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New from Cochrane Database of Systematic Reviews

**Surgery for Dupuytren's contracture of the fingers**

Jeremy N Rodrigues¹, Giles W Becker², Cathy Ball³, Weiya Zhang⁴, Henk Giele⁵, Jonathan Hobby⁶, Anna L Pratt⁷, Tim Davis⁸,*

Editorial Group: Cochrane Musculoskeletal Group

Published Online: 9 DEC 2015: Assessed as up-to-date: 20 MAY 2015

Abstract: Dupuytren's disease is a benign fibroproliferative disorder that causes the fingers to be drawn into the palm via formation of new tissue under the glabrous skin of the hand. This disorder causes functional limitations, but it can be treated through a variety of surgical techniques. As a chronic condition, it tends to recur.

**New Activity in Up-to-Date**

New updates in point-of-care evidence summarising tools Up-To-Date

**Overview of finger, hand, and wrist fractures**

Authors: Sandeep Sebastin, MMed, FAMS; Kevin C Chung, MD, MS; Shimpei Ono, MD, PhD

**Literature review current through:** Nov 2015. | This topic last updated: Nov 23, 2015.

**INTRODUCTION** — Primary care of hand fractures involves accurate diagnosis, pain control, reduction as indicated, immobilization of the fracture, appropriate referral to a hand surgeon, and appropriate rehabilitation once the fracture is healed.

This topic provides an overview of the initial evaluation, identification, and management of finger, hand, and wrist (carpal) fractures. Detailed discussions of specific injuries are found separately.

**History and examination of the adult with hand pain**

Author: Philip E Blazar, MD

**Literature review current through:** Nov 2015. | This topic last updated: Nov 13, 2015.

**INTRODUCTION** — The multiple functions of the hand are extremely important for daily life, and any deviation from normal function can lead to disability. It is important for the clinician to recognize the various traumatic and nontraumatic disorders that can lead to hand pain and dysfunction.
The history and evaluation of the adult with hand pain will be reviewed here. The differential diagnosis is lengthy, and this review will focus on some of the more common diagnoses. Thumb and wrist pain, as well as fractures and infections of the hand, are discussed in detail separately.

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Current Awareness Database Articles

Below is a selection of articles related to Hand Therapy recently added to the healthcare databases, grouped in the following categories:

- Altered Neurodynamics upper limb
- Complex Regional Pain Syndrome (CRPS)
- De-Quervain’s tenosynovitis
- Dupuytrens (fasciectomy)
- Dislocations Fingers (Proximal Interphalangeal Joints)
- Flexor and Tendon Injuries
- Mallet Finger/Thumb Deformity
- Nerve Injuries
- Soft tissue wrist injuries
- Trapeziectomy (Osteoarthritis thumb)
- Trigger finger/thumb
- Ulnar Collateral ligament Sprain- Thumb
- Wrist and Finger fractures (distal radius/scaphoid)

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Altered Neurodynamics upper limb – no new evidence this month

Complex Regional Pain Syndrome (CRPS)

**Title:** Complex regional pain syndrome (CRPS) or continuous unilateral distal experimental pain stimulation in healthy subjects does not bias visual attention towards one hemifield.

**Citation:** Experimental Brain Research, Nov 2015, vol. 233, no. 11, p. 3291-3299,

**Author(s):** Filippopulos, Filipp M., Grafenstein, Jessica, Straube, Andreas, Eggert, Thomas

**Abstract:** In natural life pain automatically draws attention towards the painful body part suggesting that it interacts with different attentional mechanisms such as visual attention. Complex regional pain syndrome (CRPS) patients who typically report on chronic distally located pain of one extremity may suffer from so-called neglect-like symptoms, which have also been linked to attentional mechanisms. The purpose of the study was to further evaluate how continuous pain conditions influence visual attention. Saccade latencies were recorded in two experiments using a common visual attention paradigm whereby orientating saccades to cued or uncued lateral visual targets had to be performed. In the
first experiment saccade latencies of healthy subjects were measured under two conditions: one in which continuous experimental pain stimulation was applied to the index finger to imitate a continuous pain situation, and one without pain stimulation. In the second experiment saccade latencies of patients suffering from CRPS were compared to controls. The results showed that neither the continuous experimental pain stimulation during the experiment nor the chronic pain in CRPS led to an unilateral increase of saccade latencies or to a unilateral increase of the cue effect on latency. The results show that unilateral, continuously applied pain stimuli or chronic pain have no or only very limited influence on visual attention. Differently from patients with visual neglect, patients with CRPS did not show strong side asymmetries of saccade latencies or of cue effects on saccade latencies. Thus, neglect-like clinical symptoms of CRPS patients do not involve the allocation of visual attention.

De-Quervain's tenosynovitis

Title: The estrogen receptor-beta expression in de Quervain's disease

Citation: International Journal of Molecular Sciences, November 2015, vol./is. 16/11(26452-26462)


Abstract: Stenosing tenosynovitis of the first dorsal compartment of the wrist (a.k.a. de Quervain's disease) is common but how estrogen is involved is still unknown. We previously reported that inflammation was involved in the pathogenesis of this ailment. In the present study, we extended our investigation of estrogen receptor (ER)-beta expression to determine whether estrogen is involved in the pathogenesis of de Quervain's. Intraoperative retinaculum samples were collected from 16 patients with the ailment. Specimens were histologically graded by collagen structure and immunohistochemically evaluated by quantifying the expression of ER-beta, interleukin (IL)-1beta and IL-6 (inflammatory cytokines), cyclooxygenase (COX)-2 (an inflammatory enzyme), and vascular endothelial growth factor (VEGF), and Von Willebrand's factor (vWF). De Quervain's occurs primarily in women. The female:male ratio in our study was 7:1. We found that ER-beta expression in the retinaculum was positively correlated with disease grade and patient age. Additionally, disease severity was associated with inflammatory factors-IL-1beta and IL-6, COX-2, and VEGF and vWF in tenosynovial tissue. The greater the levels of ER-beta expression, tissue inflammation, and angiogenesis are, the more severe de Quervain's disease is. ER-beta might be a useful target for novel de Quervain's disease therapy.

Title: Blastomyces Tenosynovitis of the Foot and Ankle: A Case Report and Review of the Literature

Citation: Journal of Foot and Ankle Surgery, November 2015, vol./is. 54/6(1183-1187)
**Author(s):** Federer A.E., Haughom B.D., Levy D.M., Riff A.J., Nho S.J.

**Abstract:** Deep fungal infection localized to the foot is not common, and when it occurs it often affects immunocompromised individuals. In this report, we describe the case of an adult diabetic patient who suffered with with Blastomycosis infection of the flexor digitorum longus and peroneal tendon sheaths. The condition was treated with systemic antifungal therapy and surgical debridement.

**Title:** Point-of-Care Ultrasound in the Evaluation of Pyogenic Flexor Tenosynovitis.

**Citation:** Pediatric emergency care, Nov 2015, vol. 31, no. 11, p. 805-807

**Author(s):** Cohen, Stephanie G, Beck, Sierra C

**Abstract:** A 4-year-old girl presented to the emergency department for evaluation of finger swelling after a dog bite. Point-of-care ultrasound was used to diagnose pyogenic flexor tenosynovitis of the digit after visualizing a fluid collection within the flexor tendon sheath. The patient underwent emergent incision and drainage of the digit with good outcome.

**Title:** Gadolinium-enhanced MRI features of acute gouty arthritis on top of chronic gouty involvement in different joints

**Citation:** Clinical Rheumatology, November 2015, vol./is. 34/11(1939-1947)

**Author(s):** Emad Y., Ragab Y., El-Naggar A., El-Shaarawy N., Abd-Allah M.A., Gamal R.M.,

**Abstract:** The aims of the current study are to describe gadolinium-enhanced MRI features of an acute flare of established gouty arthritis in different joints and to examine a possible association between serum uric acid and MRI signs indicative of ongoing inflammation and/or structural joint damage as well as association with disease characteristics and laboratory findings. Twenty-seven male patients with established chronic gout agreed to participate, mean age 47.6 years, and mean disease duration in months 43.2 (+/-31.8). For all patients, detailed demographic, disease characteristics, and laboratory findings were obtained and correlated with MRI findings. In 27 patients with established gout, a total of 50 MRI studies were performed of the following joints: feet joints (n = 23), ankles (n = 18), knees (n = 5), and hand and wrist joints (n = 4). MRI revealed capsular thickening in 19 patients, bone marrow edema (BME) in 15, soft tissue edema (STE) in 20, joint effusion in 21, bone erosions in 17, cartilaginous erosions in 4, and tenosynovitis in 9 cases. In 17 cases, tophaceous lesions were found. Post contrast MRI showed synovial thickening in seven cases. Positive correlations were observed between serum uric acid levels and the following MRI findings: capsular thickening ($r = 0.552$, $p = 0.003$), BME ($r = 0.668$, $p < 0.0001$), STE ($r = 0.559$, $p = 0.002$), and tenosynovitis ($r = 0.513$, $p = 0.006$). Using MRI in chronic gout, important features can be detected like BME, minute cartilaginous erosions, and
hypertrophic synovial inflammation in post contrast MR images. Serum uric acid (SUA) was positively correlated with capsular thickening, BME, STE, and tenosynovitis.

Title: Musculoskeletal manifestations of diabetes mellitus.

Citation: QJM : monthly journal of the Association of Physicians, Nov 2015, vol. 108, no. 11, p. 853-857

Author(s): Merashli, M, Chowdhury, T A, Jawad, A S M

Abstract: The prevalence of Type 1 and Type 2 diabetes are increasing significantly worldwide. Whilst vascular complications of diabetes are well recognized, and account for principle mortality and morbidity from the condition, musculoskeletal manifestations of diabetes are common and whilst not life threatening, are an important cause of morbidity, pain and disability. Joints affected by diabetes include peripheral joints and the axial skeleton. Charcot neuroarthropathy is an important cause of deformity and amputation associated with peripheral neuropathy. A number of fibrosing conditions of the hands and shoulder are recognized, including carpal tunnel syndrome, adhesive capsulitis, tenosynovitis and limited joint mobility. People with diabetes are more prone to gout and osteoporosis. Management of these conditions requires early recognition and close liaison between diabetes and rheumatology specialists. © The Author 2015. Published by Oxford University Press on behalf of the Association of Physicians. All rights reserved. For Permissions, please email: journals.permissions@oup.com.

Title: Tenosynovitis of a digit due to Erysipelothrix rhusiopathiae: Case report and review of the literature

Citation: New Microbes and New Infections, November 2015, vol./is. 8/(128-130), 2052-2975 (November 01, 2015)

Author(s): Tolis K., Spyridonos S., Tsiplakou S., Fandridis E.

