2011/04/21 Case conference

VS 程俊穎
R5 吳茂賢

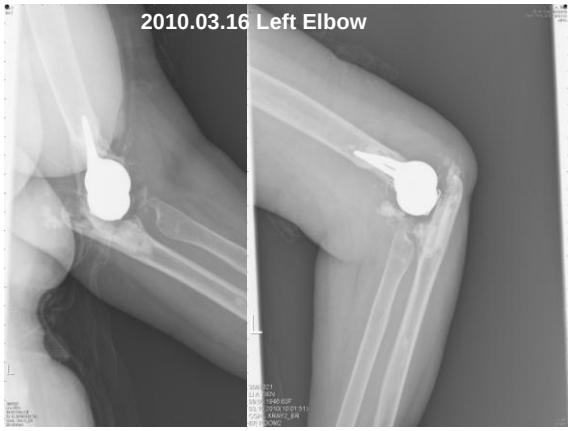
Division of Sports Medicine,
Department of Orthopaedic Surgery

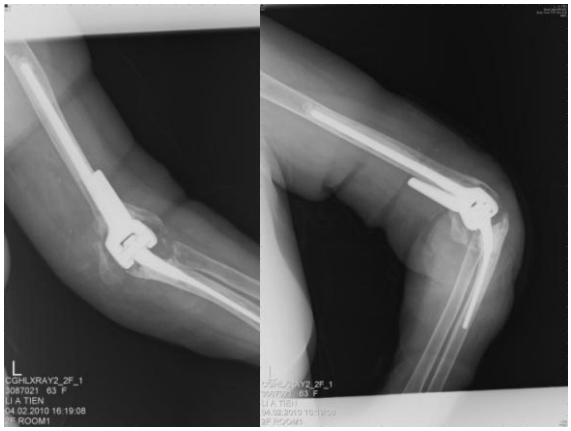
Patient Data

- Chart No.: 3087021
- Name: 黃李○甜
- Age: 65
- Gender: female
- Admission: 2011/4/12
- Chief complaint: pain with disability of right elbow for 1 month
- Limited ROM 20-120(passive 14-144)

Present Illness and History

- Rheumatoid arthritis since young and received bilateral total elbow arthroplasty and TKA over 20 years
- Received operation of left revision TEA on 2010/3/31
- Right elbow pain with medication control at Rheuma OPD for 10 years
- Past history: hypertension





Impression

- Loosening of right resurfacing elbow arthroplasty

Plan:

- Revision total elbow arthroplasty
- Strut allograft bonegrafting

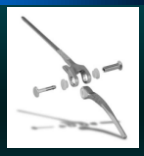
Operation on 2011/4/13

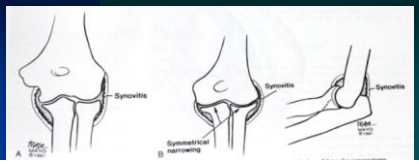
- Revision total elbow arthroplasty
  - Bryan-Morrey approach
  - Zimmer Coonrad/Morrey total elbow revision

Zimmer® Coonrad/Morrey Total Elbow Revision

Discussion

- Total elbow arthroplasty in Rheumatoid arthritis
- Loosening
- Bone grafting



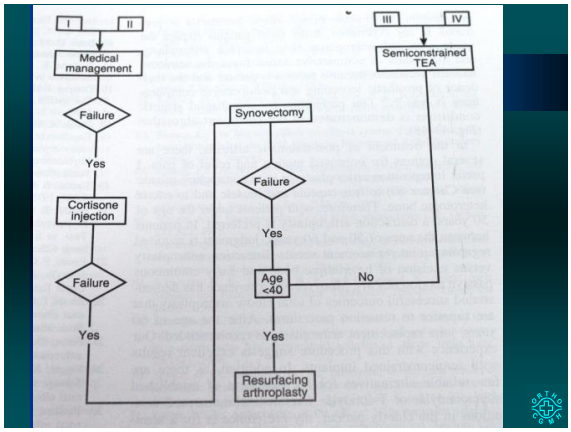


Stages of Rheumatoid Disease

Stage	Pathology
I	Pathology, mild synovitis
II	Moderate synovitis
III	Moderate to severe synovitis; mechanical joint contact; loss of joint cartilage
IV	Mechanical instability, bone-bone articulation

Stages of Rheumatoid Disease

Stage	Radiograph
I	Normal joint space, osteoporosis
II	Joint space narrowed, joint contour maintained
III	Loss of joint space; mild instability, collateral ligament intact
IV	Complete loss of joint space

