



Surgical Decision Making in Median Neuropathy Associated With Distal Radius Fractures

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Objectives

- A lack of conclusive evidence on the treatment of Acute Carpal Tunnel Syndrome (ACTS) in patients with distal radius fractures has led to inconsistent surgical guidelines and recommendations regarding ACTS in distal radius fractures.¹
- This has led to differences in both local and international surgical guidelines regarding management of ACTS in distal radius fractures.^{2,3}
- A better understanding of practice variation regarding the role of CTR during ORIF of distal radius fractures may aid in the clinical guidance for decision-making in the setting of ACTS in distal radius fractures.
- We aimed to evaluate international differences between surgical considerations and practices related to carpal tunnel release in the setting of distal radius fractures.

Methods (1)

- We approached surgeons who were a member of the Orthopaedic Trauma Association (USA) or of the Dutch Trauma Society (the Netherlands) and asked them to provide sociodemographic information and information on their surgical practice regarding carpal tunnel release in the setting of distal radius fractures.
- After applying our exclusion criteria, our final cohort consisted of 127 respondents (Table 1).

Methods (2)

- The questionnaire was based on observations, questions, clinical experiences, and expert discussions related to median neuropathy in the setting of distal radius fractures.
- To evaluate the likelihood of receiving a CTR during distal radius ORIF, we assigned a score to each of the variables possibly influencing the surgeon's likelihood of performing a CTR during distal radius ORIF. We assigned a score of 0 to each answer stating that the presence of a characteristic has no influence, a score of 1 to each answer stating that the presence of a characteristic makes it more likely, and a score of -1 to each answer stating that the presence of a characteristic makes it less likely that the surgeon would perform a CTR at the same time as distal radius ORIF.

Results

Compared to Dutch surgeons, surgeons from the USA are more of the opinion that displaced distal radius fractures are at risk of developing ACTS ($P < 0.001$) and consider persistent paresthesia in the median nerve distribution after closed reduction to be a surgical emergency less often ($P = 0.007$; table 2). Based on the mean summative scores that were assigned to the surgeon's decision making, surgeons from the USA are more likely to perform a CTR at the same time as distal radius ORIF (mean: 1.8 (SD 1.6), range: -3 to 6) when compared to surgeons from the Netherlands (mean: 0.96 (SD 2.4), range: -6 to 4; $P = 0.044$).

Table 1. Characteristics of the participating surgeons.

| | All (n=127) | NL (n=26) | USA (n=101) | P |
|------------------------------|-------------|-----------|-------------|---------------------|
| Age, mean ± SD, years | 50 ± 11 | 46 ± 7.9 | 52 ± 11 | 0.0091 ¹ |
| Sex, n (%) | | | | 0.43 ² |
| Men | 117 (92) | 23 (88) | 94 (93) | |
| Women | 10 (7.9) | 3 (12) | 7 (6.9) | |
| Type of institution, n (%) | | | | 0.001 ² |
| Level I trauma center | 54 (43) | 13 (50) | 41 (41) | |
| Non-level I trauma center | 39 (31) | 13 (50) | 26 (26) | |
| Private practice | 29 (23) | 0 (0.0) | 29 (29) | |
| >1 type of institution | 5 (3.9) | 0 (0.0) | 5 (5.0) | |
| Specialty, n(%) | | | | <0.001 ² |
| General Orthopaedic Surgery | 9 (7.1) | 0 (0.0) | 9 (8.9) | |
| Orthopaedic Traumatology | 45 (35) | 23 (88) | 22 (22) | |
| Hand and Wrist Surgery | 73 (57) | 3 (12) | 70 (69) | |
| Years in practice, mean ± SD | 16 ± 11 | 11 ± 7.5 | 18 ± 11 | 0.0033 ¹ |

¹Student T-test; ²Fisher's exact test

Table 2. Differences in surgical practice and risk assessment regarding carpal tunnel release in the setting of distal radius fractures between surgeons from the Netherlands and surgeons from the USA.

| | NL (n=26) | USA (n=101) | P |
|---|-----------|-------------|--------|
| Surgical practice: | | | |
| Performed elective open CTR in patients with CTS as part of his/her practice | 13 (50) | 81 (80) | 0.005 |
| Released a carpal tunnel, for any reason, in the past 4 weeks | 12 (46) | 76 (75) | 0.008 |
| Working in practice where ORIF of DRFx is a day surgery procedure | 20 (77) | 99 (98) | 0.001 |
| Has ever treated a patient with a displaced DRFx who also developed preoperative acute CTS | 22 (85) | 99 (98) | 0.016 |
| Has ever treated a patient with a displaced DRFx who also developed postoperative acute CTS | 16 (62) | 76 (75) | 0.22 |
| Has (institutional) clinical or radiographic guidelines to determine which DRFx are at risk of CTS | 0 (0.0) | 8 (7.9) | 0.21 |
| Performs routinely (>50% of the time) CTR at the same time as distal radius ORIF | 1 (3.9) | 9 (8.9) | 0.69 |
| Has ever returned to the operating room with a patient after distal radius ORIF for subsequent CTR | 11 (42) | 64 (63) | 0.073 |
| Changes the post-op rehabilitation if there was concurrent CTR during ORIF of the distal radius | 2 (7.7) | 11 (11) | > 0.99 |
| Routinely allows for preoperative peripheral nerve block placement for DRFx requiring surgery | 15 (58) | 73 (72) | 0.16 |
| Risk factor assessment: | | | |
| Believes that displaced DRFx are at risk of acute CTS | 20 (77) | 100 (99) | <0.001 |
| Considers persistent paresthesia in the median nerve distribution after closed reduction of DRFx to be a surgical emergency | 13 (50) | 22 (22) | 0.007 |

References

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