Abstract: Erysipelothrix rhusiopathiae is a Gram-positive bacterium that in humans causes skin infections, such as erysipeloid, as a result of direct contact with contaminated animals or their waste or products. We present the first reported case of tenosynovitis of a finger in a 30-year-old woman.


Citation: Clinical infectious diseases : an official publication of the Infectious Diseases Society of America, Nov 2015, vol. 61, no. 10, p. 1514-1520 (November 15, 2015)

Author(s): Campbell, Mark, Kusne, Shimon, Renfree, Kevin J, Vikram, Holenarasipur R,
Abstract: Tenosynovitis is an uncommon manifestation of disseminated infection with Coccidioides fungal species. Most experts treat this infection with combined surgical debridement and antifungal medication. The aim of our study was to examine the outcomes of patients with coccidioidal tenosynovitis of the hand and wrist. We retrospectively searched for the records of patients with coccidioidal tenosynovitis of the hand and wrist at our institution between 1987 and 2013. We also conducted a review of the literature from 1950 to 2014 to identify additional cases. We identified 9 cases of coccidioidal tenosynovitis of the hand and wrist at our institution, along with 5 other cases found in a review of the literature. The relapse rate was high overall (50%) and was higher after discontinuation of antifungal therapy (71%) in both immunocompromised and immunocompetent patients. Results of serologic testing were not predictive of relapse. A treatment strategy for coccidioidal tenosynovitis should focus on long-term administration of antifungal agents.

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Dupuytrens (fasciectomy) - no new evidence this month

Dislocations Fingers (Proximal Interphalangeal Joints) - no new evidence this month

Flexor and Tendon Injuries

Title: Sonographical parameters of the finger pulley system in healthy adults.

Citation: Archives of orthopaedic and trauma surgery, Nov 2015, vol. 135, no. 11, p. 1615-1622

Author(s): Bassemir, Dominik, Unglaub, Frank, Hahn, Peter, Müller, Lars Peter,

Abstract: To establish normative values of tendon to bone distances (TBDs) to evaluate the A2 and A4 annular pulley integrity, we hypothesized that these values correlate with gender, athletic exercise, occupation, individual's age and body height. Ultrasonography of 200 healthy individuals was performed prospectively. TBDs for the A2 and A4 pulley sections were measured for all fingers. Evaluation was performed in resting position and active forced flexion. Examination parameters included gender, age, body height, occupation, athletic exercise level, and hand dominance. Assessment of resting position and active forced flexion was done. No clinically relevant differences of TBDs with respect to the aforementioned parameters were observed. But TBDs were significantly greater in active forced flexion than in resting position for all measured pulley sections. Intraobserver
reliability was very satisfactory. Establishing normative values will help to detect injured pulleys more precisely and examination should be performed both in resting position and active forced flexion.

Title: Common Tendon Injuries in the Hand.

Citation: Current sports medicine reports, Nov 2015, vol. 14, no. 6, p. 428-429

Author(s): Maxwell, Shane, Olson, David

Title: Corticospinal excitability modulation in resting digit muscles during cyclical movement of the digits of the ipsilateral limb

Citation: Frontiers in Human Neuroscience, November 2015, vol./is. 9/NOVEMBER, 1662-5161;1662-5161 (04 Nov 2015)

Author(s): Muraoka T., Sakamoto M., Mizuguchi N., Nakagawa K., Kanosue K.

Abstract: We investigated how corticospinal excitability of the resting digit muscles was modulated by the digit movement in the ipsilateral limb. Subjects performed cyclical extension- flexion movements of either the right toes or fingers. To determine whether corticospinal excitability of the resting digit muscles was modulated on the basis of movement direction or action coupling between ipsilateral digits, the right forearm was maintained in either the pronated or supinated position. During the movement, the motor evoked potential (MEP) elicited by transcranial magnetic stimulation (TMS) was measured from either the resting right finger extensor and flexor, or toe extensor and flexor. For both finger and toe muscles, independent of forearm position, MEP amplitude of the flexor was greater during ipsilateral digit flexion as compared to extension, and MEP amplitude of the extensor was greater during ipsilateral digit extension as compared to flexion. An exception was that MEP amplitude of the toe flexor with the supinated forearm did not differ between during finger extension and flexion. These findings suggest that digit movement modulates corticospinal excitability of the digits of the ipsilateral limb such that the same action is preferred. Our results provide evidence for a better understanding of neural interactions between ipsilateral limbs, and may thus contribute to neurorehabilitation after a stroke or incomplete spinal cord injury.

Title: An alternative technique for stabilisation of the carpometacarpal joint of the thumb after dislocation or subluxation.

Citation: The bone & joint journal, Nov 2015, vol. 97-B, no. 11, p. 1533-1538

Author(s): Zhang, X, Shao, X, Huang, W, Zhu, H, Yu, Y
**Abstract:** We report a new surgical technique for the treatment of traumatic dislocation of the carpometacarpal (CMC) joint of the thumb. This is a tenodesis which uses part of the flexor carpi radialis. Between January 2010 and August 2013, 13 patients with traumatic instability of the CMC joint of the thumb were treated using this technique. The mean time interval between injury and ligament reconstruction was 13 days (0 to 42). The mean age of the patients at surgery was 38 years: all were male. At a mean final follow-up of 26 months (24 to 29), no patient experienced any residual instability. The mean total palmar abduction of the CMC joint of the thumb was 61° and the mean radial abduction 65°. The mean measurements for the uninjured hand were 66° (60° to 73°) and 68° (60° to 75°), respectively. The mean Kapandji thumb opposition score was 8.5° (8° to 9°). The mean pinch and grip strengths of the hand were 6.7 kg (3.4 to 8.2) and 40 kg (25 to 49), respectively. The mean Disabilities of the Arm, Shoulder, and Hand questionnaire score was 3 (1 to 6). Based on the Smith and Cooney score, we obtained a mean score of 85 (75 to 95), which included four excellent, seven good, and two fair results. Our technique offers an alternative method of treating traumatic dislocation of the CMC joint of the thumb: it produces a stable joint and acceptable hand function. Cite this article: Bone Joint J 2015;97-B:1533-8. ©2015 The British Editorial Society of Bone & Joint Surgery.

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**Mallet Finger/Thumb Deformity** - no new evidence this month

**Nerve Injuries**

**Title:** Ulnar nerve cutaneous distribution in the palm: Application to surgery of the hand

**Citation:** Clinical Anatomy, November 2015, vol./is. 28/8(1022-1028), 0897-3806;1098-2353

**Author(s):** Sulaiman S., Soames R., Lamb C.

**Abstract:** The ulnar nerve (UN) was classically described as supplying most of the intrinsic muscles of the hand, and the cutaneous innervation of the ulnar one and half digits, by dividing into superficial sensory and deep motor branches in Guyon's canal. Variations of this pattern have been reported in the literature. This study investigated the cutaneous distribution of the UN in the palm following the dissection of 144 cadaveric hands. The UN was examined and the distances from branching points of the superficial branch to the proximal edge of the pisiform were measured. The UN bifurcated (80.4%) into one deep trunk and one superficial trunk, which further divided distally into the proper digital (PDN) and common digital (CDN) nerves or trifurcated (19.6%) into one deep trunk, a PDN and a CDN in Guyon's canal. It received fibers from the median nerve in four cases and from the dorsal branch of the UN in six cases. A classification scheme based on the nerves contributing to the sensory innervation of the ulnar side of the palm was suggested. Understanding the cutaneous distribution of the UN in the palm and appreciating possible
communicating branches can help clinicians to assess hand pathologies better and avoid injuries during surgical interventions.

**Title:** Expression of Nogo receptor 1 in microglia during development and following traumatic brain injury.

**Citation:** Brain research, Nov 2015, vol. 1627, p. 41-51 (November 19, 2015)

**Author(s):** Liu, Gaoxiang, Ni, Jie, Mao, Lei, Yan, Ming, Pang, Tao, Liao, Hong

**Abstract:** As the receptor of myelin associated inhibitory factors Nogo receptor 1 (NgR1) plays an important role in central nervous system (CNS) injury and regeneration. It is found that NgR1 complex acts in neurons to transduce the signals intracellularly including induction of growth cone collapse, inhibition of axonal regeneration and regulation of nerve inflammation. In recent studies, NgR1 has also been found to be expressed in the microglia. However, NgR1 expressed in microglia in the developing nervous systems and following CNS injury have not been widely investigated. In this study, we detected the expression and cellular localization of NgR1 in microglia during development and following traumatic brain injury (TBI) in mice. The results showed that NgR1 was mainly expressed in microglia during embryonic and postnatal periods. The expression levels peaked at P4 and decreased thereafter into adulthood, while increased significantly with aging representatively at 17 mo. On the other hand, there was no significant difference in the number of double positive NgR1(+)Iba1(+) cells between normal and TBI group. In summary, we first detected the expression of NgR1 in microglia during development and found that NgR1 protein expression increased significantly in microglia with aging. These findings will contribute to make a foundation for subsequent study about the role of NgR1 expressed in microglia on the CNS disorders. Copyright © 2015 Elsevier B.V. All rights reserved.

**Title:** The effects of repetitive vibration on sensorineural function: biomarkers of sensorineural injury in an animal model of metabolic syndrome.

**Citation:** Brain research, Nov 2015, vol. 1627, p. 216-224 (November 19, 2015)

**Author(s):** Kiedrowski, Megan, Waugh, Stacey, Miller, Roger, Johnson, Claud

**Abstract:** Exposure to hand-transmitted vibration in the work-place can result in the loss of sensation and pain in workers. These effects may be exacerbated by pre-existing conditions such as diabetes or the presence of primary Raynaud's phenomena. The goal of these studies was to use an established model of vibration-induced injury in Zucker rats. Lean Zucker rats have a normal metabolic profile, while obese Zucker rats display symptoms of metabolic disorder or Type II diabetes. This study examined the effects of vibration in obese and lean rats. Zucker rats were exposed to 4h of vibration for 10 consecutive days at a frequency of 125Hz and acceleration of 49m/s(2) for 10 consecutive days. Sensory function was checked using transcutaneous electrical stimulation on days 1, 5 and 9 of the exposure. Once the study was complete the ventral tail nerves, dorsal root ganglia and spinal cord were dissected, and levels of various transcripts involved in sensorineural dysfunction were
measured. Sensorineural dysfunction was assessed using transcutaneous electrical stimulation. Obese Zucker rats displayed very few changes in sensorineural function. However they did display significant changes in transcript levels for factors involved in synapse formation, peripheral nerve remodeling, and inflammation. The changes in transcript levels suggested that obese Zucker rats had some level of sensory nerve injury prior to exposure, and that exposure to vibration activated pathways involved in injury and re-innervation. Published by Elsevier B.V.

Title: Modified anterograde pedicle advancement flap in fingertip injury.