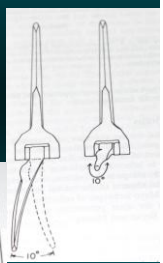


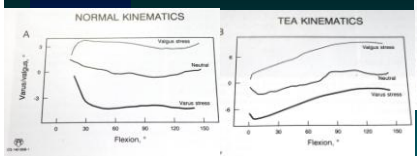
Resurfacing Total Elbow Arthroplasty

- London type
- ERS type
- The Kudo type
- Souter-Strathclyde type

Semiconstrained Elbow Replacement Arthroplasty

- Pritchard
- GSB III
- Coonrad-Morrey



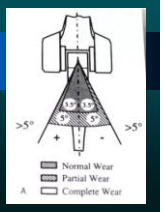


Complications
Not requiring surgery

- Motion restriction (functional arc of 30-130 ˚ of flexion)
- Wound complications
- Neuritis: ulnar nerve
- Triceps insufficiency
- Ectopic bone

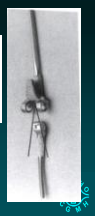
Complications
Requiring surgery

- Component failure
- Wear
- Infection
- Instability- resurfacing
- Loosening

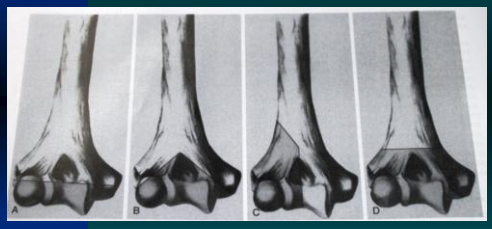


Loosening of Prosthesis

- 25% within 5 years
- Biomechanics
  - 3 times BW anteriorly during extension
- Prosthetic design
  - Semiconstrained
  - Laxity at the bushing
  - Anterior flange
- Surgical technique
  - Cementing technique
  - IM injecting system



Bone Loss

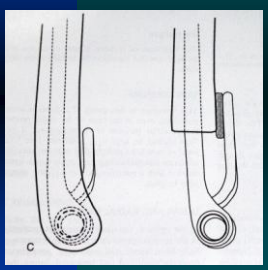


TYPE I | TYPE II | TYPE III | TYPE IV

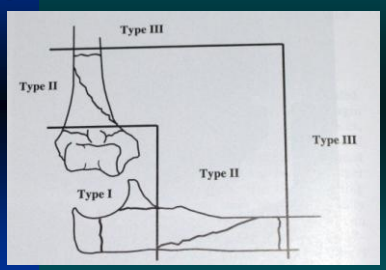
Revision for Bone Loss

- Adequate bone stock
  - Arthrodesis, resection, interposition, TEA, semiconstrained prosthesis
- Inadequate bone stock
  - Resection, allograft, TEA, semiconstrained(long-flanged) prosthesis, APC, custom-made

Distal Humerus Deficiency



Periprosthetic Fractures – Mayo Classification

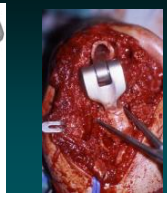
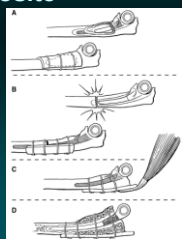


Revision for Periprosthetic Fracture

- Type I: not interfered
- Type II: cerclage wire or plate and screws
- Type III: Plate + Cortical strut, or longer-stemmed device

Bonegrafting Options

- Impaction bone grafting
- Allograft-prosthesis composite
- Tubular strut bone graft

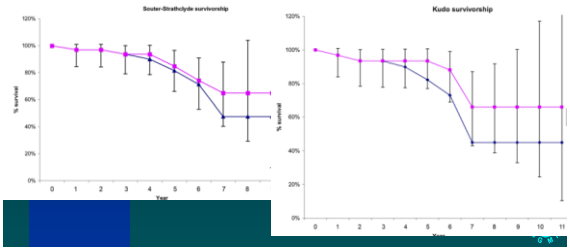




2005 JBJS A

Outcomes of Total Elbow Arthroplasty for Rheumatoid Arthritis: Comparative Study of Three Implants

By Christopher P. Little, FRCS(Tr&Orth), Alastair J. Graham, FRCS(Tr&Orth), Georgios Karatzas, David A. Woods, FRCS, and Andrew J. Carr, FRCS

Investigation performed at the Nuffield Department of Orthopaedic Surgery, Nuffield Orthopaedic Centre, Oxford, England



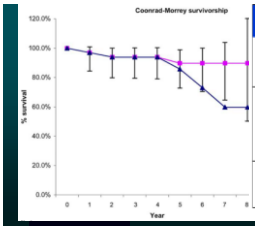


TABLE IV Modes of Failure of the Different Components

Implant	Infection	Instability*	Aseptic Loosening Requiring Revision (Component Involved)
Souter-Strathclyde	1	1 (1 reduced)	5 (4 humeral; 1 both)
Kudo	-	2 (1 subluxated)	4 (2 humeral; 2 both)
Coonrad-Morrey	2	-	1 (both)

*The information in parentheses refers to patients who were treated with closed means for a single episode of dislocation or who showed radiographic subluxation; they were not considered to have had a failure.

