

COMPLICATION AND LONG TERM RESULT

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COMMON COMPLICATIONS FOLLOWING ELBOW ARTHROPLASTY

Complication	Frequency (%)
Loosening (Semiconstrained)	1-2
Instability	5-10
Mechanical failure	
Component fracture	1
Articular uncoupling	3
Infection	1-5
Nerve injury (permanent)	2
Triceps deficiency	5
Wound healing	4
Fracture	
Cortex penetration (revision)	30*
Humerus/ulna	5

* For revision surgery

High incidence of complications is a complex joint

- 1) Poorly covered by soft tissue
- 2) Intimately transversed by a major nerve
- 3) Vulnerable to host compromising conditions, such as RA and previously operated post-traumatic arthritis

Complications not usually requiring surgery

1. Motion Restriction
2. Wound
3. Neuritis
4. Triceps Insufficiency
5. Ectopic Bone
6. Fracture

1. Motion Restriction

- Goal of this surgery : obtaine the functional arc of 30 to 130 degrees of flexiton

2. The Wound

- Most frequent complication : about 5% of patients

3. Neuritis

- Ulnar nerve is particularly vulnerable at the elbow.
- The incidence of ulnar nerve involvement has been reported in 2 to 26%
- Cause of this complication involves several factors
 - 1) Excessive traction
 - 2) Exposure of the nerve to surgical trauma
 - 3) Perineural or epineural hematoma
 - 4) Direct mechanical pressure during the procedure
 - 5) Irritation by the bandage or from swelling
 - 6) The possibility of thermal damage

4. Triceps Insufficiency

- Poor quality of the triceps tendon in patients with rheumatoid arthritis,

5. Ectopic Bone

- Very rare complication that occurs only under unusual circumstances.

6. Fracture

- If undisplaced: casting.
- If displaced: open reduction and internal fixation.

COMPLICATIONS REQUIRING REOPERATION

1. Nonreimplantation revision procedures

- 1) Component failure
- 2) Wear

2. Complications treated by implant removal

- 1) Infection
- 2) Reimplantation
- 3) Instability
- 4) Loosening

1. Nonreimplantation Revision Procedures

- 1) Component failure
 - Mechanical failure of the elbow component is rare
 - May involve the articulation or the stem.
- 2) Wear
 - The reaction to the particulate debris is characteristic.
 - The bone resorbs and the interface takes on a scalloped appearance.
 - If not corrected, gross destruction and fracture occur.

Treatment

- (1) Excessive wear of the articulation simply to remove and replace the articulation
- (2) The goal: complete cleansing of the joint of the particulate debris
- (3) If the implant is loose must be removed

- (4) The intramedullary pseudomembrane ' . completely removed.

2. Complications Treated by Implant Removal

1) Infection

- More common than after any other replacement procedure :about 7%
- Known risk factors
 - (1) Previous surgery from trauma
 - (2) Rheumatoid arthritis

2) Reimplantation

- If a resection arthroplasty is painful or resection causes significant functional insufficiency due to gross instability
 - a. Procedure that should be done only with extreme caution
 - b. Resection arthroplasty continues to be the treatment of choice.

3) Instability

- a. Occures in approximately 10% of instances.
- b. Subluxation occurs about twice as frequently as frank dislocation.
- c. Only about 20% of patients with instability will require surgical revision.
- d. Instability requiring revision is seen in approximately 2 to 5 % of the resurfacing devices.

4) Loosening

- 25% of the constrained, hinged total elbow arthroplasties will loosen within 5 years. most loosening occurs about the humeral component.
- Traumatic arthritis is a major risk factor.
- If loosening is allowed to persist
 - : The osseous resorption may lead the fracture
 - : Causing a very difficult revision procedure.
- Three factors that have been indentified to account or nonseptic loosening
 - (1) Joint mechanics
 - (2) Implant design
 - (3) Surgical technique

TREATMENT

- Options
 - 1) Removal of the implant
 - 2) Leaving a resection arthroplasty
 - 3) Revision to a different type of prosthetic replacement
 - 4) Fusion of the resected joint
 - 5) Possibly cadaveric replacement of the resected elbow.

RESULT OF RESURFACING ELBOW REPLACEMENT ARTHROPLASTY

I. Earlier Experience

- 1) Experience of various surface replacement for rheumatoid arthritis reveals the pain Relief and range of motion have been very acceptable.

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- 2) Complication rates relatively high.
- 3) Posterior displacement of the articulation
 - Most common problem
 - Due to the lack of a stem on the humeral device

2. Complications in TEAs : higher than in other major joints.

- 1) Dislocation
- 2) Malalignment
- 3) Loosening
- 4) Triceps rupture
- 5) Ulnar nerve palsy
- 6) Wound dehiscence and infection
- 7) Less serious lications transient ulnar nerve palsies, subluxations and burn or blisters

Results of Approximately 700 Semiconstrained joint replacements from eleven authors

Author	Satisfied	Implant	No	% with Rheumatoid arthritis	Follow-up(year)	Extension flexion	Pronation Supination	Pain Relief	% Communication	Revised Loose	%
Inljs, 1978		Triaxial	44	64	3.5	-	-	89	36	2	-
Pritchard, 1981		Pritchard II	92	60	2.5	-	-	98	15	2	85
Baylet, 1982		Stanmore	30	90	100	107 arc	107 arc	67	67	-	7
Rosenfeld, 1982		Pitchare I&II	14	100	2.6	-	-	100	53	-	94
Bell, 1986		GSB III	45	82	2.6	29-137	65-60	96	25	5	87
Gschwend, 1988		GSB III	71	72	4	29-140	69-64	93	27	-	91
Leber, 1988		Triaxial	11	100	4	30-132	75-75	91	36	-	91
Morrey, 1991		Pritchard II	47	48	>5	30-135	60-65	90	32	4	80
Morrey, 1991		Coonrad-Morrey	237	40	>5	26-132	64-62	92	15	2	88
Madsen, 1989		Pritchard II	25	100	3	28-130	65-62	100	8	1	92
Risung, 1991		Norway	79	100	2.9	-	-	-	-	4	-
Total			695	69	>3.5	29-135	63-63	93	22	2.5	89

- When loosening did not occur, pain relief was excellent and the complication rate was high(55%).
- Semiconstrained implant:
 - 1) Very reliable device for a broad spectrum of elbow pathology.
 - 2) Functionally, the mean arc of motion for the entire group : 26 to 130° with 64° pronation and 62° supination.
 - 3) Pain relief was obtained in 92%.
 - 4) Dramatic reduction in the complication rate to 15% was observed.
 - 5) The 5-year survival for nonseptic failure for all diagnoses for the Pritchard Walker and the Mayo modified Coonrad implants is about 95%.

CURRENT PERFERED TREATMENT

- Prosthetic Options
 - 1) Disease process
 - 2) Ptient age
 - 3) Functional expectations