Citation: The Journal of hand surgery, European volume, Nov 2015, vol. 40, no. 9, p. 944-951

Author(s): Lee, S H, Jang, J H, Kim, J I, Cheon, S J

Abstract: Soft tissue reconstruction is needed to maintain the maximum length of the fingers in fingertip injury. The purpose of this study was to present an anterograde pedicle advancement flap technique, for the treatment of fingertip injuries, which involved a modification to the anterograde advancement flap by the dissection of the digital nerve and artery with a pedicle to advance the flap. This technique was used in 12 fingers in patients who had undergone soft tissue reconstruction of fingertip injuries between January 2012 and October 2013. The sizes of the flaps ranged from 8 × 7 mm to 14 × 10 mm. The mean length of advancement was 9.7 mm (range 7-13). The mean value of the static two-point discrimination test of the healed flaps was 5.1 mm (range 4-6) and the flaps survived in all the 12 cases. The modified anterograde pedicle advancement flap provides a reliable coverage of sensate soft tissue without bone shortening in fingertip injuries. Level II. © The Author(s) 2014.

Title: Transfer of a Terminal Motor Branch Nerve to the Flexor Carpi Ulnaris for Triceps Reinnervation: Anatomical Study and Clinical Cases.

Citation: The Journal of hand surgery, Nov 2015, vol. 40, no. 11, p. 2229

Author(s): Bertelli, Jayme, Soldado, Francisco, Ghizoni, Marcos F, Rodríguez-Baeza, Alfonso

Abstract: To analyze the anatomical feasibility of transferring a motor branch nerve to the flexor carpi ulnaris (FCU) to the triceps upper medial head motor branch (UMHM) and to report the resultant outcome of the restoration of elbow extension in 5 patients with extensive brachial plexus injury. The ulnar and radial nerves were dissected in 10 cadavers. We measured the length and diameter of the branches to the FCU and the UMHM branch and counted the axons. Then, 5 male patients, mean age 30 years, underwent FCU nerve branch transfer for reconstruction of elbow extension. Elbow flexion was restored via a median nerve branch to biceps transfer. Mean UMHM nerve length and diameter were 86 and 1.5 mm, respectively. Mean number of branches to the FCU muscle was 2.9. Mean FCU nerve length and diameter were 50 and 1.0 mm, respectively. Mean number of myelinated fibers was 818 and 743 for the UMHM and the longest branch to the FCU, respectively. Coaptation between nerves was possible without tension. All patients recovered functional
active elbow extension at a mean follow-up of 19 months with a British Medical Research Council score of M4. After surgery, all patients retained a functional FCU with a British Medical Research Council score of M4. Nonselective ulnar nerve fascicles at the root of the limb might not be adequate to restore elbow extension when combined with a median nerve branch transfer for elbow flexion. A selective distal ulnar motor fascicle such as a FCU motor branch could be harvested and connected to a triceps branch to restore elbow extension. Such a nerve transfer would also allow for later transfer of the still functional FCU tendon to the digital extensors. For patients with extensive brachial plexus injury and a preserved medial cord, transferring a motor branch nerve to the FCU is an effective technique for the reconstruction of elbow extension. Therapeutic IV. Copyright © 2015 American Society for Surgery of the Hand. Published by Elsevier Inc. All rights reserved.

Title: Comparative Study of Nerve Grafting versus Distal Nerve Transfer for Treatment of Proximal Injuries of the Ulnar Nerve.

Citation: Journal of reconstructive microsurgery, Nov 2015, vol. 31, no. 9, p. 647-653

Author(s): Flores, Leandro Pretto

Abstract: Background The prognosis for motor recovery associated with ulnar nerve injuries at a level proximal to the elbow is usually considered poor. Nerve transfers techniques were introduced as an alternative for the management of nerve lesions of the upper limb, aiming to improve the surgical results of those nerves for which direct reconstruction has not historically yielded good outcomes. Methods A retrospective chart review was conducted to compare the outcomes obtained using nerve grafting (20 cases) with those of distal nerve transfer (15 patients) for the treatment of proximal injuries of the ulnar nerve. Nerve transfer combined the suture of the anterior interosseous nerve to the motor branch of the ulnar nerve and the coaptation of its sensory branch to the third common digital nerve via an end-to-side suture. Results The Medical Research Council M3/M4 outcomes were observed significantly more often in the nerve transfer group (80 vs. 22%), and the mean values for handgrip strength were higher (31.3 ± 5.8 vs. 14.5 ± 7.2 kg). The groups were similar in attaining good sensory recovery (40 vs. 30%) and mean two-point-discrimination (grafting: 11 ± 2 mm; nerve transfer: 9 ± 1 mm). The mean value of the disabilities of arm, shoulder, and hand for the nerve transfer group (23.6 ± 6.7) was significantly lower than for grafting (34.2 ± 8.3). Conclusions Distal nerve transfer resulted in better motor and functional outcomes than nerve grafting. Both techniques resulted in similar sensory outcomes, and nerve grafting was demonstrated to be a better technique for managing the painful symptoms associated with the nerve injury. Thieme Medical Publishers 333 Seventh Avenue, New York, NY 10001, USA.

Title: Management of brachial plexus injuries in adults: Clinical evaluation and diagnosis.

Citation: Neurology India, Nov 2015, vol. 63, no. 6, p. 918-925, 0028-3886

Author(s): Sinha, Sumit, Pemmaiah, Devi, Midha, Rajiv
Abstract: Brachial plexus injuries are devastating injuries that usually affect the younger population. The usual modes of injuries are roadside accidents, falls, and assaults. The affected individuals are crippled and may suffer from excruciating peripheral or central deafferentation pain for rest of their lives. The loss of functional capacity accounts for a significant number of man-hours lost at the workplace and consequent financial burden on the family. The results of brachial plexus reconstructive surgery have generally been unsatisfactory in the past. However, in recent decades, the efficacy of surgery has been proven beyond doubt, and there have been various published series in literature that have reported a good outcome after surgical management of these injuries. This has been made possible by the use of operating microscopes, better microsuture techniques for nerve graft and nerve or tendon transfer repair, and advanced perioperative electrophysiological techniques. The key to successful management lies in the proper clinical evaluation, supplemented with electrophysiology, preoperative imaging studies, and planning of surgical strategy. The partial injuries have a better outcome as compared with global palsies, and early referral should be emphasized. Selective combinations of nerve graft and transfers provide a moderate shoulder and elbow control. However, a multispecialty approach involving hand surgeons, plastic surgeons, and physiotherapists is required.

Soft tissue wrist injuries - no new evidence this month

Trapeziectomy (Osteoarthritis thumb)

Title: Altered Innervation Pattern in Ligaments of Patients with Basal Thumb Arthritis

Citation: Journal of Wrist Surgery, November 2015, vol./is. 4/4 (284-291)

Author(s): Ludwig C.A., Mobargha N., Okogbaa J., Hagert E., Ladd A.L.

Abstract: Purpose The population of mechanoreceptors in patients with osteoarthritis (OA) lacks detailed characterization. In this study, we examined the distribution and type of mechanoreceptors of two principal ligaments in surgical subjects with OA of the first carpometacarpal joint (CMC1). Methods We harvested two ligaments from the CMC1 of eleven subjects undergoing complete trapeziectomy and suspension arthroplasty: the anterior oblique (AOL) and dorsal radial ligament (DRL). Ligaments were divided into proximal and distal portions, paraffin-sectioned, and analyzed using immunofluorescent triple staining microscopy. We performed statistical analyses using the Wilcoxon Rank Sum test and ANOVA with post-hoc Bonferroni and Tamhane adjustments. Results The most prevalent nerve endings in the AOL and DRL of subjects with OA were unclassifiable mechanoreceptors, which do not currently fit into a defined morphological scheme. These were found in 11/11 (100%) DRLs and 7/11 (63.6%) AOLs. No significant difference existed
with respect to location within the ligament (proximal versus distal) of mechanoreceptors in OA subjects. Conclusion The distribution and type of mechanoreceptors in cadavers with no to mild OA differ from those in surgical patients with OA. Where Ruffini endings predominate in cadavers with no to mild OA, unclassifiable corpuscles predominate in surgical patients with OA. These findings suggest an alteration of the mechanoreceptor population and distribution that accompanies the development of OA. Clinical Relevance Identification of a unique type and distribution of mechanoreceptors in the CMC1 of symptomatic subjects provides preliminary evidence of altered proprioception in OA.

**Title:** Combined Treatment of Wrist and Trapeziometacarpal Joint Arthritis.

**Citation:** Journal of wrist surgery, Nov 2015, vol. 4, no. 4, p. 301-306, 2163-3916

**Author(s):** Waitzenegger, Thomas, Leclercq, Caroline, Masmejean, Emmanuel,

**Abstract:** Background Combined thumb basal and wrist joint arthritis (excluding scaphotrapeziotrapezoid arthritis) is rare considering the frequency of arthritis of either joint alone. Combined surgical treatment has never been described in the literature. Furthermore, the scaphoidectomy common to all interventions for Watson stage 2 or 3 wrist arthritis theoretically makes it impossible to perform a trapeziectomy for thumb basal joint arthritis. Question/Purpose The aim of this study was to present and analyze the results of two types of surgical treatment when both wrist and thumb arthritis was present. Materials and Methods Our retrospective series included 11 patients suffering from Eaton Stage III thumb basal joint arthritis and scapholunate advanced collapse (SLAC) II and III-type wrist arthritis. Five patients (group A) underwent trapeziectomy and palliative surgery for their wrist with conservation of the distal pole of the scaphoid (one proximal row carpectomy [PRC] and four four-corner fusions), and six (group B) patients had a trapeziometacarpal arthroplasty either with PRC (two cases) or four-corner arthrodesis (four cases) including total scaphoidectomy. Results The mean follow-up was 57 months. The overall visual analog scale (VAS) score for pain was 1.5 at rest, with no difference between the trapeziectomy and arthroplasty groups. The average Kapandji score was 9.3 (9 in group A and 9.5 in group B). The flexion/extension range of motion for the wrist was 64° following four-corner arthrodesis and 75° following PRC. Only one case of algodystrophy was observed. The radiological analysis revealed no complications. Discussion This study shows that thumb basal joint arthritis and SLAC type wrist arthritis may be treated by combined treatment during the same intervention without any complications. The results of palliative surgery for the wrist, either with trapeziectomy or with a trapeziometacarpal arthroplasty, are comparable. With a trapeziectomy, the distal pole of the scaphoid must be fused to the capitate to help stabilize the thumb column. Level of Evidence Level IV.

**Title:** The effect of a bone tunnel during ligament reconstruction for trapeziometacarpal osteoarthritis: A 5-year follow-up

**Citation:** Journal of Hand Surgery, November 2015, vol./is. 40/11(2214-2222)
**Author(s):** Spekreijse K.R., Vermeulen G.M., Kedilioglu M.A., Slijper H.P., Feitz R.

