Clinical Evaluation: Traumatic Elbow Injuries

Radial head fractures account for approximately one-third of all adult elbow fractures. In the article “Interventions for displaced radial head fractures: network meta-analysis of randomized trials,” it was concluded that radial head arthroplasty results in better function and reduced postoperative complications than other radial head treatment options such as ORIF and radial head excision.1 When dealing with a radial head fracture, the ulnar nerve should be taken into consideration to avoid postoperative complications. Clinical evidence acknowledges the potential for unwanted postoperative neuropathic symptoms due to scarring in and around the cubital tunnel. Injury can tether the ulnar nerve to the wall of the cubital tunnel, preventing normal sliding and exposing the ulnar nerve to injury.2 Peer reviewed journal articles provide insight into the benefits of a bipolar radial head with a smooth stem and the use of an ulnar nerve product to minimize postoperative ulnar neuropathy.

Radial head replacement with a bipolar system: a minimum 2-year follow-up3

**Background:** Short-term results of a cohort of patients undergoing radial head replacement using a novel radial head prosthesis with a smooth, unfixed, telescoping stem and a bipolar design after a mean follow-up of 34 months. To date, this is the largest reported outcome analysis of bipolar radial head replacement in the literature.

**Results:** At final follow-up, the average Mayo Elbow Performance Index Score was 92.1 and the DASH score was 13.8. Clinical examination revealed significant differences between operative and nonoperative sides for flexion/extension and pronation/supination. Radiographic measurement of medial and lateral ulnohumeral spaces revealed re-establishment of a congruent elbow joint. No significant arthritic changes were identified at the radiocapitellar joint. Minimal angular migration of the implant in the proximal radial shaft was observed over time. Complications included 1 patient requiring temporary placement of a hinged external fixator for instability and 1 patient requiring revision surgery at 4 weeks.

**Conclusion:** This review demonstrates that a bipolar radial head prosthesis with a smooth stem and telescoping neck effectively restores stability to elbows with a comminuted radial head fracture and valgus instability.

Radial head replacement with a bipolar system: an average 10-year follow-up4

**Background:** We report the long-term results of a cohort of patients after radial head replacement with a bipolar design and a smooth cementless stem at a mean follow-up of 10.4 years.

**Results:** The average follow-up was 10.5 years (range, 8.5-12 years). The median visual analog scale was 1 (range, 0-5), Minnesota Elbow Performance Index was 93 (range, 70-100), and the Disabilities of the Arm, Shoulder and Hand was 7.5 (range, 0-53). Range of motion was decreased on the operative side compared with the nonoperative side for flexion/extension (P=.005) and pronation/supination (P=.015). Grip strength was decreased on the affected side (P=.045). No patients had elbow instability. Significant arthritic changes developed in 2 patients at the ulnohumeral joint. The median cantilever quotient was 0.4 (range, 0.30-0.50). Osteolysis in zones 1 to 7 was found in all but 2 patients. The median stem radiolucency was 0.5 mm (range, 0.2-0.9 mm). No reoperations occurred since our previous report. Implant survival in this cohort was 97%.

**Conclusion:** Bipolar radial head prosthesis with a smooth cementless stem effectively restores elbow stability and function after comminuted radial head fractures with or without concomitant elbow instability. Our study demonstrates excellent long-term implant survival.
Malpositioning of radial head prostheses: an in vitro study

**Background:** Nonanatomic insertion of radial head prostheses may result in maltracking and capitellar erosion. The purpose of this study was to analyze the ability to perform anatomic radial head replacement and to study radiocapitellar prosthetic subluxation under unstable conditions. In vitro measurements were performed in 10 intact elbows and after insertion of radial head prostheses (rigid uncremented, rigid cemented, bipolar). The diameter and length of the proximal radius were approximately restored. However, prosthesis-shaft malalignment, up to 21 degrees was observed frequently. A posterosomedial rotatory stress after resection of 50% of the coronoid caused a mean radiocapitellar subluxation of more than 30% for the rigid prostheses, whereas bipolar devices self-aligned with a mean subluxation similar to intact elbows. In conclusion, it was not possible to consistently insert radial head prostheses anatomicall. Marked radiocapitellar subluxation occurred for the rigid but not for the bipolar implants. Clinical trials are needed to analyze these findings.

The ulnar nerve in elbow trauma

**Background:** Ulnar neuropathy is well documented after distal humeral fracture, but it can also develop following any complex elbow trauma. The ulnar nerve should be identified and protected during treatment, but current data are inconclusive regarding the value of routine anterior transposition of the nerve. Ulnar nerve decompression and transposition are becoming an integral part of many posttraumatic reconstructive elbow procedures, but most recommendations for management of the ulnar nerve are based on retrospective reviews, anecdotal report, and expert opinion. Further evaluation is encouraged.

### Katalyst® Bipolar Radial Head System Ordering Information

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### NeuraWrap™ Nerve Protector Ordering Information

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**NeuraWrap™ Nerve Protector**
- Description: NeuraWrap nerve protector is an absorbable collagen implant that provides a non-constricting encumbrance for injured peripheral nerves for protection of the neural environment. NeuraWrap nerve protector is designed to be an interface between the nerve and the surrounding tissue. When hydrated, NeuraWrap nerve protector is an easy to handle, soft, pliable, conformable, porous collagen conduit. The resilience of the collagen conduit allows NeuraWrap nerve protector to recover and maintain closure once the device is placed around the nerve.
- **Indications For Use:** NeuraWrap nerve protector is indicated for the management of peripheral nerve injuries in which there has been no substantial loss of nerve tissue.
- **Contraindications:** NeuraWrap nerve protector is not designed, sold or intended for use except as described in the indications for use and is contraindicated for patients with a known history of hypersensitivity to bovine-derived materials.
- **Adverse Events:** Possible complications can occur with any peripheral nerve surgical procedure including pain, infection, decreased or increased nerve sensitivity, and complications associated with use of anesthetics.
  - Non contractual documents. The manufacturer reserves the right, without prior notice, to modify the products in order to improve their quality.
  - Warning: Applicable laws restrict these products to sale by or on the order of a physician.
  - Consult product labels and inserts for any indication, contraindications, hazards, warnings, precautions, and instructions for use.

**Availability of these products might vary from a given country or region to another, as a result of specific local regulatory approval or clearance requirements for sale in such country or region.**

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**For more information or to place an order, please contact:**

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