repair:** Repair or reconstruct any associated ligamentous injuries to restore elbow stability.
8. **Wound Closure:** Close the wound in layers, maintaining meticulous hemostasis.

# Postoperative Management and Rehabilitation

Postoperative care following the Synthes radial head replacement technique guide focuses on early mobilization to prevent stiffness and promote functional recovery. Pain control, edema management, and protection of the surgical site are integral parts of rehabilitation.

## Immobilization and Early Motion

The elbow is typically immobilized in a splint or brace for a short duration, often 1 to 2 weeks, to allow soft tissue healing. Early passive and active-assisted range of motion exercises are initiated promptly to minimize joint stiffness.

## Physical Therapy Protocol

A structured physical therapy program tailored to the patient's progress includes strengthening

exercises, proprioceptive training, and gradual return to activities. Close monitoring for signs of instability or implant complications is essential during rehabilitation.

# Potential Complications and Troubleshooting

Awareness of possible complications related to the Synthes radial head replacement technique guide enables prompt identification and management. Common issues include implant loosening, overstuffing, heterotopic ossification, and nerve injury.

## Implant-Related Complications

Overlengthening the radial column can result in overstuffing, leading to limited motion and pain. Conversely, undersizing may cause instability. Radiographic assessment and intraoperative trialing help minimize these risks.

## Soft Tissue and Neurological Concerns

Injury to the posterior interosseous nerve is a potential risk, particularly with extensive dissection. Meticulous surgical technique and anatomical knowledge reduce this hazard. Heterotopic ossification may necessitate pharmacologic prophylaxis or surgical excision in severe cases.

## Management Strategies

Early recognition of complications allows for timely interventions such as implant revision, physical therapy modification, or additional surgical procedures. Patient education regarding symptom monitoring is also critical for successful outcomes.

# Frequently Asked Questions

## What is the Synthes radial head replacement technique?

The Synthes radial head replacement technique involves surgically replacing the damaged radial head in the elbow with a prosthetic implant designed by Synthes to restore joint function and stability.

## When is the Synthes radial head replacement indicated?

This technique is indicated for patients with complex radial head fractures that are not amenable to fixation, comminuted fractures, or cases with associated elbow instability requiring prosthetic replacement.

## What are the key steps in the Synthes radial head replacement procedure?

Key steps include surgical exposure of the radial head, careful removal of the fractured radial head fragments, preparation of the radial neck, selection of the appropriate implant size, and secure implantation of the Synthes radial head prosthesis.

## What are the advantages of using the Synthes radial head replacement system?

Advantages include anatomically designed implants for better joint congruency, modular components for size customization, improved elbow stability, and the potential for quicker rehabilitation compared to fixation methods.

## What postoperative care is recommended after Synthes radial head replacement?

Postoperative care involves immobilization initially, followed by guided physical therapy to restore range of motion and strength, regular follow-up to monitor implant position and function, and pain management as needed.

## What complications should surgeons be aware of when performing Synthes radial head replacement?

Potential complications include implant loosening, heterotopic ossification, elbow stiffness, nerve injury, infection, and issues related to implant sizing or positioning that can affect joint mechanics.

# Additional Resources

1. *Synthes Radial Head Replacement: Surgical Techniques and Outcomes*
This comprehensive guide covers the detailed surgical procedure for synthes radial head replacement, emphasizing preoperative planning and postoperative care. It includes step-by-step instructions, intraoperative tips, and troubleshooting strategies. Surgeons will find high-quality images and case studies that illustrate various clinical scenarios and outcomes.

2. *Mastering Radial Head Arthroplasty with Synthes Implants*
Focused on the use of Synthes implants for radial head arthroplasty, this book offers insights into implant selection, sizing, and positioning. It highlights common complications and methods to avoid them, ensuring optimal patient recovery. The text is supported by expert commentary and surgical videos.

3. *Techniques in Elbow Reconstruction: Synthes Radial Head Replacement*
This volume addresses the complexities of elbow reconstruction, with a special focus on radial head replacement techniques using Synthes devices. It discusses anatomy, biomechanics, and implant integration to restore joint function. Surgeons will benefit from detailed procedural guidelines and postoperative rehabilitation protocols.

4. *Synthes Radial Head Prosthesis: A Clinical Handbook*
Designed as a quick-reference clinical handbook, this book summarizes essential information on Synthes radial head prostheses. It includes indications, contraindications, surgical steps, and patient outcomes. The handbook is ideal for orthopedic residents and practicing surgeons seeking concise yet thorough guidance.

5. *Elbow Trauma and Radial Head Replacement: Synthes Technique Essentials*
This text provides an in-depth exploration of managing complex elbow trauma cases requiring radial head replacement with Synthes implants. It offers practical advice on fracture patterns, implant choice, and fixation methods. Case examples demonstrate how to achieve stability and preserve joint mobility.

6. *Surgical Atlas of Radial Head Replacement Using Synthes Systems*
Featuring detailed illustrations and operative photographs, this surgical atlas guides readers through the entire radial head replacement procedure with Synthes systems. The visual format aids in understanding the nuances of implant placement and soft tissue management. It is a valuable resource for both novice and experienced surgeons.

7. *Radial Head Arthroplasty: Principles and Synthes Technique Guide*
This book outlines the foundational principles of radial head arthroplasty alongside a focused guide on Synthes implant techniques. It discusses patient selection criteria, surgical approach options, and rehabilitation considerations. The content helps surgeons optimize treatment plans for better functional outcomes.

8. *Advanced Techniques in Radial Head Replacement with Synthes Prostheses*
Targeting experienced orthopedic surgeons, this book delves into advanced surgical techniques and innovations in radial head replacement using Synthes prostheses. It addresses challenging cases such as revision surgeries and complex fractures. The text integrates biomechanical insights and long-term follow-up data.

9. *Comprehensive Guide to Synthes Radial Head Replacement in Elbow Surgery*
This all-encompassing guide presents a thorough overview of Synthes radial head replacement within the broader context of elbow surgery. It covers anatomy, implant technology, surgical technique, and postoperative management. The book is well-suited for orthopedic fellows and specialists aiming to enhance their expertise.

## Synthes Radial Head Replacement Technique Guide



**synthes radial head replacement technique guide: Arthroplasty for the Treatment of Fractures in the Older Patient** Joseph Borrelli Jr., Jeffrey O. Anglen, 2018-09-06 Focusing exclusively on the older patient with poor bone quality, this unique book presents the indications, contraindications and common techniques – as well as the risks, benefits and outcomes – for utilizing

arthroplasty for the treatment of fractures in this population, sensibly divided into four thematic sections. The incidence and burden of fragility fractures is presented in part one, with considerations of the influences of osteoporosis on both treatment and healing. The subsequent three sections cover upper extremity fractures, lower extremity fractures, and peri-articular nonunions, respectively. However, far from providing a simple “how-to” for the techniques discussed, the relevant current literature is presented as well as the common techniques employed in fracture management, allowing the reader to select the best approach for the specific patient presentation. In addition, chapters are included here that cover degenerative joint conditions not typically treated with total joint replacement. The treatment of fragility fractures is constantly evolving, and the aging population is consistently expanding, creating a strong need for clinicians who have experience with and exposure to the use of arthroplasty techniques as an option in their successful treatment. Written and edited by leaders in the field, Arthroplasty for the Treatment of Fractures in the Older Patient is an invaluable resource for orthopedic surgeons, residents and support staff who see and treat these increasingly common injuries.

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