**Abstract:** Purpose To compare in trapeziometacarpal (TMC) osteoarthritis the effects of trapeziectomy with tendon interposition and ligament reconstruction (LRTI) with or without a bone tunnel after a mean follow-up of 5 years. Methods We randomized 79 women (aged 40 years or older) with stage IV TMC osteoarthritis to either trapeziectomy with LRTI using a bone tunnel (Burton-Pellegrini) or a tendon sling arthroplasty (Weilby). Before surgery and at 3 months and 1 year after surgery, patients were evaluated for pain, function, strength, satisfaction, and complications. Of these patients, 72% were evaluated after a mean follow-up of 5 years (range, 3.8-6.4 years). Results There were no significant differences in function and pain (Patient-Rated Wrist and Hand Evaluation) between treatment groups after a mean follow-up of 5 years. In addition, grip and pinch strength, satisfaction, and persisting complications did not differ between groups. Three patients in the Weilby group had repeat surgery (2 for symptomatic scaphotrapezoidal osteoarthritis and 1 elsewhere) and one in the Burton-Pellegrini group operated on again elsewhere. Furthermore, 3 patients who were first conservatively treated for a trigger finger or neuroma were operated on again because conservative therapy failed. Two more patients were operated on again because of de Quervain tendinitis and carpal tunnel syndrome. The overall treatment effect of both groups together showed no significant differences between results at 1 and 5 years after surgery, except for grip strength, which improved for both groups. Conclusions This study showed that improved function, strength, and satisfaction obtained at 1 year after trapeziectomy with LRTI with or without the use of a bone tunnel for stage IV TMC thumb osteoarthritis was maintained after 5 years.

**Title:** Direct flexor carpi radialis to abductor pollicis longus tenodesis: an alternative technique for ligament suspension following trapeziectomy.

**Citation:** The Journal of hand surgery, European volume, Nov 2015, vol. 40, no. 9, p. 1006-1008

**Author(s):** Werthel, J-D, Schoch, B, Elhassan, B T

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**Trigger finger/thumb**

**Title:** Pediatric trigger digits

**Citation:** Journal of Hand Surgery, November 2015, vol./is. 40/11(2304-2309)

**Author(s):** Bauer A.S., Bae D.S.

**Abstract:** Pediatric trigger thumb presents not at birth but early in childhood. Most evidence suggests that it is caused by a developmental size mismatch between the flexor pollicis longus tendon and its sheath. Patients generally present with the thumb interphalangeal joint locked in flexion. Surgical reviews report near universally excellent outcomes after
open release of the A1 pulley. However, recent reports indicate that there may be a role for
nonsurgical treatment for families that are willing to wait several years for possible
spontaneous resolution of the deformity. Triggering in digits other than the thumb in
children is generally associated with an underlying diagnosis including anatomic
abnormalities of the tendons, and metabolic, inflammatory, and infectious etiologies.
Although some have advocated nonsurgical treatment, surgery is often necessary to address
the underlying anatomic etiology. More extensive surgery beyond simple A1 pulley release
is often required, including release of the A3 pulley and resection of a slip of the flexor
digitorum superficialis tendon.

Title: Corticosteroid injection for trigger finger: Blinded or ultrasound-guided injection?

Citation: Archives of Orthopaedic and Trauma Surgery, November 2015, vol./is. 135/1(125-
131)

Author(s): Cecen G.S., Gulabi D., Saglam F., Tanju N.U., Bekler H.I.

Abstract: Introduction Trigger digit is one of the most common causes of pain and disability
in the hand. The mainstay of conservative treatment of this disease has been local steroid
injection into the tendon sheath. The aim of this study was to investigate the clinical benefit
of an ultrasound-guided corticosteroid injection compared to a blinded application.
Materials and methods 74 patients, who suffered from persistent or increasing symptoms of
a single trigger digit, were enrolled in this prospective, randomised case-control study. All
patients were treated with an injection of 40 mg/1 ml methylprednisolone acetate into the
flexor tendon sheath at the level of the A1 pulley. Half of the patients had their injections
under ultrasound control (USG) and half without (blinded injection group, BIG). Associated
metabolic diseases were recorded. At the 6-week and 6-month follow-up examinations, the
complication rate and the need for a second injection were assessed. The outcome was
rated using the Quinnell grading. The pain level was assessed using the visual analogue
scale. Results Four patients were excluded due to lack of follow-up. Both study groups were
comparable in respect of age, hand dominance and associated diseases. There were
significantly more female patients in the USG group (32 versus 23%). After the corticosteroid
injections, all patients improved significantly in terms of pain level and the Quinnell grading
at 6 weeks and 6 months after the intervention in comparison to the pre-injection status.
There were no significant differences between the groups. 9 patients (13%) needed a
second injection (6 of BIG, 3 of USG), all of whom had diabetes mellitus. No local
complications were seen after the injections. Conclusion The use of ultrasound-guided
injection of corticosteroid may be associated with extra time and effort, with no superior
clinical benefits compared to the blinded technique. Level of evidence Level 1(prospective
randomised study).

Title: Sonographic evaluation of effects of the volar plate on trigger finger.

Citation: Journal of orthopaedic science : official journal of the Japanese Orthopaedic
Association, Nov 2015, vol. 20, no. 6, p. 999-1004
**Author(s):** Tanaka, Yoshitaka, Gotani, Hiroyuki, Yano, Koichi, Sasaki, Kosuke,

**Abstract:** We evaluated trigger fingers ultrasonographically and clarified differences between fingers with and without continuous locking or snapping symptoms according to the thicknesses of the A1 pulley, flexor tendon and volar plate. We evaluated 26 trigger fingers, divided into two groups: Group 1, 14 fingers with locking or snapping; and Group 2, 12 fingers without such symptoms. We also evaluated 26 contralateral fingers as controls (Control 1 and 2 groups). We compared each group to the respective control group according to thickness of the A1 pulley and volar plate, and cross-sectional area of the flexor tendon. In addition, nine fingers with locking or snapping and treated using corticosteroid injection were evaluated according to symptoms and sonographic findings 3-4 weeks after treatment. Thickness of the A1 pulley and cross-sectional area of the flexor tendon were greater in both Groups 1 and 2 than in controls. Thickness of the volar plate was greater in Group 1 than in Control 1, although no significant difference was seen between Group 2 and Control 2. In Group 1, eight of the nine fingers showed an alleviation of locking or snapping symptoms with corticosteroid injection, and sonographic findings showed that thickness of the volar plate was significantly decreased with corticosteroid injection, in addition to reduced thickness of the A1 pulley. In addition to thickening of the A1 pulley, thickening of the volar plate may represent an important contributor to continuous snapping or locking symptoms.

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**Title:** Sonographic evaluation of effects of the volar plate on trigger finger

**Citation:** Journal of Orthopaedic Science, November 2015, vol./is. 20/6(999-1004)

**Author(s):** Tanaka Y., Gotani H., Yano K., Sasaki K., Miyashita M., Hamada Y.

**Abstract:** Background: We evaluated trigger fingers ultrasonographically and clarified differences between fingers with and without continuous locking or snapping symptoms according to the thicknesses of the A1 pulley, flexor tendon and volar plate. Methods: We evaluated 26 trigger fingers, divided into two groups: Group 1, 14 fingers with locking or snapping; and Group 2, 12 fingers without such symptoms. We also evaluated 26 contralateral fingers as controls (Control 1 and 2 groups). We compared each group to the respective control group according to thickness of the A1 pulley and volar plate, and cross-sectional area of the flexor tendon. In addition, nine fingers with locking or snapping and treated using corticosteroid injection were evaluated according to symptoms and sonographic findings 3-4 weeks after treatment. Results: Thickness of the A1 pulley and cross-sectional area of the flexor tendon were greater in both Groups 1 and 2 than in controls. Thickness of the volar plate was greater in Group 1 than in Control 1, although no significant difference was seen between Group 2 and Control 2. In Group 1, eight of the nine fingers showed an alleviation of locking or snapping symptoms with corticosteroid injection, and sonographic findings showed that thickness of the volar plate was significantly decreased with corticosteroid injection, in addition to reduced thickness of the A1 pulley. Conclusion: In addition to thickening of the A1 pulley, thickening of the volar plate may represent an important contributor to continuous snapping or locking symptoms.
Ulnar Collateral ligament Sprain - Thumb – no new evidence this month

Wrist and Finger fractures (distal radius/scaphoid)

**Title:** Wrist Fracture and Risk of Subsequent Fracture: Findings from the Women’s Health Initiative Study.

**Citation:** Journal of bone and mineral research : the official journal of the American Society for Bone and Mineral Research, Nov 2015, vol. 30, no. 11, p. 2086-2095 (November 2015)

**Author(s):** Crandall, Carolyn J, Hovey, Kathleen M, Cauley, Jane A, Andrews, Christopher A,

**Abstract:** Wrist fractures are common in postmenopausal women and are associated with functional decline. Fracture patterns after wrist fracture are unclear. The goal of this study was to determine the frequency and types of fractures that occur after a wrist fracture among postmenopausal women. We carried out a post hoc analysis of data from the Women's Health Initiative Observational Study and Clinical Trials (1993-2010) carried out at 40 US clinical centers. Participants were postmenopausal women aged 50 to 79 years at baseline. Mean follow-up duration was 11.8 years. Main measures included incident wrist, clinical spine, humerus, upper extremity, lower extremity, hip, and total non-wrist fractures and bone mineral density (BMD) in a subset. Among women who experienced wrist fracture, 15.5% subsequently experienced non-wrist fracture. The hazard for non-wrist fractures was higher among women who had experienced previous wrist fracture than among women who had not experienced wrist fracture: non-wrist fracture overall (hazard ratio [HR] = 1.40, 95% confidence interval [CI] 1.33-1.48), spine (HR = 1.48, 95% CI 1.32-1.66), humerus (HR = 1.78, 95% CI 1.57-2.02), upper extremity (non-wrist) (HR = 1.88, 95% CI 1.70-2.07), lower extremity (non-hip) (HR = 1.36, 95% CI 1.26-1.48), and hip (HR = 1.50, 95% CI 1.32-1.71) fracture. Associations persisted after adjustment for BMD, physical activity, and other risk factors. Risk of non-wrist fracture was higher in women who were younger when they experienced wrist fracture (interaction p value 0.02). Associations between incident wrist fracture and subsequent non-wrist fracture did not vary by baseline BMD category (normal, low bone density, osteoporosis). A wrist fracture is associated with increased risk of subsequent hip, vertebral, upper extremity, and lower extremity fractures. There may be substantial missed opportunity for intervention in the large number of women who present with wrist fractures. © 2015 American Society for Bone and Mineral Research. © 2015 American Society for Bone and Mineral Research.
Title: Ultrasound evaluation of the transverse movement of the flexor pollicis longus tendon on the distal radius during wrist and finger motion in healthy volunteers

Citation: Journal of Nippon Medical School, November 2015, vol./is. 82/5(220-228)

Author(s): Nanno M., Sawaizumi T., Kodera N., Tomori Y., Takai S.

