The Usefulness of Ultrasonography in the Treatment of Pink Pulseless Hand in Pediatric Supracondylar Fractures

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Purpose: Pink pulseless hand (PPH) in pediatric supracondylar fracture with neurovascular injury is an indication for emergency surgical repair. However, it is difficult to accurately determine neurovascular injury without open surgery. This study aimed to clarify the usefulness of intraoperative ultrasonography (US) for the assessment of neurovascular injury in patients with PPH.

Methods: In 2 facilities, all patients with PPHs after closed reduction and percutaneous pinning in the pediatric supracondylar fracture were included between April 2018 and March 2021. We investigated the humeral arterial blood flow and median nerve continuity using intraoperative US. We evaluated the symptom of neurovascular injury after 6 months from the surgery.

Results: There were 7 cases, with a mean age of 6.9 years old; 4 were girls. Six cases had humeral arterial blood flow using US; in the remaining 1 case with no blood flow, we explored the vessels and found it was a spasm requiring no surgical repair. All cases had median nerve continuity. After the operation, only 1 case had numbness of the median nerve area and the symptom improved in 5 days. There were no cases with the symptom of neurovascular injury after 6 months from the surgery.

Conclusion: We could evaluate the humeral arterial blood flow and median nerve continuity using intraoperative US in patients with PPH in all cases. As a result, we could avoid 6 cases (86%) of open surgery. Intraoperative US would be useful to detect neurovascular injury without an additional invasive procedure.