Treatment Outcomes of (Almost) Simple Elbow Dislocations: A Systematic Review of 1,081 Cases

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INTRODUCTION:

The treatment of simple elbow dislocations (SED) has become more functional last decade with a tendency to shorter immobilization of the elbow whereas simultaneously surgical stabilization has been promoted by some authors. Optimizing the treatment strategy is essential as suboptimal treatment may result in pain, persistent or recurrent instability, stiffness, posttraumatic osteoarthritis, and the need for additional surgical intervention. The primary aim of this study was to systematically review the literature and analyze the outcomes and complications of different treatment options for acute and delayed diagnosed SEDs, including operative and nonsurgical treatments with varying immobilization periods.

METHODS:

A literature search was performed based on the online medical databases Medline, Embase, and the Cochrane Central Register of Controlled Trials. Articles presenting patients with a SED were eligible for inclusion. Patients with an acute or neglected total SED, without associated injuries, preexisting elbow pathology, or previous surgery in the ipsilateral elbow were included. Patients with an isolated radius dislocation were excluded. Studies were included if they were written in English, German, or Dutch, had at least 12 months of follow up, and reported on a minimum of five patients.

The different durations of immobilization and mobilization used for nonsurgical treatment were categorized as: early mobilization (within 7 days), 1 to 3 weeks immobilization, ≥ 3 weeks immobilization, and surgery. The surgery group included two subgroups: patients who underwent surgery as their initial treatment or after failed nonsurgical treatment and patients with delayed diagnosed elbows. When an elbow dislocation persists for more than 3 weeks, it is categorized as a delayed diagnosis. To get insight into the severity of complications, all complications were categorized as minor or major. Minor complications were those that did not seriously affect daily functioning in a patient's daily life, were treatable in a timely manner and where the patient did not have any after-effects. To assess the risk of bias, the Methodological Index for Non-Randomized Studies (MINORS) was used for non-randomized studies, and the Cochrane risk-of-bias tool was used for randomized studies. In this systematic review, studies were pooled per treatment group, and a comparison between the groups was not conducted due to their high heterogeneity.

RESULTS:

The methodologic quality evaluation of the study showed a fair quality of evidence for the non-randomized studies and a low risk of bias for the randomized study. The 37 included articles described 1,078 patients with a total of 1,081 dislocated elbows. The mean patient age ranged from 8 to 53 years (overall range, 5-91 years), and the mean follow up ranged from 12 to 69 months (overall range, 12-228 months). Nonsurgical treatment was administered to 710 elbows, with 244 elbows treated with early mobilization, 239 with 1 to 3 weeks immobilization, and 163 with ≥ 3 weeks immobilization. Surgical treatment as open reduction and ligament repair or reconstruction was performed in 228 elbows. A total of 143 delayed diagnosed elbow dislocations were treated surgically. Various outcome measures were assessed, including the range of motion (ROM), patient-reported outcome measures (PROMs), and complication rates. In Table 1, the most used PROM, ROM, and complication rates are presented for all different treatments.

DISCUSSION AND CONCLUSION:

The early mobilization treatment showed the most consistent satisfactory outcomes in literature compared to the other treatment options. Nevertheless, there remains ambiguity regarding which patients would benefit more from surgery as opposed to nonsurgical treatment. Future research should focus on stratifying patients and their specific pathologies to quantify the severity of the SED. This approach will enable us to provide more specific recommendations regarding the suitability of different treatments for particular patient profiles.

Table 1: Overview of weighted mean outcomes per treatment					
	MEPS	ROM F/E	ROM P/S	Minor complications	Major complications
Early mobilization	95.1 (± 1.5)	137° (± 6.1)	173° (± 7.9)	20% (± 26.3)	5% (± 3.9)
1-3 weeks immobilization	90.0 (± 5.6)	129° (± 13.5)	147°	23% (± 17.7)	29% (± 27.6)
≥ 3 weeks immobilization	96.9 (± 3.5)	131° (± 9.6)	163° (± 18.6)	40% (± 34.9)	40% (± 55.9)
Surgery	92.1 (± 4.8)	128° (± 7.4)	167° (± 10.0)	27% (± 35.7)	18% (± 23.3)
Neglected	89.6 (± 7.1)	90° (± 6.5)	126° (± 20.5)	8% (± 43.6)	43% (± 37.5)
Values are given in weighted mean (SD); MEPS, Mayo Elbow Performance Score; ROM F/E, range of motion flexion-extension arc; ROM P/S, range of motion pronation-supination arc; °, degrees					