Abstract: Purpose: This study aimed to evaluate the kinematics of the flexor pollicis longus tendon (FPL) at the wrist by examining the movement of the FPL on the distal radius during various wrist and finger motions using transverse ultrasound in healthy volunteers. Methods: Forty-eight wrists of 24 asymptomatic volunteers were examined by transverse ultrasound to observe the location of the FPL on the distal radius at 5 wrist positions (neutral, 60degree dorsal flexion, 60degree palmar flexion, 40degree ulnar deviation, and 10degree radial deviation) with all 5 fingers in full extension and full flexion, and isolated thumb in full flexion, respectively. Results: We found that the FPL was situated statistically significantly more ulnodorsally at the wrist dorsal and ulnar deviation positions, more ulnopalmarly at the wrist palmar flexion position, and more radiopalmarly at the wrist radial deviation-position than at the wrist neutral position with all 5 fingers at full extension. Especially, it moved statistically significantly most ulnodorsally at the wrist dorsal flexion position during finger motion. The FPL moved most statistically significantly ulnopalmarly at the wrist palmar flexion position with all 5 fingers in full extension among all wrist positions during finger motion. During finger motion, the wrist dorsal flexion position induced significant displacement of the FPL to the distal radius and compressed it between the flexor tendons and the distal radius. The average distance between the FPL and the volar surface of the distal radius in the palmar-dorsal direction at wrist dorsal flexion position in all fingers at full flexion was 1.9 mm, the smallest among all wrist positions during finger motion. Conclusions: There is a significant relationship between the transverse movement of the FPL at the distal radius and wrist and finger motions. Our findings indicated that the irritation of the FPL caused by the movement of both the FPL itself and of the flexor digitorum superficialis and profundus is most induced with the wrist in dorsal flexion with all 5 fingers at full flexion compared to other wrist positions during finger motion. This wrist position might be the optimum one at which to evaluate the irritation of the FPL from volar locking plates in patients with distal radius fracture. We believe that our transverse ultrasound results can play a role in the gaining of a better understanding of the kinematics of the FPL. Moreover, they have potential to lead to improved diagnosis of and treatment for fractures of the distal radius and help to minimize the risk of FPL rupture related to volar locking plates.

Title: Cost-effectiveness of zoledronic acid versus alendronic acid in the treatment of osteoporosis in postmenopausal Egyptian patients: Decision analysis

Citation: Value in Health, November 2015, vol./is. 18/7(A646), 1098-3015

Author(s): Elmansy H., Metry A.B., Eldessouki R., Elsisi G.
Abstract: Objectives: To evaluate from the Ministry of Health perspective, over a five-year period, the cost-effectiveness of using zoledronic acid 5mg compared to that of alendronic acid in the treatment of osteoporosis in postmenopausal Egyptian patients. Methods: A Markov model with five mutually exclusive health states (Well, hip fracture, spine (vertebral) fracture, wrist (non-vertebral) fracture, and death) was developed. The transition probabilities between the health states were derived from a previously published source. Health state utilities and major adverse events were obtained from published sources. Direct medical costs were obtained from the Ministry of health list. Costs and effects were discounted at 3.5% annually. One way sensitivity analyses were conducted. Results: Across the overall population, the total QALYs of the Zoledronic acid group were estimated to be 194.4 compared with 194.1 for the Alendronic acid group, which resulted in a difference of 0.33 QALYs. The total costs for the Zoledronic acid group and Alendronic acid group were LE 215,232 and LE 215,087 respectively. These costs yielded an ICER of LE 435 for the Zoledronic acid group. The odds ratio of zoledronic acid on vertebral & non-vertebral fractures was found to have the greatest impact on the results. Conclusions: Compared with our willingness-to-pay threshold stated by world health organization for middle and lower income countries, Zoledronic acid is cost-effective; and most likely to result in an ICER lower than the threshold limit. Thus, the new treatment (Zoledronic acid) should be recommended in the Ministry of health list.

Title: Clinical effectiveness of bisphosphonates for prevention of fragility fractures: A systematic review and network meta-analysis

Citation: Value in Health, November 2015, vol./is. 18/7(A634)

Author(s): Sanderson J.
treatments. Pairwise comparisons between treatments indicated that no active treatment was statistically significantly more effective than any other active treatment for fracture outcomes. There was some heterogeneity in treatment effects between studies suggesting differential treatment effects according to study characteristics. However, there was no evidence of differential treatment effects with respect to gender and age.

**Title:** A comparison of K-wire versus screw fixation on the outcomes of distal phalanx fractures

**Citation:** Journal of Hand Surgery, November 2015, vol./is. 40/11(2160-2167)

**Author(s):** Hay R.A.S., Tay S.C.

**Abstract:** Purpose To compare K-wire and screw fixation of distal phalanx (DP) fractures with respect to union and functional outcome. Methods This retrospective study identified patients with DP fractures from a clinic registry taken from 2007 to 2013. Clinical data collected included patient demographics, range of motion (ROM), removal of implant (ROI), and complications. Radiographic data collected included fracture type, location, configuration, fracture displacement, and radiographic union. Statistical analysis was done using a chi-squared test for categorical variables and paired Student's t test for continuous variables. Results A total of 172 patients with DP fractures were seen in our clinic between 2007 and 2013. Of these, 141 patients were managed conservatively and 31 patients had surgery for 33 DP fractures, of which 12 had K-wire and 21 had screw fixation. Mean union incidence for screw was 100% compared with 83% for K-wire. Time to union was 2.4 months for screw fixation compared with 4.1 months for K-wire fixation. ROM for screw fixation was significantly better (60degree) compared with K-wire fixation (45degree). ROM for non-transarticular K-wire (46degree) was similar to transarticular K-wire (44degree). ROI was performed in 52% of patients with screw fixation. Other than fingertip tenderness, which resolved after ROI, no other complications were noted. Conclusions Our study showed that the union incidence and time to union for screw fixation were comparable to those for K-wire fixation. Screw fixation of DP fractures resulted in greater distal interphalangeal joint motion compared with K-wire fixation but required removal in half of cases.

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**Title:** Effect of volarly angulated distal radius fractures on forearm rotation and distal radioulnar joint kinematics

**Citation:** Journal of Hand Surgery, November 2015, vol./is. 40/11(2236-2242)

**Author(s):** Nishiwaki M., Welsh M.F., Gammon B., Ferreira L.M., Johnson J.A., King G.J.W.

**Abstract:** Purpose To examine the effect of volar angulation deformities of the distal radius with and without triangular fibrocartilage complex (TFCC) rupture on forearm range of motion and the kinematics of the ulnar head at the distal radioulnar joint (DRUJ) during simulated active forearm rotation. Methods Volar angulation deformities of the distal radius with 10degree and 20degree angulation from the native orientation were created in 8
cadaveric specimens using an adjustable apparatus. Active supination and pronation were performed using a forearm motion simulator. Pronation and supination range of motion was quantified with each deformity. In addition, changes in the dorsovolar position of the ulnar head relative to the radius were calculated after simulating each distal radial deformity. Testing was performed with the TFCC intact and sectioned. Results Volar angulation deformities of 20° decreased the supination range with preservation of pronation. There was no effect of TFCC status on the range of forearm rotation. With the TFCC intact, volar angulation deformities translated the ulna slightly dorsally in pronation and volarly in supination. After sectioning the TFCC, volar angulation deformities of 10° and 20° translated the ulna dorsally throughout forearm rotation. Conclusions Volar angulation deformities reduce supination range and alter the DRUJ kinematics. The increased tension in the intact TFCC caused by volar angulation deformities likely prevented the expected dorsovolar displacement at the DRUJ and restricted supination. Dividing the TFCC released the constraining effect on the DRUJ and allowed the ulna to translate dorsally. However, supination remained limited, presumably because of impediment from the dorsally subluxated ulna. Clinical relevance This study demonstrated the importance of correcting volar angulation deformities of the distal radius to less than 20° in order to maintain normal range of forearm rotation and to less than 10° to maintain normal DRUJ kinematics when the TFCC is ruptured.

Title: The Missed Scaphoid Fracture—Outcomes of Delayed Cast Treatment

Citation: Journal of Wrist Surgery, November 2015, vol./is. 4/4(278-283)

Author(s): Grewal R., Suh N., Macdermid J.C.

Abstract: Background The purpose of this study is to evaluate outcomes (report union rates and times based on CT) for subacute scaphoid fractures, defined as those presenting between 6 weeks and 6 months from injury. Questions 1) What are the expected union rates for subacute scaphoid fractures? 2) What are the expected union times for subacute scaphoid fractures? 3) Is it worth trialing a period of cast immobilization for these patients? Methods All isolated sub-acute scaphoid fractures that presented at our institution between 2006 and 2010 were identified. Each subject’s health record, CT scans and X-rays were retrospectively reviewed. Results There were 20 males and 8 females, with a mean age of 30, treated with casting alone. There were 20 waist, 7 proximal and 1 distal pole fracture. The mean casting time was 11 (waist) and 14 (proximal pole) weeks with a union rate of 82% (23/28). Diabetes, comminution and a humpback deformity increased the non-union risk in this cohort. Exclusion of these cases resulted in a 96% union rate (23/24). Conclusion Subacute scaphoid fractures (presenting within 6 months from injury) can be expected to successfully heal with casting alone, even if the initial diagnosis is delayed. The expected time frame for union with cast treatment is shorter than previously reported. Level of Evidence IV.

Title: Volar, Intramedullary, and Percutaneous Fixation of Distal Radius Fractures
Citation: Journal of Wrist Surgery, November 2015, vol./is. 4/4(292-300)

Author(s): Alluri R., Longacre M., Pannell W., Stevanovic M., Ghiassi A.

