Supracondylar Humerus Fractures and Initial Treatment for Avoiding the Complications

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Purpose: For supracondylar humerus fractures, there is currently no clear consensus on the need for emergency surgery, surgical method, and surgical position. The American Academy of Orthopaedic Surgeons (AAOS) has published guidelines, and they have been verified. It is important to take appropriate initial treatment to avoid potentially persistent complications such as neurovascular injury, varus elbow, and aseptic necrosis. We will introduce recent evidence and consider each complication and its countermeasures based on our own cases.

Methods: The subjects were supracondylar humerus fractures (173 elbows [66 females, 107 males]) that could be followed up in our department for 1 year or more. At the time of final observation, the humerus-elbow-wrist angle (HEWA), Baumann angle (BA), tilting angle (TA), medial dislocation (MS), and anterior spike length (AS) at the time of injury (surgery immediately after surgery) were evaluated. Correlation with carrying angle (CA) and complications were investigated. Furthermore, these factors on cubitus varus deformity were examined using multivariate analysis at a significance level of 5%.

Results: The presence of medial displacement and medial comminuted fragments and young age were significant predictors of cubitus varus deformity and delayed displacement, although anterior spike and fixation method (medial wiring, the number of wires) were not. Nerve damage at injury was seen in 18 cases and all recovered within 9 months after the injury. Necroses of the distal humerus were seen in 3 cases and all necrosis cases were diagnosed with pain a few years after injury.

Conclusions: Leaving medial displacement carries a risk of cubitus varus deformity and delayed displacement. It is important to perform the reduction of medial side with rotational correction. Nerve damage resolves spontaneously, but in the cases of severe dislocation, we need to do manual reduction with tender care, so the patient is placed in the supine position and the surgeon considers open reduction under direct vision on the front plane. Since the occurrence of compartment syndrome is also a concern, emergency surgery should be performed as much as possible. It should be noted that the future occurrence of aseptic necrosis is unpredictable, and it is important to follow up in at least several years.