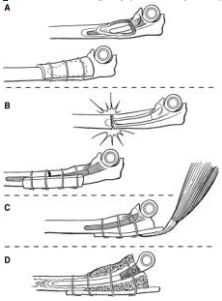
- The clinical function of these implants was **similar** in terms of **pain relief** and **range of motion**. We believe that component linkage with the **Coonrad-Morrey implant prevents dislocation without increasing the risk of loosening**.

2004 JBJS A

Proximal Ulnar Reconstruction with Strut Allograft in Revision Total Elbow Arthroplasty

By S. Kamineni, FRCS(Orth), and B.F. Morrey, MD

Investigation performed at the Department of Orthopedics, Mayo Clinic, Rochester, Minnesota




Conclusion

- Although the complication rate is highthis technique is suitable
  - Discrete cortical lesions,
  - Periprosthetic fractures
  - Expanded proximal part of the ulna
- Olecranon deficiency:
  - Not suitable due to lack of vascularity

2004 JBJS A

Allograft-Prosthesis Composite for Revision of Catastrophic Failure of Total Elbow Arthroplasty

By Pierre Mansat, MD, PhD, Robert A. Adams, PA, and Bernard F. Morrey, MD

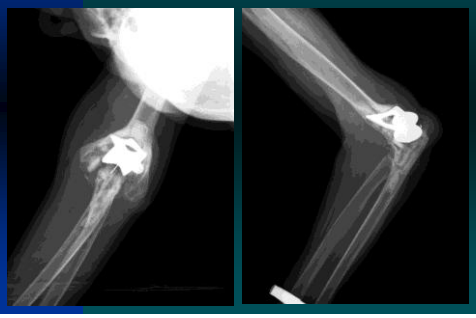
Investigation performed at the Department of Orthopedic Surgery, Mayo Clinic, Rochester, Minnesota

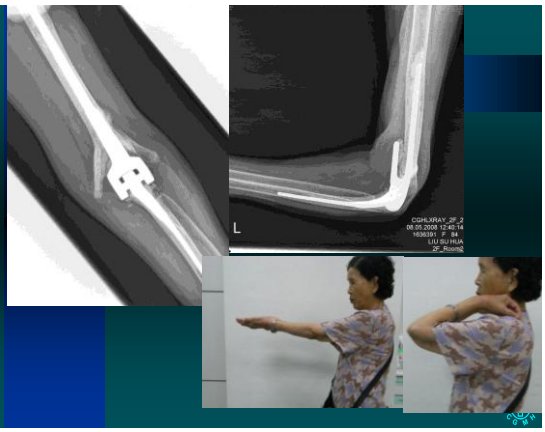
Conclusion

- High union and implant survival rate
- Complication of deep infection
- Recommand:
  - Use other revision options as strut graft reconstruction before APC was used

Case presentation - 1

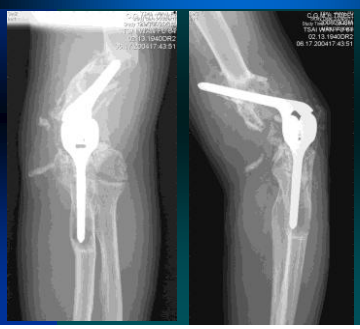
83 y/o female s/p TER 13 yrs



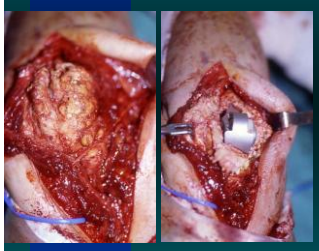


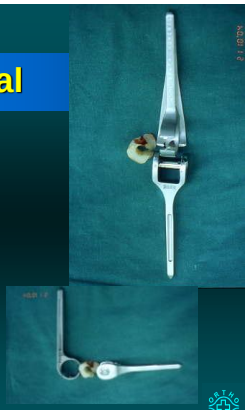
Case presentation - 2

64 y/o male s/p TER 20 yrs



Pritchard retrieval






Post-op
4 yrs


Thank you for your attention
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Chang Gung Memorial Hospital at Linkou