Abstract: Background The management of extra-articular distal radius fractures is highly variable, with no clear consensus regarding their optimal management. Purpose To assess comparatively the biomechanical stability of Kirschner wire (K-wire) fixation, volar plating, and intramedullary nailing for unstable, extra-articular distal radius fractures with both (1) constant and (2) cyclical axial compression, simulating forces experienced during early postoperative rehabilitation. Methods Twenty-six volar locking plate, intramedullary nail, and K-wire bone-implant constructs were biomechanically assessed using an unstable extra-articular distal radius bone model. Bone implant models were created for each type of construct. Three samples from each construct underwent compressive axial loading until fixation failure. The remaining samples from each construct underwent fatigue testing with a 50-N force for 2,000 cycles followed by repeat compressive axial loading until fixation failure. Results Axial loading revealed the volar plate was significantly stiffer than the intramedullary nail and K-wire constructs. Both the volar plate and intramedullary nail required greater than 300 N of force for fixation failure, while the K-wire construct failed at less than 150 N. Both the volar plate and intramedullary nail demonstrated less than 1 mm of displacement during cyclic loading, while the K-wire construct displaced greater than 3 mm. Postfatigue testing demonstrated the volar plate was stiffer than the intramedullary nail and K-wire constructs, and both the volar plate and intramedullary nail required greater than 300 N of force for fixation failure while the K-wire construct failed at less than 150 N. Conclusions Volar plating of unstable extra-articular distal radius fractures is biomechanically stiffer than K-wire and intramedullary fixation. Both the volar plate and intramedullary nail demonstrated the necessary stability and stiffness to maintain anatomic reduction during the postoperative rehabilitation period. Clinical Relevance Both the volar plate and intramedullary nail demonstrated the necessary biomechanical stability to maintain postoperative reduction in extra-articular distal radius fractures, warranting further clinical comparison.

Title: The Unstable Distal Radius Fracture—How Do We Define It? A Systematic Review

Citation: Journal of Wrist Surgery, November 2015, vol./is. 4/4(307-316)

Author(s): Walenkamp M.M.J., Vos L.M., Strackee S.D., Goslings J.C., Schep N.W.L.

Abstract: Background Unstable distal radius fractures are a popular research subject. However, to appreciate the findings of studies that enrolled patients with unstable distal radius fractures, it should be clear how the authors defined an unstable distal radius fracture. Questions In what percentage of studies involving patients with unstable distal radius fractures did the authors define unstable distal radius fracture? What are the most common descriptions of an unstable distal radius fracture? And is there one preferred evidence-based definition for future authors? Methods A systematic search of literature was performed to identify any type of study with the term unstable distal radius fracture. We assessed whether a definition was provided and determined the level of evidence for the
most common definitions. Results The search yielded 2,489 citations, of which 479 were included. In 149 studies, it was explicitly stated that patients with unstable distal radius fractures were enrolled. In 54% (81/149) of these studies, the authors defined an unstable distal radius fracture. Overall, we found 143 different definitions. The seven most common definitions were: displacement following adequate reduction; Lafontaine’s definition; irreducibility; an AO type C2 fracture; a volarly displaced fracture; Poigenfurst’s criteria; and Cooney’s criteria. Only Lafontaine’s definition originated from a clinical study (level IIIb). Conclusion In only half of the studies involving patients with an unstable distal radius fracture did the authors define what they considered an unstable distal radius fracture. None of the definitions stood out as the preferred choice. A general consensus definition could help to standardize future research.

Title: The influence of bone density and anisotropy in finite element models of distal radius fracture osteosynthesis: Evaluations and comparison to experiments.

Citation: Journal of biomechanics, Nov 2015, vol. 48, no. 15, p. 4116-4123

Author(s): Synek, A, Chevalier, Y, Baumbach, S F, Pahr, D H

Abstract: Continuum-level finite element (FE) models can be used to analyze and improve osteosynthesis procedures for distal radius fractures (DRF) from a biomechanical point of view. However, previous models oversimplified the bone material and lacked thorough experimental validation. The goal of this study was to assess the influence of local bone density and anisotropy in FE models of DRF osteosynthesis for predictions of axial stiffness, implant plate stresses, and screw loads. Experiments and FE analysis were conducted in 25 fresh frozen cadaveric radii with DRFs treated by volar locking plate osteosynthesis. Specimen specific geometries were captured using clinical quantitative CT (QCT) scans of the prepared samples. Local bone material properties were computed based on high resolution CT (HR-pQCT) scans of the intact radii. The axial stiffness and individual screw loads were evaluated in FE models, with (1) orthotropic inhomogeneous (OrthoInhom), (2) isotropic inhomogeneous (IsoInhom), and (3) isotropic homogeneous (IsoHom) bone material and compared to the experimental axial stiffness and screw-plate interface failures. FE simulated and experimental axial stiffness correlated significantly (p<0.0001) for all three model types. The coefficient of determination was similar for OrthoInhom (R(2)=0.807) and IsoInhom (R(2)=0.816) models but considerably lower for IsoHom models (R(2)=0.500). The peak screw loads were in qualitative agreement with experimental screw-plate interface failure. Individual loads and implant plate stresses of IsoHom models differed significantly (p<0.05) from OrthoInhom and IsoInhom models. In conclusion, including local bone density in FE models of DRF osteosynthesis is essential whereas local bone anisotropy hardly effects the models’ predictive abilities. Copyright © 2015 Elsevier Ltd. All rights reserved.

Title: Diagnosis of Occult Scaphoid Fractures: A Cost-Effectiveness Analysis.

Author(s): Karl, John W, Swart, Eric, Strauch, Robert J

Abstract: Scaphoid fractures are common but may be missed on initial radiographs. Advanced imaging modalities such as computed tomography (CT) and magnetic resonance imaging (MRI) have improved diagnostic accuracy, but at an increased initial cost. The purpose of this study was to evaluate the cost-effectiveness of immediate advanced imaging for suspected occult scaphoid fractures. A decision analysis model was created to evaluate three diagnostic strategies for patients with concerning history and examination but negative radiographs: (1) empiric cast immobilization with orthopaedic follow-up and repeat radiography at two weeks post-injury, (2) immediate CT scanning, or (3) immediate MRI. Prevalence of occult scaphoid fracture, sensitivity and specificity of CT and MRI, and risks and outcomes of a missed fracture were derived from published clinical trials. Costs of imaging, lost worker productivity, and surgical costs of nonunion surgery were estimated on the basis of the literature. Advanced imaging was dominant over empiric cast immobilization; advanced imaging had lower costs and its health outcomes were projected to be better than those of empiric cast immobilization. MRI was slightly more cost-effective than CT on the basis of the mean published diagnostic performance, but was highly sensitive to test performance characteristics. Advanced imaging would have to increase in cost to more than $2000 or decrease in sensitivity to <25% for CT or <32% for MRI for empiric cast immobilization to be cost-effective. Given its relatively low cost and high diagnostic accuracy, advanced imaging for suspected scaphoid fractures in the setting of negative radiographs represents a cost-effective strategy for reducing both costs and morbidity. The decision to use CT compared with MRI is a function of individual institutional costs and local test performance characteristics. Economic and decision analysis Level IV. See Instructions for Authors for a complete description of levels of evidence. Copyright © 2015 by The Journal of Bone and Joint Surgery, Incorporated.

Title: Locking compression plate stabilization of 20 distal radial and ulnar fractures in toy and miniature breed dogs.

Citation: Veterinary and comparative orthopaedics and traumatology : V.C.O.T, Nov 2015, vol. 28, no. 6, p. 441-447

Author(s): Gibert, S, Ragetly, G R, Boudrieau, R J

Abstract: To evaluate retrospectively the effectiveness of the Locking Compression Plate® (LCP), in the form of either a straight or notched head T-plate, for the treatment of fractures of the distal radius and ulna in a series of 20 toy and miniature breed dogs. The medical records of toy and miniature breed dogs (<6 kg), greater than six months of age, with fractures of the distal radius and ulna from two veterinary hospitals were reviewed. The inclusion criteria included: fractures of the distal 1/3 of the radius and ulna and repair with open reduction and internal fixation utilizing an LCP (straight or notched head T-plate). Twenty fractures (20 dogs) satisfied the inclusion criteria; eight straight and 12 notched head T-plates were used, either 2.0 mm (n = 13) or 2.4 mm (n = 7). Hybrid fixation was performed in all dogs in one or both fragments. Mean time to radiographic union was 6.9 ±
2.5 weeks (range: 4-12 weeks) in 18/20 dogs with radiographic follow-up. One complication was observed: infection that resolved with antibiotic medication and implant removal. No other major complications occurred by the time of last follow-up. In all cases (mean follow-up: 15 ± 7 months), the reported limb function as evaluated by the referring veterinarian or owner was excellent. The LCP, used as a hybrid construct for the treatment of distal radial and ulnar fractures was shown to yield excellent clinical results with both uncomplicated healing and excellent functional outcomes in this series of toy and miniature breed dogs.

**Title:** Identification and characterization of naturally occurring inhibitors against UDP-glucuronosyltransferase 1A1 in Fructus Psoraleae (Bu-gu-zhi).

**Citation:** Toxicology and applied pharmacology, Nov 2015, vol. 289, no. 1, p. 70-78

**Author(s):** Wang, Xin-Xin, Lv, Xia, Li, Shi-Yang, Hou, Jie, Ning, Jing, Wang, Jia-Yue, Cao,

**Abstract:** As an edible traditional Chinese herb, Fructus psoraleae (FP) has been widely used in Asia for the treatment of vitiligo, bone fracture and osteoporosis. Several cases on markedly elevated bilirubin and acute liver injury following administration of FP and its related proprietary medicine have been reported, but the mechanism in FP-associated toxicity has not been well investigated yet. This study aimed to investigate the inhibitory effects of FP extract and its major constituents against human UDP-glucuronosyltransferase 1A1 (UGT1A1), the key enzyme responsible for metabolic elimination of bilirubin. To this end, N-(3-carboxy propyl)-4-hydroxy-1,8-naphthalimide (NCHN), a newly developed specific fluorescent probe for UGT1A1, was used to evaluate the inhibitory effects of FP extract or its fractions in human liver microsomes (HLM), while LC-UV fingerprint and UGT1A1 inhibition profile were combined to identify and characterize the naturally occurring inhibitors of UGT1A1 in FP. Our results demonstrated that both the extract of FP and five major components of FP displayed evident inhibitory effects on UGT1A1 in HLM. Among these five identified naturally occurring inhibitors, bavachin and corylifol A were found to be strong inhibitors of UGT1A1 with the inhibition kinetic parameters (Ki) values lower than 1μM, while neobavaisoflavone, isobavachalcone, and bavachinin displayed moderate inhibitory effects against UGT1A1 in HLM, with the Ki values ranging from 1.61 to 9.86μM. These findings suggested that FP contains natural compounds with potent inhibitory effects against human UGT1A1, which may be one of the important reasons for triggering FP-associated toxicity, including elevated bilirubin levels and liver injury. Copyright © 2015 Elsevier Inc. All rights reserved.

**Title:** A homozygous B3GAT3 mutation causes a severe syndrome with multiple fractures, expanding the phenotype of linkeropathy syndromes.

