Ulnar nonunion in forearm and its association with anatomical and epidemiological risk factors

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Non-union after operative treatment of an ulnar fracture is very uncommon. Multiple factors have been associated with the establishment of this non-union, like soft tissue damage, fracture site vascularity, persistent instability, infection, and the surgical treatment technique.

This study analyzed the systemic conditions and local factors associated with the failure of bone fracture healing. The aim of our study was to identify the risk factors for ulnar nonunion.

Materials and methods

We retrospectively reviewed a cohort of ulnar fractures treated surgically with open reduction and internal fixation, during a period of 10 years (2007-2016). We identified 211 ulnar fractures, 16distal, 52 diaphyseal, 143proximal. All patients had a minimum follow-up of 1 year. We defined non-union if there was no radiological consolidation of the fracture after this period, and we classified them according to Weber classification. We assessed risk factors like: fracture site vascularity, surgical treatment technique, biological factors of the patient, and the fracture’s mechanism.

Data were analyzed using SPSS. Statistical significance was considered as p less than 0.05.

Results

We found 17 ulnar non-union (8.1%). The mechanism of the fractures was high-energy traumatism in 30%. The 30% of patients smoked, 10.4% have diabetes mellitus, the 40.7% have vascular pathology. The fractures were open in 15.2%, the 72.5% were isolated ulnar fracture, the 25.6% were comminuted.

We analyzed the ORIF and the 93.8% were well done (according to AO principles).

We obtained statistically significant results in the relationship of high-energy injuries (p=0.0001), comminution (p=0.0001) and suboptimal fixation of the fracture (p=0.013), with the risk of developing nonunion.

Conclusions

Our results showed that a high-energy injury, a comminuted fracture, and a suboptimal treatment of the fracture, are risk factors of an ulnar nonunion.

References

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