

TREATMENT ALGORITHM FOR DISTAL HUMERUS FRACTURES

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Keywords: distal humerus fractures, ORIF, treatment algorithm

Abstract: The objective of this study was to develop an algorithm for the treatment of the distal humerus fractures. It were analyzed the implant categories (1, 2, 6, 15) and operative techniques (3, 5, 7, 8, 9, 12, 14) currently recommended for the treatment of the distal humerus fractures. It was taken into account the references from the literature (4, 10, 11, 13), our personal experience and the current practice of the discipline of Orthopedics and Traumatology. We analyzed the functional and radiological results for a series of 734 cases of distal humerus fractures over a period of six years. This analysis followed the AO (Arbeitsgemeinschaft für Osteosynthesefragen) classification (16), because this classification fails to cover the full range of the distal humerus fractures with few exceptions – personally I met a single fracture that could not be classified in the AO classification.

Cuvinte cheie: fractura humerusului distal, tratament chirurgical, algoritm de tratament

Rezumat: Obiectivul acestui studiu a fost elaborarea unui algoritm de tratament aplicabil pentru fracturile humerusului distal. Au fost analizate categoriile de implante (1, 2, 6, 15) și tehnicile operatorii (3, 5, 7, 8, 9, 12, 14) recomandate la ora actuală pentru tratamentul fracturilor humerusului distal. S-au luat în considerare atât literatura de specialitate (4, 10, 11, 13) cât și experiența personală și a disciplinei. Au fost analizate rezultatele funcționale și radiologice pentru o serie de 734 cazuri cu fractură de humerus distal pe o perioadă de 6 ani. Analiza a urmărit clasificarea AO (Arbeitsgemeinschaft für Osteosynthesefragen) (16), deoarece această clasificare reușește să acopere cel mai bine întreaga varietate de fracturi de la nivelul humerusului distal cu foarte mici excepții – personal am întâlnit o singură fractură care nu a putut fi încadrată în clasificarea AO.

The objective of this study was to develop an algorithm for the treatment of the distal humerus fractures. It was analyzed the implants categories (1, 2, 6, 15) and operative techniques (3, 5, 7, 8, 9, 12, 14) currently recommended for the treatment of the distal humerus fractures. It was taken into account the references from the literature (4, 10, 11, 13), our personal experience and the current practice of the discipline of Orthopedics and Traumatologie. We analyzed the functional and radiological results for a series of 734 cases of distal humerus fracture over a period of six years. This analysis followed the AO (Arbeitsgemeinschaft für Osteosynthesefragen) classification (16), because this classification fails to cover the full range of the distal humerus fractures with few exceptions – personally I met a single fracture that could not be classified in the AO classification.

Corroborating all the data, we propose the following algorithm of treatment:

1. A1
 - A1.1 și A1.2
 - Without displacement
 - § Stable elbow – conservative treatment
 - § Unstable elbow
 - Lateral / medial approach or arthroscopic portals
 - classic/ arthroscopic fixation with Kirschner wire ± ligament reconstruction
 - § Displaced

- Lateral / medial approach or arthroscopic portals
- classic/ arthroscopic fixation with Kirschner wire ± ligament reconstruction
- A1.3
 - § Lateral / medial approach or arthroscopic portals
 - § classic/ arthroscopic fixation with Kirschner wire ± ligament reconstruction
- 2. A2 – Surgical only
 - A2.1
 - § Median transtricpital or Brayan – Morrey approach
 - § ORIF 4,5 mm plate minim 2+3/ Y plate/2 perpendicular plates
 - A2.2
 - § Median transtricpital or Brayan – Morrey approach
 - § ORIF 4,5 mm plate minim 2+3/ Y plate/2 perpendicular plates
 - A2.3
 - § Osteoporosis
 - Negative
 - Brayan – Morrey approach
 - ORIF LCP/ X screws ± Herbert screws/ crossing double tension band

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ESSAYS

- Positive
 - Brayan – Morrey approach + ORIF LCP
 - Transolecranon/anterior approach + total elbow replacement
3. A3 – Surgical only
- A3.1
 - § Median transtricipital or Brayan – Morrey approach
 - § ORIF 4,5 mm plate minim 2+3/ Y plate/2 perpendicular plates
 - A3.2
 - § Median transtricipital or Brayan – Morrey approach
 - § ORIF 4,5 mm plate minim 2+3/ Y plate/2 perpendicular plates
 - A3.3
 - § Osteoporosis
 - Negative
 - Brayan – Morrey approach
 - ORIF LCP/ X screws ± Herbert screws/ crossing double tension band
 - Positive
 - Brayan – Morrey approach + ORIF LCP
 - Transolecranon/anterior approach + total elbow replacement
4. B1 – Surgical only
- B1.1
 - § Lateral approach or arthroscopic portals
 - § ORIF – cannulate 4,5 mm screws/ simple screws/ Kirschner wire/ reconstruction plate
 - B1.2
 - § Lateral approach or arthroscopic portals
 - § ORIF – cannulate 4,5 mm screws/ simple screws/ Kirschner wire/ reconstruction plate
 - B1.3
 - § Lateral approach or arthroscopic portals
 - § ORIF – cannulate 4,5 mm screws/ simple screws/ Kirschner wire/ reconstruction plate
5. B2 – Surgical only
- B2.1
 - Medial approach or arthroscopic portals
 - ORIF – cannulate 4,5 mm screws/ simple screws/ Kirschner wire/ reconstruction plate
 - B2.2
 - § Medial approach or arthroscopic portals
 - § ORIF – cannulate 4,5 mm screws/ simple screws/ Kirschner wire/ reconstruction plate
 - B2.3
 - § Medial approach or arthroscopic portals
6. B3 – Surgical only
- B3.1 – classic or athroscopic surgery
 - § Hahn – Steintal
 - Lateral approach or arthroscopic portals
 - Herbert screws
 - § Kocher – Lorenz
 - Lateral approach
 - ORIF versus resurfacing arthroplasty
 - § Burst fractures
 - Lateral approach
 - ORIF versus resurfacing arthroplasty
 - B3.2 – classic or athroscopic surgery
 - § Simple fracture
 - Transolecranon/anterior approach or arthroscopic portals
 - Herbert screws
 - § Burst fractures
 - Transolecranon/anterior approach
 - ORIF versus total elbow replacement
 - B3.3 – classic or athroscopic surgery
 - § Osteoporosis
 - Negative
 - Transolecranon/a nterior approach or arthroscopic portals
 - Herbert screws
 - Positive
 - Transolecranon/a nterior approach
 - total elbow replacement
7. C1
- Brayan – Morrey approach
 - ORIF – 2 perpendicular plates
8. C2
- Brayan – Morrey approach
 - ORIF – 2 perpendicular plates
9. C3
- Under 60 years
 - § Brayan – Morrey approach
 - § ORIF – 2 perpendicular plates
 - Over 60 years
 - § Osteoporosis
 - Negative
 - Brayan – Morrey approach
 - ORIF – 2 perpendicular plates
 - Positive
 - Transolecranon approach
 - ORIF LCP/ total elbow replacement

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