**Citation:** American journal of medical genetics. Part A, Nov 2015, vol. 167, no. 11, p. 2691-2696

**Author(s):** Jones, Kelly L, Schwarze, Ulrike, Adam, Margaret P, Byers, Peter H,
Abstract: Linkeropathies are a group of syndromes characterized by short stature, radio-ulnar synostosis, decreased bone density, congenital contractures and dislocations, joint laxity, broad digits, brachycephaly, small mouth, prominent eyes, short or webbed neck, congenital heart defects and mild developmental delay. Linkeropathies are due to enzymatic defects in the synthesis of the common linker region that joins the core proteins to their glycosaminoglycan (GAG) side chains. The enzyme glucuronyltransferase 1, encoded by B3GAT3, adds the last four saccharides comprising the linker region. Mutations in B3GAT3 have been reported in two unrelated families with the same homozygous mutation (c.830G>A, p.Arg277Gln). We report on a patient with a novel homozygous B3GAT3 (c.667G>A, p.Gly223Ser) mutation and a history of multiple fractures, blue sclerae, and glaucoma. Our patient was a 12-month-old boy born to consanguineous parents and, like previously reported patients, he had bilateral radio-ulnar synostosis, severe osteopenia, an increased gap between first and second toes, bilateral club feet, and atrial and ventricular septal defects. He had the additional features of bilateral glaucoma, hypertelorism, upturned nose with anteverted nares, a small chest, a diaphragmatic hernia, multiple fractures, arachnodactyly, overlapping fingers with ulnar deviation, lymphedema, hypotonia, hearing loss, and perinatal cerebral infarction with bilateral supra- and infratentorial subdural hematomas. We highlight the extended phenotypic range of B3GAT3 mutations and provide comparative overview of the phenotypic features of the linkeropathies associated with mutations in XYLT1, B4GALT7, B3GALT6, and B3GAT3. © 2015 Wiley Periodicals, Inc. © 2015 Wiley Periodicals, Inc.

Title: Acute Multiple Flexor Tendon Injury and Carpal Tunnel Syndrome After Open Distal Radius Fracture.


Author(s): Erickson, John, Culp, Brian, Kayiaros, Stephen, Monica, James

Abstract: Although the rupture of extensor tendons after distal radius fractures is well described, acute flexor tendon ruptures are much less common. We report a case of acute rupture of the flexor pollicis longus and flexor carpi radialis tendons with acute carpal tunnel syndrome after a Gustilo-Anderson type II open distal radius fracture. We reviewed the literature to identify risk factors for tendon rupture and the development of carpal tunnel syndrome.

Title: A prospective study of a modified pin-in-plaster technique for treatment of fractures of the distal radius.

Citation: Bone & joint research, Nov 2015, vol. 4, no. 11, p. 176-180

Author(s): Mirghasemi, S A, Rashidinia, S, Sadeghi, M S, Talebizadeh, M, Rahimi, N
Abstract: There are various pin-in-plaster methods for treating fractures of the distal radius. The purpose of this study is to introduce a modified technique of ‘pin in plaster’. Fifty-four patients with fractures of the distal radius were followed for one year post-operatively. Patients were excluded if they had type B fractures according to AO classification, multiple injuries or pathological fractures, and were treated more than seven days after injury. Range of movement and functional results were evaluated at three and six months and one and two years post-operatively. Radiographic parameters including radial inclination, tilt, and height, were measured pre- and post-operatively. The average radial tilt was 10.6° of volar flexion and radial height was 10.2 mm at the sixth month post-operatively. Three cases of pin tract infection were recorded, all of which were treated successfully with oral antibiotics. There were no cases of pin loosening. A total of 73 patients underwent surgery, and three cases of radial nerve irritation were recorded at the time of cast removal. All radial nerve palsies resolved at the six-month follow-up. There were no cases of median nerve compression or carpal tunnel syndrome, and no cases of tendon injury. Our modified technique is effective to restore anatomic congruity and maintain reduction in fractures of the distal radius. Cite this article: Bone Joint Res 2015;4:176-180. ©2015 Mirghasemi et al.

Title: DVR plating of distal radius fractures.

Citation: Injury, Nov 2015, vol. 46 Suppl 5, p. S33. (November 2015)

Author(s): Vanhaecke, J, Fernandez, D L

Abstract: Volar plating has become the standard of care for most distal radius fractures. When done for the right indication and with adequate mastering of the technique complication ratio is low. The concept of subchondral support is key in this technique. Osteoporotic patients will especially benefit from this type of fixation which allows early immobilization, quick return to activities of daily living and early good outcome. Copyright © 2015 Elsevier Ltd. All rights reserved.

Title: Functional outcome of en bloc excision and custom prosthetic replacement for giant cell tumor of the distal radius.

Citation: Journal of orthopaedic science : official journal of the Japanese Orthopaedic Association, Nov 2015, vol. 20, no. 6, p. 1090-1097

Author(s): Zhang, Shuai, Xu, Mei-Tao, Wang, Xu-Quan, Wang, Jia-Jia

Abstract: Giant cell tumors (GCT) of the distal radius at Campanacci grade II/III are particularly challenging to treat. Wide excision is the management of choice, but this creates a defect at the distal end of radius. We treated 11 cases of GCT of the distal radius by en bloc excision and custom prosthetic replacement. The purpose of this study was to present our experience and assess the functional outcomes of all patients treated with this surgery. Between 2005 and 2014, we followed up 11 patients with GCT of the distal radius who were treated with en bloc excision and custom prosthetic replacement. All cases were evaluated
based on clinical and radiological examinations, passive range of motion (ROM) of the wrist joint, complications, and Musculoskeletal Tumor Society (MSTS) score. Mean follow-up period was 55.5 months (24-83 months); mean resected length of the radius was 7.9 cm. One patient had tumor recurrence in the soft tissues after 15 months (recurrence rate 9.09%). No patient had fracture, recurrence in the bone, metastases, or immune rejection. No complications were seen, such as loosening, rupture, or dislocation of the custom prosthesis. One patient developed superficial infection at the operative site which resolved after a course of antibiotics for 4 weeks. One patient experienced pain, which could be endured without the need for analgesics. Average ROM was 40.9° of dorsiflexion, 30.0° of volar flexion, 46.4° of supination, and 38.2° of pronation. Mean grip strength was 71% (42-86%). Overall revised MSTS score averaged 80.3% (63.3-93.3%) with one being excellent, five good, and five satisfactory. En bloc excision and custom prosthesis replacement for a Campanacci grade II/III GCT of the distal radius results in reasonable functional outcome at intermediate follow-up evaluation. Although average ROM of the ipsilateral wrist is poorer than some studies with other techniques, this method can be considered a reasonable option.

Title: No Difference in Adverse Events Between Surgically Treated Reduced and Unreduced Distal Radius Fractures.

Citation: Journal of orthopaedic trauma, Nov 2015, vol. 29, no. 11, p. 521-525

Author(s): Teunis, Teun, Mulder, Frans, Nota, Sjoerd P, Milne, Leslie W, Dyer, George S M,

Abstract: To determine if closed reduction is worthwhile for the subset of patients who choose operative treatment before attempted reduction of their distal radius fracture. We hypothesize that there are no differences in (1) adverse events and (2) subsequent surgeries between patients treated with manipulative reduction compared with those that were splinted without reduction. Retrospective cohort study. Three affiliated urban hospitals in a single city in the United States. One thousand five hundred eleven consecutive adult patients who underwent open reduction and internal fixation of their distal radius fracture between January 1, 2007, and December 31, 2012, of whom 102 (7%) were not reduced before surgery. Manipulative reduction compared with splinting without reduction. Adverse events were defined as any infections, hematomas treated operatively, disproportionate finger stiffness, (transient) neuropathology after surgery, delayed carpal tunnel release, malunion, reoperation for loss of alignment, hardware removal, and tendon ruptures within 1 year after surgery. Outcome measures were grouped to determine the overall adverse event rate and subsequent surgery rate. We found no difference in specific adverse events between unreduced and reduced fractures. After adjusting for possible confounding variables by logistic regression, we found no difference in overall rates of adverse events (adjusted odds ratio unreduced fractures 1.2, 95% confidence interval 0.67-2.0) and subsequent surgeries (adjusted odds ratio unreduced fractures 0.65, 95% confidence interval 0.23-1.8). Leaving the fracture unreduced before surgery was not associated with increased adverse events or subsequent surgeries. For patients who make an informed decision to undergo operative treatment for their closed neurovascular intact displaced...
distal radius fracture, manipulative reduction may not be helpful. Therapeutic Level III. See Instructions for Authors for a complete description of levels of evidence.

**Title:** Fracture dislocation of the pisiform bone in children: a case report and review of the literature.

**Citation:** Journal of pediatric orthopedics. Part B, Nov 2015, vol. 24, no. 6, p. 556-560

**Author(s):** Hurni, Yannick, Fusetti, Cesare, de Rosa, Vincenzo

**Abstract:** Simultaneous fracture and dislocation of the pisiform is a rare condition, and only two cases have been reported in children. We retrospectively collected and reviewed clinical and radiographic data of a child with a type II Salter-Harris fracture of the distal radius, associated with fracture dislocation of the pisiform. In addition, we performed a systematic review of the literature available to date.

**Title:** The relationship between radiographic parameters and clinical outcome of distal radius fractures in elderly patients.

**Citation:** Orthopaedics & traumatology, surgery & research : OTSR, Nov 2015, vol. 101, no. 7, p. 827-831 (November 2015)

**Author(s):** Cai, L, Zhu, S, Du, S, Lin, W, Wang, T, Lu, D, Chen, H

**Abstract:** Treatment of distal radius fractures in elderly patients is controversial. This study explored the relationship between radiographic parameters and clinical outcomes of patients with distal radius fractures following conservative treatment. The study was done using radiographic measurements of distal radius fractures in elderly patients. Ninety-two active, healthy patients with conservatively managed distal radius fractures were included in the study. Functional and radiographic assessments were made 1 year after injury. Fifty patients who underwent corrective osteotomy comprised the control group. Radiographic parameters and clinical outcomes were compared between the two groups. The correlation coefficients of the radiographic parameters were analysed using multiple regression. Radius height (RH), volar tilt (VT) and Mayo wrist and Disabilities of the Arm, Shoulder and Hand (DASH) scores in the experimental group were significantly superior to those of the control group. There was no significant group difference in radial inclination. Multiple regression analysis revealed that the most important factor affecting functional outcome was RH, followed by VT. RH and VT were significantly correlated with the clinical outcomes of conservative treatment of distal radius fractures. RH should be given foremost consideration in elderly patients. Preoperatively, surgeons should evaluate this parameter carefully and be prepared to treat injuries accordingly. Level IV retrospective study. Copyright © 2015 Elsevier Masson SAS. All rights reserved.

**Title:** Bone Mineral Density as a Predictor of Subsequent Wrist Fractures: Findings From the Women’s Health Initiative Study.
**Citation:** The Journal of clinical endocrinology and metabolism, Nov 2015, vol. 100, no. 11, p. 4315-4324

**Author(s):** Crandall, Carolyn J, Hovey, Kathleen M, Andrews, Christopher A, Cauley, Jane A

**Abstract:** Wrist fractures are common among postmenopausal women. Associations of bone mineral density (BMD) and 10-year predicted risk of major osteoporotic fracture (MOF) with wrist fractures are poorly characterized. The objective was to examine associations between the Fracture Risk Assessment Tool (FRAX)-predicted risk of MOF, BMD, BMD change, and wrist fracture. This was a prospective observational study with a mean follow-up of 8.5 years. This study included 40 US centers. A total of 11 392 participants from the Women's Health Initiative BMD Cohort aged 50-79 years at baseline were included in this study. None. The goal was to measure incident wrist fracture. A FRAX-predicted MOF risk ≥9.3% identified 17% of the women aged <65 years who subsequently experienced wrist fracture. Each one standard deviation lower BMD was associated with higher wrist fracture risk, with adjusted hazard ratio (95% confidence interval) of 1.66 (1.42-1.93) for femoral neck (FN) BMD and 1.45 (1.28-1.64) for lumbar spine BMD. Compared with FN BMD T score ≥-1.0, wrist fracture adjusted hazard ratios (95% confidence interval) were: 1.51 (1.06-2.16) for a T score between -1.01 and -1.49; 1.93 (1.36-2.72) for T score between -1.50 and -1.99; 2.52 (1.77-3.60) for a T score between -2.00 and -2.49; and 2.65 (1.78-3.95) for a T score ≤-2.5. Decrease in FN BMD between baseline and year 3 was associated with increased risk of subsequent wrist fracture; however, change in lumbar spine BMD was not. Lumbar spine and femoral neck BMDs were associated with incident wrist fracture, but the FRAX threshold recommended to identify screening candidates did not identify the majority of women who subsequently experienced wrist fracture. Improved understanding of determinants of wrist fractures is warranted.

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**Title:** Intraoperative Periprosthetic Fractures in Proximal Interphalangeal Joint Arthroplasty.

**Citation:** The Journal of hand surgery, Nov 2015, vol. 40, no. 11, p. 2149-2154

**Author(s):** Wagner, Eric R, Van Demark, Robert, Kor, Daryl J, Moran, Steven L, Rizzo, Marco

**Abstract:** To examine the frequency, risk factors, and postoperative outcomes associated with intraoperative periprosthetic fractures during proximal interphalangeal (PIP) joint arthroplasty. We examined 382 consecutive PIP joint arthroplasties in 205 patients. Procedures were performed from 1998 to 2012. The patients were identified and outcomes were collected through a single institution's total joints registry, collecting additional information not contained in the prospectively collected registry through medical record examination. Multiple outcomes were analyzed relating to the fractures, the hard surgical outcomes, finger function, and radiographic findings. Statistical analysis was performed utilizing Kaplan-Meier survival models, log-rank tests, univariate analysis, Student t test and Fisher exact test. Intraoperative periprosthetic fracture occurred in 5% (n = 20) of 383 PIP joint arthroplasties. All of the patients who had an intraoperative fracture were women. Lower body mass index and a diagnosis of rheumatoid arthritis were associated with a
significantly higher risk of intraoperative fracture. The use of pyrocarbon implants also significantly increased fracture risk. At a median follow-up of 5.3 years, there were no refractures in the patients who sustained an intraoperative fracture. Six patients underwent revision surgery, with a 2- and 5-year survival rate free of revision surgery of 76% and 64%, respectively. These rates were not significantly different from those without intraoperative fractures. There was no significant difference in the incidence of postoperative complications between patients with or without an intraoperative fracture. Intraoperative fractures occur in about 5% of PIP joint arthroplasties. These periprosthetic fractures do not appear to influence outcomes, including revision surgery, refracture rate, or other early complications. Female sex, lower body mass index, rheumatoid arthritis, and the use of pyrocarbon implants were associated with increased risk for intraoperative fractures. This information may help decrease fracture risk and help surgeons identify and treat the fractures when they do occur. Prognostic II. Copyright © 2015 American Society for Surgery of the Hand. Published by Elsevier Inc. All rights reserved.

Title: Results of Perilunate Dislocations and Perilunate Fracture Dislocations With a Minimum 15-Year Follow-Up.

Citation: The Journal of hand surgery, Nov 2015, vol. 40, no. 11, p. 2191-2197

Author(s): Krief, Elie, Appy-Fedida, Benjamin, Rotari, Vladimir, David, Emmanuel,

Abstract: To evaluate the long-term clinical, functional, and radiological outcomes in 30 patients with at least 15 years of follow-up. We performed a retrospective study that identified 73 patients. Thirty patients agreed to participate and were included. The mean follow-up was 18 years (range, 15-24 years). There were 14 cases of perilunate dislocation and 16 cases of perilunate fracture-dislocation (including 13 transscaphoid perilunate fracture-dislocations). At the last follow-up, the clinical and functional evaluation was based on the range of motion, grip strength, the Mayo wrist score, the Quick Disabilities of the Arm Shoulder and Hand score, and the Patient-Rated Wrist Evaluation score. Radiological abnormalities, according to the Herzberg classification, were 5 type A1 cases, 7 type B, 16 type B1, and 2 type C. The mean flexion-extension arc, radial-ulnar abduction arc, and pronation-supination arc were, respectively, 68%, 67%, and 80%, relative to the contralateral side. The mean grip strength was 70%, relative to the contralateral side. The mean Mayo wrist score was 70, and the mean Quick Disabilities of the Arm Shoulder and Hand and Patient-Rated Wrist Evaluation scores were, respectively, 20 and 21. Five patients had secondary procedure. Six patients had a complex regional pain syndrome type 1. Although arthritis occurred in 70% of cases, its clinical and functional impact appeared to be low. However, the 2 lowest Mayo wrist scores corresponded to the patients with the most advanced arthritis. Complex regional pain syndrome appeared to have an impact on long-term outcomes. Therapeutic IV. Copyright © 2015 American Society for Surgery of the Hand. Published by Elsevier Inc. All rights reserved.

Title: Hybrid Russe Procedure for Scaphoid Waist Fracture Nonunion With Deformity.
Abstract: To assess the results of a hybrid Russe procedure using a corticocancellous strut, cancellous autologous nonvascularized bone graft, and cannulated headless compression screw to reduce the deformity reliably from a collapsed scaphoid nonunion, provide osteoinductive stimulus, and stabilize the fracture for predictable union. A hybrid Russe procedure was performed for scaphoid waist fracture nonunions with humpback deformity and no evidence of avascular necrosis. A volar distal radius autologous bone graft was harvested and a strut of cortical bone was fashioned and placed into the nonunion site to restore length and alignment. We packed cancellous bone graft in the remainder of the nonunion site and fixed the scaphoid with a headless compression screw. Union was determined by radiographs or computed tomography, and intrascaphoid, scapholunate, and radiolunate angles were calculated on final radiographs. We recorded wrist range of motion, grip strength, pinch strength, pain, and complications. Fourteen male and 3 female patients (average age, 32 years; range, 16-78 years), with a mean follow-up of 32 months, were examined clinically and radiographically. All 17 scaphoids united with a mean time for union of 3.6 months. The mean postoperative intrascaphoid angle was significantly reduced from 65° preoperatively to 35° postoperatively. The mean radiolunate angle was significantly improved from 20° from neutral (lunate tilted dorsally) preoperatively to 0° postoperatively. The scapholunate angle also demonstrated significant improvement from 70° preoperatively to 56° postoperatively. Grip strength improved from 70% of the contralateral hand to 89% after the procedure. All patients were satisfied with the functional outcome and no donor site morbidity or hardware issues were identified. This straightforward hybrid Russe technique predictably restored radiolunate, scapholunate, and intrascaphoid angles with a 100% union incidence. The technique provides excellent functional results in patients with a challenging clinical problem, and we recommend it for scaphoid fracture waist nonunions with dorsal intercalated segment instability deformity. Therapeutic IV. Copyright © 2015 American Society for Surgery of the Hand. Published by Elsevier Inc. All rights reserved.

Title: In Vivo Contact Characteristics of Distal Radioulnar Joint With Malunited Distal Radius During Wrist Motion.

Abstract: To determine whether distal radioulnar joint (DRUJ) contact characteristics were altered in patients with malunited distal radius fractures. We obtained computed tomography scans at 5 positions of both wrists of 6 patients who had unilateral malunited distal radius fractures with dorsal angulation from 10° to 20° and ulnar variance less than 3 mm. We reconstructed 3-dimensional images and mapped contact regions of DRUJ by calculating the shortest distance between the 2 opposing bones. The contact areas of the DRUJ were measured and the contact region centers were calculated and analyzed. The values of the malunited side were compared with those of the contralateral uninjured side.
In the uninjured wrist, the contact areas of the DRUJ increased slightly from wrist flexion to extension and ulnar deviation. In the malunited wrist, we found the contact areas of DRUJ to be progressively reduced from 20° flexion to neutral, 40° extension, and 20° extension, to ulnar deviation. The centroid of this area on the sigmoid notch moved to distal from flexion to extension. Compared with the contralateral uninjured wrist, the contact area significantly decreased during wrist extension and ulnar deviation, and significantly increased during wrist flexion. The centroids of this area on sigmoid notch all moved volarly in all selected wrist positions. The contact areas of the DRUJ and the centroid of contact area on sigmoid notch are altered in patients with malunited distal radius fractures. The contact area of the DRUJ increases during wrist flexion and decreases during wrist extension and ulnar deviation. The centroids of the contact area on sigmoid notch move volarly during wrist flexion-extension and ulnar deviation. The in vivo findings suggest that alterations in joint mechanics may have an important role in the dysfunction associated with these injuries.

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Title: Fragility Fractures in Patients with Rheumatoid Arthritis and Osteoarthritis Compared with the General Population.

Citation: The Journal of rheumatology, Nov 2015, vol. 42, no. 11, p. 2055-2058, 0315-162X

Author(s): Yamamoto, Yuri, Turkiewicz, Aleksandra, Wingstrand, Hans, Englund, Martin

Abstract: To determine the rate ratios of hip and distal radius fractures in patients with rheumatoid arthritis (RA), hip osteoarthritis (OA), and knee OA. Cohort study using healthcare data (1998-2012) covering the entire population of the Skåne region of Sweden. We found an increased rate of hip fracture in both female [standardized fracture rate ratio (SFR) 1.54, 95% CI 1.40-1.70] and male patients with RA (SFR 1.81, 95% CI 1.51-2.17). The hip fracture rate in female OA was reduced by 10-20%, and trochanteric fracture tended to have a higher rate ratio compared with the cervical. The 50-80% increased rate of hip fracture adds to the total burden of RA while the shifted distribution of cervical/trochanteric fractures in OA is in support of subchondral bone alterations.
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