Functional Outcomes of Treatments for Preiser’s Disease

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INTRODUCTION: The purpose of this retrospective study was to evaluate the functional outcomes after surgical reconstructions as treatment of Preiser’s disease.

MATERIALS AND METHODS: From 1982 to 2009, a series of 32 patients were diagnosed with Preiser’s disease with the criteria that avascular necrosis of the scaphoid was not associated with an obvious fracture. Conservative treatment only was applied in 9 patients; surgical reconstructions were applied in the other 23. The primary indication for surgery was pain at all times, or at occupational and recreational activities. The surgical procedures included vascularized bone grafting in 15 patients, proximal row carpectomy in 3, four-corner fusion in 3, and proximal pole carpectomy in 2. The average age of the patients at surgery was 37.3 years. The mean follow-up time was 28 months. The clinical assessment included assessment of the active range of motion (ROM), grip strength, pain, patient-rated wrist examination (PR WE), and the disability of arm, shoulder, and hand score (DASH).

RESULTS: Wrist flexion-extension ROM decreased by 16° (in average) after surgery. Postoperative radial-ulnar deviation ROM decreased by 7°. However, there was a slight improvement in grip strength from 24.6 kg to 26.0 kg. No significant difference was noted in ROM or grip power between the preoperative and final follow-up values. Fifteen patients in the surgical group joined subjective outcome measurements. Decreased pain was reported at any time after surgery by 11 patients (73.3%). The average PRWE score was 23 and the average DASH score was 19 in 11 effective questionnaire samples. However, 9 patients (60.0%) were unsatisfied with the functional outcome of the surgery. Two patients (9.5%) needed further surgery owing to failed treatment.

CONCLUSION: The various surgical options were effective in providing pain relief. Compared with the preoperative value, a better grip power and worse active ROM of the wrist was noted. Even though a high number of patients was not satisfied with the outcome of the surgery, the results of the subjective functional assessment were still acceptable.

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Carpal Translocation Following Dorsal Bridge Plate Fixation of Distal Radius Fractures: A Cadaveric Study

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INTRODUCTION: Dorsal bridge plate fixation is a technique increasingly utilized to establish and maintain anatomic reduction of the distal radius in the setting of complex fracture patterns involving significant comminution, a large zone of injury, or osteopenic bone. This study investigates carpal translocation resulting from bridge plate distal fixation to the second vs. third metacarpal bone.

MATERIALS AND METHODS: Three paired (left-right) cadaveric upper extremities with no history of trauma were imaged in 3-views by fluoroscopy (Group A). Each specimen served as an internal control. A 1-cm osteotomy distal radius fracture model was created via volar Henry approach. Following incision and dissection, dorsal bridge plates were inserted from distal to proximal under the extensor retinaculum (Group B). Distal fixation to the second or third metacarpal was randomly assigned to the right or left hand of each specimen. Cortical locking screws were used to secure the plate to the metacarpal and radial diaphysis. 3-view wrist fluoroscopic images were repeated and measured for ulnar translocation, ulnar variance, radial inclination, radial height, and radiocarpal angle. Carpal translocation was calculated using Taleisnick’s Classification, Chamay’s, and McMurtry’s translation indices.

RESULTS: Randomly, distal fixation to the 2nd metacarpal occurred on the right hand and fixation to the 3rd metacarpal in the left hand in all three cadavers. Ulnar variance, radial inclination, radial height, and radiocarpal angle were not statistically different between Group A and Group B (p > 0.25); similarly, there was no difference between Group A and Group B when evaluating distal fixation to the 2nd vs. 3rd metacarpal bone (p > 0.96). Taleisnick Type 1 ulnar translocation was calculated using radial styloid-scaphoid distance and radiolunate/proximal lunate linear articular surface distance. Several wrists demonstrated ulnar translocation in Group B based on Taleisnick classification, Chamay’s, and McMurtry’s translocation indices, however, the results were not statistically significant.
**CONCLUSION:** Dorsal bridge plate fixation of distal radius fractures restores preoperative physiologic measures of the radius, ulna, and carpus. No significant carpal translocation occurred during distal bridge plate fixation to the 2nd or 3rd metacarpal bone. While additional studies are needed, fixation to the 2nd metacarpal is preferred as it does not translocate the wrist, and previous studies demonstrate fixation to the 3rd metacarpal bone can entrap the 1st and 3rd extensor compartments.

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**Cost Analysis of Percutaneous Fixation of Hand Fractures in the Main Operating Room Versus the Ambulatory Setting**

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**INTRODUCTION:** To date, there have been no studies identifying the cost differential for performing closed reduction internal fixation (CRIF) of hand fractures in the operating room (OR) versus an outpatient clinic setting. Our goal was to analyze the cost and efficiency of performing CRIF in these two settings and to investigate current practice trends in Canada.

**METHODS:** A detailed analysis of the costs involved both directly and indirectly in the CRIF of a hand fracture was conducted, including material and labour costs. Hospital statistical records were used to calculate efficiency. A survey was distributed to practicing plastic surgeons across Canada regarding their current practice of managing hand fractures.

**RESULTS:** In an eight-hour surgical block we are able to perform approximately five CRIF in the OR versus eight in an ambulatory setting. The costs of performing a CRIF in the ambulatory setting under local anaesthetic, not including surgeon compensation, is $115.59 Canadian (CAD) compared to $461.27 CAD in the OR, a 299% decrease in cost. The use of a regional block increases the cost to $665.49 CAD, a 476% increase. This was due to a significant increase in labour costs, 1062% and material costs, 72%. The main barrier to performing CRIFs in an outpatient setting is the absence of equipment necessary to perform these cases effectively, based on survey results.

**CONCLUSION:** The use of the OR for CRIF of hand fractures is associated with a significant increase in cost and hospital resources with decreased efficiency. We conclude that for appropriately selected hand fractures, CRIF in an ambulatory setting is less costly and more efficient compared to the OR and resources should be allocated to facilitate CRIF in this setting.

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**Incidence of Trigger Digits after Carpal Tunnel Release: A Nationwide, Population-Based Cohort Study**

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**INTRODUCTION:** The onset of trigger digits after carpal tunnel release (CTR) have been reported inconsistently across the literature. The aim of this study is to assess the incidence of trigger digits after CTR using a nationwide population cohort data.

**MATERIALS AND METHODS:** We conducted a retrospective cohort study using the Longitudinal Health Insurance Database 2000 (LHID2000) from the National Health Insurance Database (NHIRD) in Taiwan. The LHID2000 contained one million beneficiaries randomly selected from the year 2000 Registry for Beneficiaries in NHIRD. From 2000 to 2010, 2,605 carpal tunnel syndrome (CTS) patients received CTR (CTR cohort, n = 2,605). For each CTR patient, 4 CTS patients without CTR were randomly selected in the control cohort from the general population frequency matched by age, sex, and diagnosed year (non-CTR cohort, n = 10,420). Both cohorts were followed up until the end of 2011 to investigate the occurrence of trigger digits. Adjusted hazard ratios (aHRs) with 95% confidence interval (CI) of trigger digits were estimated using the Cox proportional hazards model after controlling for age, sex and comorbidities.

**RESULTS:** The CTR cohort had a mean follow-up period of 5.58 ± 3.18 years and the non-CTR cohort had a mean follow-up period of 5.90 ± 3.10 years. The overall risk of trigger digits was 3.63-fold greater in the CTR cohort than in the non-CTR cohort (incidence rate: 12.6 vs 3.38/1,000 person-years, aHR: