

---

## AUTHOR INDEX

- Akelman, E., 109  
Allan, C.H., 134, 195  
Archibald, S., 134  
Athanasian, E.A., 60  
Baratz, M., 94  
Brunelli, G.A., 50  
Dahlin, L.B., 143  
ElHassan, B.T., 42, 121  
Eo, S., 250  
Floyd, W.E., 117  
Gonzalez, M.H., 42, 121  
Graham, T.J., 233  
Haerle, M., 4  
Henry, M.H., 35  
Hildebrand, K.A., 256  
Hostin, R., 275  
James, M.A., 275  
Jones, N.F., 27, 250  
King, G.J.W., 11  
Koo, J.T., 156  
Lavigne, G., 94  
Mackinnon, S.E., 200  
Masson, M.V., 35  
Mathoulin, C.L., 4  
Mikola, E.A., 73  
Omer, G.E., 214  
Patel, A., 109  
Patton, M.W., 266  
Poelzer, C., 256  
Saffar, P., 103  
Sarris, I.K., 189  
Segalman, K.A., 233  
Slutsky, D.J., 176  
Smith, D.W., 35  
Sokolow, C., 103  
Sotereanos, D.G., 189  
Szabo, R.M., 156  
Tashjian, R.Z., 109  
Theron, P., 103  
Trumble T.E., 134  
Weber, R.V., 200  
Weiss, A-P.C., 109, 133  
Wood, M.B., 227  
Wynn, S.W., 42, 121  
Young, S.D., 73
- 

## SUBJECT INDEX

- Abduction of thumb, low ulnar palsy, 218  
Abductor digiti minimi (ADM), 280, 281, 283  
Abductor pollicis brevis (APB), 218  
Abnormal spontaneous potentials in muscle, 180-181  
    fibrillation potentials, 180  
    positive sharp waves, 180  
Absidia species, 48  
Actinomycetales, 48  
Actinomycetoma, 48  
Acute complications in hand, 32  
Acute fractures  
    indications for radial head arthroplasty in, 14  
    treatment of, 236-237  
        preferred approach, 236-237  
Adaptive carpal instability, 268  
AIDs. See HIV.  
Algorithm for treatment of Preiser's disease, 105-106  
Allograft tissues, in nerve grafts and conduits, 141  
Alternative procedures for DRUJ reconstruction, 38  
American Society for Surgery of the Hand/International  
    Federation of Societies for Surgery of the Hand  
    Classification of Congenital Upper Limb Malfor-  
    mations, 276  
Amputation, as early treatment for chondrosarcoma of  
    hand, 68  
Anatomic location of lesions, 63-64  
    dorsum hand, 64  
    fingers, 63  
    palm 64  
    thumbs, 64  
    web space, 64  
Anatomy of hand, 42  
Anterior interosseous nerve, hand intrinsic muscle reami-  
    nation, use of  
        conclusions, 229  
        discussion, 229  
        re-education of nerve transfer, effective, 227-228  
        surgical procedures that target muscle reanimation, 227  
        surgical techniques, 170  
Anterior interosseous nerve syndrome (AINS), 168-170  
    anatomy, 169  
    conservative management, 170  
    diagnosis, 169-170  
    postoperative management, 170  
    surgical technique, 170  
Antibiotic treatment of TB of hand, 43  
Antiretroviral therapy for AIDs, 122-123  
Approach-exposure of median nerve, 190-191  
Art of the hand  
    Election poster promoting Rajiv Ghandi's Congress  
        Party, *xiii*, (issue 4)  
    "Il Salviati," by Dei' Rossi, *xiii*, (issue 3)  
    "Nerva", a bronze coin, *xiii* (issue 2)

- Study of a Hand, by Franceschini, called "Il Volterrano,"  
*xiii* (issue 1)
- Arthrodesis, 91
- Arthroplasty, radial head, *see* Radial head fractures
- Arthrosis of thumb  
 anatomy, 73, 74-75  
 conclusions, 91-92  
 conservative management, 78-81  
 etiology, 75-76  
 examination of, 76-78  
 LRTI, 84-87  
 LRTI technique, 87-89  
 metacarpophalangeal joint, 91  
 pathology, 75-76  
 prearthritic joint, 81-82  
 prevalence of, 73  
 radiographic evaluation, 78  
 silicone implant arthroplasty, 90  
 staging, 78  
 surgical management, 81  
 trapezial excision, 83-84  
 trapeziometacarpal arthrodesis, 89-90
- Aspectic scaphoid necrosis, 103
- Aspergillus species, 47
- Aspergillus fumigatus*, 251
- Aspergillus species, 251-252
- Attachment and vein wrapping technique around median nerve, 191
- Atypical infections of hand  
 anatomy, 42  
 bacterial infections, 42  
 conclusions, 48  
 fungal infections, 46-48  
   actinomycetoma, 48  
   cutaneous and nail fungal infections, 47  
   deep and systemic fungal infections, 47-48  
   subcutaneous fungal infections, 47  
 hand infections, 42  
 leprosy, 44-45  
 mycobacterial infections, 43-44  
   mycobacterium species other than TB, 43-44  
   mycobacterium tuberculosis, 43  
 viral infections, 45-46  
   herpes simplex, 45  
   papillomavirus, 46  
   parapoxvirus, 45
- Avascular necrosis (AVN), 262
- Avascular necrosis of wrist and hand excluding scaphoid and lunate  
 causes, 109-110  
 of hand, 114, 115  
   Dieterich's disease, 114  
   Thiemann's disease, 114  
 of wrist, 110-114  
   capitate, 110-111, 112  
   hamate, 110  
   pisiform, 114  
   trapezium, 113  
   trapezoid, 113  
 summary, 115
- AVN. *See* Avascular necrosis
- Axial forearm stability, 13
- Axillary nerves, shoulder abduction, 205-207  
 author's preferred surgical procedure for, 207
- Axonal outgrowth, 149  
 direction of axonal outgrowth specificity, 149-150
- Bacterial infections of hand, 42
- Bacterium actinomycetem comitans, 48
- Basal joint pain syndrome, 78
- Beta-hemolytic streptococcus and diabetes, 124
- Bioengineering for nerve repair in future  
 accuracy improvement of nerve repair, 134-136  
 allograft tissues, use of in nerve grafts and conduits, 141  
 conclusions, 141  
 neurotrophism versus neurotropism, 136-137  
 of nerve glides, 137-138  
 speed of regeneration or slowing rate of motor degeneration  
   delaying degeneration of motor end plates, 140  
   enhancing nerve regeneration, 138-139
- Biopsy procedures of soft-tissue sarcomas of hand, 62-63  
 core needle biopsy, 63  
 excision biopsy, 63  
 incision biopsy, 62-63  
 staging, 63
- Blastomyces dermatidis*, 254
- Blastomycosis, 44, 254
- Bone  
 harvesting vascularized, 6, 8  
 malignant. *See* malignant bone and soft-tissue sarcomas of hand.
- Bone graft options, 273
- Bone lesions and surgery, 264
- Bone scintigraphy for Preiser's disease, 104
- Bone sarcomas of hand, 67-71  
 chondrosarcoma, 67-69  
 conclusions, 71  
 Ewing's sarcoma, 70-71  
 osteogenic sarcoma, 69-70
- Brachial plexus injury, as most devastating upper limb injury, 202-203
- Buck-Gramcko sutures, 30-31
- Candida and nail infections, 46
- Candidiasis species, 251, 252
- Capitate AVN, 110-111, 112
- Carpal Tunnel syndrome, 81, 157-162  
 anatomy, 157-159  
 diagnosis, 159  
 nonsurgical management, 159-160  
 postoperative management, 162  
 surgical management, 160-161  
 surgical technique, 160-162  
 versus pronator syndrome, 163, 166
- Carpometacarpal fusion, 89-90
- Cellular response to injury, 144-145
- Centers for Disease Control (CDC), report on HIV, 122
- Charot-Marie-Tooth progressive muscular atrophy, 214
- Chemotherapy of fungal infections of hand and upper extremity, 252
- Chondrosarcoma, 67-69
- Chromomycoses infections, 46-47
- Clawed fingers, low ulnar palsy, 218
- Coccidiomycosis species, 47, 254

- Comminuted fractures, 97-98  
 involving whole head, 14
- Compensatory lunate flexion due to radius malunion, 270
- Complex upper-extremity nerve injuries, 200
- Compression neuropathies of median nerve  
 anterior interosseus syndrome, 168-170  
 anatomy, 169  
 conservative management, 170  
 diagnosis, 169-170  
 postoperative management, 170  
 surgical technique, 170
- carpal tunnel syndrome, 157-162  
 anatomy, 157-159  
 diagnosis, 159  
 nonsurgical management, 159-160  
 postoperative management, 162  
 surgical technique, 160-162
- compression neuropathy, description of, 156
- pronator syndrome, 162-168  
 conservative management, 167  
 diagnosis, 163-167  
 postoperative management, 168  
 surgical technique, 167-168
- Computed tomography (CT), for Preiser's disease, 104
- Congenital anomalies of hand, nonvascularized toe phalan-  
 geal bone grafts for  
 complications, 32  
 conclusions, 33  
 digital hypoplasia or aplasia, occurrence of, 27  
 historical background, 28  
 indication, 28-29  
 postoperative function, 33  
 results, 32-33  
 surgical technique, 30-32
- Congenital hand malformations, 277
- Core needle biopsy, 63
- Cryptococcosis species, 47, 277
- Cryptococcus* infections, 47, 253
- Cutaneous fungal infections, 250, 251  
 nail infections, 47
- Cutaneous dermatophytosis of hand, 46
- Cyclic adenosine monophosphate (cAMP), 145
- Cytomegalovirus and AIDs, 122
- Dactylitis, 43
- Deep systemic fungal infections, 47-48, 250, 251
- DeQuervain's tenosynovitis, 76, 81
- Diabetes  
 and beta-hemolytic streptococcus, 124  
 digits with severe vascular disease, 124-125  
 and gangrene, 124
- Diabetic patient, hand infections and, 123-125
- Dieterich's disease, 114
- Digital hypoplasia or aplasia, 27-28
- Digital nerve injuries, 196
- Digits with severe vascular disease, in diabetes, 124-125
- Direct end-to-end suture of separated nerve ends, 195
- Distal nerve segment after injury, 148
- Distal radius malunion  
 conclusions, 273  
 consequences of malunion, 268-270  
 history of treatment, 266  
 osteotomy techniques, 272  
 patient-specific factors, 270-273  
 surgical considerations, 266-268  
 surgical interventions, 273  
 treatment, 267
- Distal radial-ulnar joint (DRUJ), 269
- Distal radioulnar joint (DRUJ) instability, reconstruction  
 of  
 alternative procedures, 38  
 complications, 38-39  
 conclusions, 41  
 motion at, 35-36  
 rehabilitation, 39-40  
 surgical considerations, 36  
 technical aspects, 36
- Dorsal approach for acute fracture or nonunion of scaphoid,  
 128
- Dorsal vascularity, importance of, 234
- Dorsum hand, lesions of, 64
- Elbow  
 balgus stabilizer of, 13  
 understanding of lateral ligamentous anatomy, 12
- Elbow flexion, musculocutaneous nerve, 203-205  
 author's preferred surgical procedure for, 204-205
- Electrical activity of hand, 177
- Electromyography (EMG) in hand surgery  
 abnormal spontaneous potentials in muscle, 180, 181  
 anatomy and electrophysiology  
 electrical activity, 177  
 motor unit anatomy, 177  
 muscle fiber anatomy, 176-177  
 neuropraxia, 183-184  
 classification of nerve injury  
 axonotmesis/neurotmesis, 184  
 complete lesions, 184-185  
 paraspinal EMG, 186  
 partial lesions, 184  
 radiculopathy, 185-186
- EMG examination, 180-183  
 insertional activity, 181-182  
 minimal to moderate voluntary contraction, 182-183  
 muscle at rest, 180
- methodology  
 instrumentation, 178  
 MUAP morphology, 178  
 MUAP pathology, 179  
 waveform generation, 177-178
- normal electrical potentials in muscle  
 pitfalls, 186-187  
 summary, 187
- End-organ-specificity, 150
- Epiphyseal idiopathic aseptic osteonecrosis, 103
- Epithelioid sarcoma, 70-71
- Ewing's sarcoma, 66-67
- Examination using EMG  
 insertional activity, 181-182  
 minimal to moderate voluntary contraction, 182-183  
 muscle at rest, 180
- Excision  
 biopsy, 63  
 of fractured olecranon, 101
- Exophiala werneckii*, 46
- Extensor carpi radialis brevis (ECRB), 218, 220
- External rotation and shoulder abduction, suprascapular  
 nerve, 205

- False negative, as pitfall of EMG, 186-187  
 False positive, as pitfall of EMG, 186  
 Fascial interval between anconeus and extensor carpi ulnaris, identifying, 16  
 Femoral nerve model for determining regeneration specificity, 135, 136  
 Fernandez technique of inlay corticocancellous bone graft, 243  
 Fibrillation  
   grading system, 184  
   potentials, 180  
 Fibroblasts, controlling invasions of, 138  
 Finger and wrist extension, radial nerve, 207-208  
 Finger flexion, forearm pronation and thumb opposition, median nerve, 208-209  
 Fingers, lesions of, 63  
 First web space sensation, median nerve, 211-212  
 Fissure or marginal sector fractures without displacement, 14  
 Flexor carpi radialis (FCR) tendon, 76  
   and LRTI technique, 86-88  
 Flexor carpi ulnaris (FCU), 291  
   tendon, 280  
 Flexor digitorum superficialis (FDS), 218, 280, 282  
 Flexor pollicis longus (FPL), 217  
 Forearm  
   and hand, combined nerve palsies of, 222  
   pronation, thumb opposition and finger flexion of median nerve, 208-209  
   author's preferred surgical procedure for, 209  
 Fractures and nonunions of scaphoid  
   anatomy, 233-234  
   conclusions, 246-247  
   diagnosis, 235-236  
   electrical stimulation, 242  
   natural history, 234-235  
   nonunited fractures, 237-239  
   salvage procedures, 245-246  
   secondary or salvage surgery for previously operated scaphoid nonunion, 241-242  
   treatment of acute fractures, 236-237  
   treatment of scaphoid nonunion, 239-241  
   vascularized bone grafts, 242-245  
 Fractures of distal radius  
   conclusions, 273  
   consequences of malunion, 268-270  
   history of treatment, 266  
   patient-specific factors, 270-273  
   surgical considerations, 266-268  
   surgical intervention, 273  
   treatment of, 267  
 Fractures of olecranon process  
   classification, 96  
   evaluation, 96-97  
   literature, 94  
   mechanism, 94-95  
   options for fixation, 97-99  
   postoperative care, 99  
   relevant anatomy, 84  
   results, 99-100  
   summary, 101  
   surgical approach, 97  
   treatment, 97  
 Fractures of radial head, classification of, 14  
 Fragments of radial head, removal, 16  
 Fungal infections, 46-48  
   actinomycetoma, 48  
   cutaneous and nail fungal infections, 47  
   deep and systemic fungal infections, 47-48  
   of soft tissue, 125  
   subcutaneous fungal infections, 47  
 Fungal infections of hand and upper extremity  
   *Aspergillus* species, 251-252  
   Blastomycosis, 254  
   *Candidiasis* species, 252  
   chronic infections, 250  
   Coccidioidomycosis, 254  
   conclusions, 254  
   *Cryptococcus* species, 253  
   Histoplasmosis, 254  
   Mucormycosis, 252-253  
   Phaeohiphomyces, 254  
   Sporotrichosis species, 254  
 Gangrene, and diabetes, 124  
 Gantzer's muscle testing, 163  
 Gap, after nerve repair, 148-149  
 Gout of wrist  
   case reports, 256-260  
   conclusions, 264  
   discussion  
     interventions, 263-264  
     manifestations, 260-263  
     medical history, 256  
 Grafting of scaphoid, 106-107  
 Hamate AVN, 110  
 Hand  
   AVN of, excluding scaphoid and lunate and forearm, combined nerve palsies of, 222  
   Dieterich's disease, 114  
   Thiemann's disease, 114  
   summary, 115  
 Hand, malignant bone and soft-tissue sarcomas. *See* Bone sarcomas of hand Soft-tissue sarcomas of hand  
 Hand, atypical infections of  
   anatomy of hand, 42  
   bacterial infections, 42  
   conclusions, 48  
   fungal infections, 46-48  
     actinomycetoma, 48  
     cutaneous and nail fungal infections, 47  
     deep and systemic fungal infections, 47-48  
     subcutaneous fungal infections, 47  
   hand infections, 42  
   leprosy, 44-45  
   mycobacterial infections, 43-44  
   mycobacterium species other than TB, 43-44  
     mycobacterium tuberculosis, 43  
   viral infections, 45-46  
     herpes simplex, 45  
     papillomavirus, 46  
     parapoxvirus, 46  
 Hand, infections of in immunocompromised host  
   conclusions, 125-126  
   diabetic patient, 123-125

- HIV/AIDs patient, 122-123  
immunocompromised host, 121  
other immunosuppressed patients, 125
- Hand and upper extremity, fungal infections of, *see* Fungal infections
- Hand difference, child with, 277-278
- Hand intrinsic muscle reanimation using anterior interosseous nerve  
conclusions, 229  
discussion, 229  
re-education of nerve transfer, effective, 227-228  
surgical procedures that target muscle reanimation, 227  
surgical technique, 228-229
- Hand surgery, EMG in  
abnormal spontaneous potentials in muscle, 180, 181  
anatomy and electrophysiology  
electrical activity, 177  
motor unit anatomy, 177  
muscle fiber anatomy, 176-177  
neuropraxia, 183-184  
classification of nerve injury  
axonotmesis/neurotmesis, 184  
complete lesions, 184-185  
paraspinal EMG, 186  
partial lesions, 184  
radiculopathy, 185-186  
EMG examination, 180-183  
insertional activity, 181-182  
minimal to moderate voluntary contraction, 182-183  
muscle at rest, 180  
methodology  
instrumentation, 178  
MUAP morphology, 178  
MUAP pathology, 178  
waveform generation, 177-178  
normal electrical potentials in muscle spontaneous activity, 179-180  
pitfalls  
false negative, 186-187  
false positive, 186  
summary, 187
- Herpes simplex virus (HSV), 45
- Heterotopic bone, as complication of radial head arthroplasty, 22
- Histoplasmosis, 47, 254
- HIV/AIDs patient, hand infections of, 122-123  
CDC estimates on, 122  
progress of infection, 122-123
- Hoe-hand position, 218
- Homeostasis, or tissue equilibrium, 214
- Horner's sign, 118-119
- Humeral avulsion of lateral collateral ligament and common extensor muscles from lateral epicondyle, 14
- Hypoplastic thumb, reconstruction of  
alternative procedures, 287  
classification and terminology, 276-277  
complications, 287  
conclusions, 289  
genetics and epidemiology, 276  
outcomes, 288  
prenatal hand development, 275-276  
rehabilitation, 287  
surgical considerations, 277-287  
congenital hand malformations, 277  
timing of surgery, 277  
type 1 hypoplastic thumb, 278-279  
type 2 hypoplastic thumb, 280-281  
type 3A hypoplastic thumb, 281-282  
type 3B hypoplastic thumb, 282-285  
type 4 hypoplastic thumb, 285-286  
type 5 hypoplastic thumb, 286-287
- Idiopathic avascular necrosis of scaphoid, 103
- Idiopathic capitate AVN  
symptoms, 111, 113  
vascular patterns supplying, 112
- Imaging for Preiser's disease, 103-104  
bone scintigraphy, 104  
computed tomography, 104  
MRI, 104  
plain radiographs, 103-104
- Immunocompromised host, hand infection of  
conclusions, 125-126  
diabetic patient, 123-125  
HIV/AIDs patient, 122-123  
other immunosuppressed patients, 121, 125
- Implant failure, as complication of radial head arthroplasty, 22
- Incision biopsy, 62-63
- Index finger, pollicization of, 283, 284, 285
- Indomethacin, 21
- Infections of hand, atypical  
anatomy, 42  
bacterial infections, 42  
conclusions, 48  
fungal infections, 46-48  
actinomycetoma, 48  
cutaneous and nail fungal infections, 47  
deep and systemic fungal infections, 47-48  
subcutaneous fungal infections, 47  
hand infections, 42  
leprosy, 44-45  
mycobacterial infections, 43-44  
mycobacterium species other than TB, 43-44  
mycobacterium tuberculosis, 43  
viral infections, 45-46  
herpes simplex, 45  
papillomavirus, 46  
parapoxvirus, 46
- Injury, location of for primary nerve repair, 196
- Insertional activity, EMG, 181-182
- Instrumentation  
defects, EMG, 186  
EMG, 178
- Interference pattern, EMG, 187
- Internal splints, early tendon transfers as, 217-218
- Interventions for gout of wrist, 263-264  
intraosseous tophi, 263  
ligaments, 264  
surgery and bone lesions, 263-264  
surgery and ligament disruption, 264
- Intramedullary screw and tension band constructs, 99-100
- Intraosseous tophi, 263
- Intrinsic muscle function and ulnar sensory loss, ulnar nerve, 209-211  
author's preferred surgery procedure for, 210-211
- Ischemic necrosis, classification systems for, 239



- Isolated median palsy, 219-220  
 Isolated radial head replacement, 21  
 Isolated radial palsy, 239  
 Isolated ulnar palsy, 220-221  
 Isolated wrist palsy, 218-219
- K-wires  
 fixation on nonunions, 239  
 immobilization, 84, 88  
 insertion of, 31  
 migration of as complication, 32  
 for oblique radial osteotomy, 52  
 Kienbock's disease, 262
- Lateral collateral ligament anatomy, 13  
 Lateral ligament repair technique, 19  
 Lateral ligamentous anatomy of elbow, understanding, 12  
 Leprosy, 44-45  
 Lesions  
 complete, 184-185  
 of individual nerves, complete, 218  
 partial, 184  
 Lesions of brachial plexus  
 clinical findings, 117-119  
 conclusions, 120  
 diagnostic tools, 117, 119-120  
 historical background, 117  
 surgical considerations, 120  
 symptoms of, 118  
 Ligament disruption and surgery, 264  
 Ligament reconstruction tendon interposition arthroplasty (LRTI), 84-87  
 follow up, 86  
 results, 86  
 technique, 85, 87-89  
 Ligaments, and gout, 264  
 Low median palsy, abduction of thumb, 218  
 Low ulnar palsy, thumb abduction, clawed fingers, and metacarpal, 218  
 Lowenstein-Jensen media, 44  
 Lower extremity injuries, 198-199  
 Lymphocyte-mediated cytotoxicity, 140
- Magnetic resonance imaging (MRI) for Preiser's disease, 104  
 Major histocompatibility complexes (MHC), types, 136  
 Malignant bone and soft-tissue sarcomas of hand. See bone sarcomas of hand; soft-tissue sarcomas of hand  
 Manifestations of gout in wrist, 260-263  
 Marginal sector fractures with displacement, 14  
 Medial antebrachial cutaneous nerve (MABCN), conduction study of, 119-120  
 Median and/or ulnar nerve injuries, 197-198  
 Median nerve  
 first web space sensation, 211-212  
 forearm pronation, thumb opposition, and finger flexion, 208-209  
 nerve attachment  
 approach-exposure of, 190-191  
 and vein wrapping technique around, 191  
 nerve palsy, combined high (proximal), 224-225  
 Median nerve, compression neuropathies of  
 anterior interosseous syndrome, 168-170  
 anatomy, 169  
 conservative management, 170  
 diagnosis, 169-170  
 postoperative management, 170  
 surgical technique, 170  
 carpal tunnel syndrome, 157-162  
 anatomy, 157-159  
 diagnosis, 159  
 nonsurgical management, 162  
 postoperative management, 160-161  
 surgical management, 160-161  
 surgical technique, 160-162  
 compression neuropathy, 156  
 pronator syndrome, 162-167  
 conservative management, 167  
 diagnosis, 163-167  
 postoperative management, 168  
 surgical technique, 167-168  
 Medullary canal of radial neck, 18  
 Metacarpal, low ulnar palsy, 218  
 Metacarpal extension osteotomy, 82  
 Metacarpophalangeal capsulodosis, 91  
 Metacarpophalangeal joint, 91  
 Metacarpophalangeal ulnar collateral ligament (MCP UCL), 280  
 Metallic radial head implants, 15-16  
 MHC markers, as chief barriers to allograft tissue usage, 141  
 Microanatomy of nerve trunk, neuron, and Schwann cell, 144, 145, 146, 147  
 Miniature endplate potentials (MEPPs), 179-180  
 Modified Blauth Classification, 278  
 Modular metallic radial head arthroplasty, 15  
 Monoblock radial head, surgical implantation, 18  
*Monosporotium apiospermum*, 251  
 Motor and sensory transfers for isolated nerve injuries  
 axillary nerves, shoulder abduction, 205-207  
 first web space sensation, median nerve, 211-212  
 median nerve, forearm pronation, thumb opposition, and finger flexion, 208-209  
 radial nerve, wrist and finger extension, 207-208  
 suprascapular nerve, shoulder abduction and external rotation, 205  
 ulnar nerve, intrinsic muscle function and ulnar sensory loss, 209-211  
 Motor end plates, delaying degeneration of, 140  
 Motor function, recovery of, 203  
 Motor muscle, 215-216  
 selected for transfer, 216  
 Motor unit action potential (MUAP)  
 MUAP morphology, 178  
 MUAP pathology, 179  
 overlap, 186  
 parameters, 186  
 Motor unit anatomy of hand, 177  
 MRI for scaphoid fractures, 235-236, 238-239  
 MUAP. See motor unit action potential.  
 Mucor species, 48  
*Mucormycosis* fungi, 48, 252-253  
 Multibacillary leprosy, 45  
 Multiple lytic lesions involving different bones of joint, 261  
 Muscle fiber anatomy of hand, 176-177

- Muscle reanimation. See hand intrinsic muscle reanimation
- Muscle-tendon amplitude and tension, 216
- Musculocutaneous nerve, elbow flexion, 203-205
- Mycobacterial infections, 43-44  
*Mycobacterium* species other than TB, 43-44  
*Mycobacterium tuberculosis*, 43  
 species other than TB (MOTT), 43-44
- Mycobacterium avium-intracellulare* (MAC)  
 of hand, 43, 44  
 infection, 122
- Nails, infections and cutaneous fungal infections, 46, 47
- Necrotizing fasciitis, 125
- Nerve cell body and proximal nerve segment after injury, 145-147  
 injury, 146-147  
 morphology, 147
- Nerve compression. See Recurrent median nerve compression
- Nerve conduction velocity, 167
- Nerve guides, bioengineering of, 137-138  
 axonotmesis/neurotmesis, 184  
 complete lesions, 184-185  
 paraspinal EMG, 186  
 partial lesions, 184  
 radiculopathy, 185-186
- Nerve injury  
 as complication of radial head arthroplasty, 22  
 traumatic, see Traumatic nerve injuries
- Nerve involvement of leprosy, stages of, 45
- Nerve regeneration, 150-151
- Nerve repair, bioengineering for future  
 accuracy improvement of nerve repair, 134-136  
 allograft tissues, use of in nerve grafts and conduits, 141  
 bioengineering of nerve glides, 137-138  
 conclusions, 141  
 neurotrophism versus neurotrophism, 136-137  
 speed of regeneration or slowing rate of motor degeneration  
 delaying, 140  
 enhancing nerve regeneration, 138-139
- Nerve repair and injury, biology of  
 cellular response to injury, 144-145  
 distal nerve segment after injury, 148  
 events after, 148-150  
 axonal outgrowth, 149  
 direction of axonal outgrowth specificity, 149-150  
 gap, 148-149  
 future of surgeries, 151  
 microanatomy of, 144, 145  
 nerve cell body and proximal nerve segment after injury, 145-147  
 nerve injury and treatment, 150-151  
 peripheral nerve trunk, 143-144
- Nerve transfer re-education, effective, 227-228
- Nerve transfers in upper extremity  
 background, 200-201  
 classification of nerve injuries, 201  
 complex upper-extremity nerve injuries, 200  
 indication for, 202-203  
 motor and sensory re-education, 212  
 motor and sensory transfers for isolated nerve injuries  
 axillary nerves, shoulder abduction, 205-207  
 first web space sensation, median nerve, 211-212  
 median nerve, forearm pronation, thumb opposition and finger flexion, 208-209  
 musculocutaneous nerve, elbow flexion, 203-205  
 radial nerve, wrist and finger extension, 207-208  
 suprascapular nerve, shoulder abduction and external rotation, 205  
 ulnar nerve, intrinsic muscle function and ulnar sensory loss, 209-211  
 planning of, 203  
 principles of nerve transfer, 201-202  
 summary, 212
- Nerve trunk, microanatomy of, 144-147
- Neurogenic disorders, 183
- Neuromuscular imbalance, cause of, 215
- Neuron, microanatomy of, 144, 145, 146, 147
- Neuropraxia, 183-184
- Neurotrophism versus neurotrophism, 136-137
- Oblique radial osteotomy for supination syndrome, technique  
 conclusions, 53  
 historical treatment, 50-51  
 tendon transfer, 51  
 transverse pronation osteotomy of radius, 51  
 rehabilitation, 53  
 schematic of, 52  
 series review, 53  
 supination syndrome, 50-51  
 surgical technique, oblique pronation osteotomy of radius, 51-52
- Olecranon process, fractures of  
 classification, 96  
 evaluation, 96-97  
 literature, 94  
 mechanism, 94-95  
 options for fixation, 97-99  
 postoperative care, 99  
 relevant anatomy, 84  
 results, 99-101  
 summary, 101  
 surgical approach, 97  
 treatment, 97
- Onychomycosis, 46
- Open reduction and internal fixation (ORIF), 11-12, 19-20
- Osteoarthritis, as complication of radial head arthroplasty, 22
- Osteogenic sarcoma, 69-70
- Osteomyelitis of distal radius and radiocarpal arthritis, 43
- Pain, as presenting complaint in patients with brachial plexus lesion, 117
- Palm, lesions of, 64
- Palmar cutaneous branch (PCN), 157, 159, 162
- Palsy  
 combined high (proximal) median and radial nerve, 224-225  
 combined high (proximal) median and ulnar, 223-224  
 combined high (proximal) ulnar and radial nerve, 224  
 combined low (distal) median and ulnar, 222-223  
 combined nerve palsies of forearm and hand, 222  
 isolated median palsy, 219-220  
 isolated ulnar palsy, 220-221  
 isolated wrist palsy, 218-219

- low median, abduction of thumb, 218  
low ulnar, thumb abduction, clawed fingers and metacarpal, 218  
    complete lesions of individual nerves, 218  
    radial palsy, extension of wrist, 218  
Pancoast lesions, 118-119  
Pantrapezial arthritis, 74  
Papillomavirus, 46  
Paronychia, 46  
Parapoxvirus, 46  
Paraspinal EMG, 186  
Paronychia caused by candidiasis, chronic, 253  
Paronychia, 46  
Partial ulnar nerve injury, 184  
Paucibacillary leprosy, 45  
Peripheral nerve  
    injury, 143  
    trunk, 143-144  
Phaeohyphomycosis, 254  
Phalen's wrist flexion test, 159, 166-167  
Photochromogens, 43  
Pisiform AVN, 114  
Plane of osteotomy, 52  
Plate fixation, indicated in comminuted fractures, 97  
*Pneumocystis carinii* and AIDs, 122  
Pollicization, pitfalls of, 287  
Polyphasia, 186  
Positive sharp waves, 180  
Postoperative treatment of vein wrapping, 191  
Prearthritic thumb joint, 81-82  
Prehensile function, improving, 27  
Preiser's disease  
    algorithm for treatment, 105-106  
    aseptic scaphoid necrosis, 103  
    discussion, 107  
    evaluation, 103  
    imaging, 103-104  
        bone scintigraphy, 104  
        computed tomography, 104  
        MRI, 104  
        plain radiographs, 103-104  
    literature review, 106-107  
    surgical considerations, 104  
    surgical techniques, 104-105  
        scaphoid resection, 104-105  
        vascularized bone grafts, 105  
Primary nerve repair, indications and results  
    direct end-to-end suture of separated nerve ends, 195  
    indications, 195-196  
    results, 196-197  
    digital nerves, 196-197  
        location of injury, 196  
        lower extremity, 198-199  
        median and/or ulnar nerves, 197-198  
        radial nerve, 198  
    summary, 199  
Pronation of forearm, author's preferred surgical procedure for, 209  
Pronator syndrome, 162-168  
    compression sites, 164-165  
    conservative management, 167  
    diagnosis, 163-167  
    postoperative management, 168  
        surgical technique, 167-168  
        versus carpal tunnel syndrome, 163, 166  
Pronator teres (PT), 218  
Proximal interphalangeal (PIP) joint, 28  
Proximal nerve segment and nerve cell body after injury, 145-147  
Proximal pole fractures and nonunions, scaphoid. See fractures and nonunions of scaphoids  
Proximal radius, morphological characteristics of, 12  
Proximal ulna  
    fragments, resection of, 99  
    intramedullary canal of, 101  
Pruritic scaling lesions, 46  
Pseudoarthrosis of scaphoid, 8, 9  
*Pseudomonas aeruginosa*, 45  
  
Questionnaire, Quarterly ASSH member, 1-3, 55-59, 129-132, 231-232  
  
Radial longitudinal deficiency, 277  
Radial nerve, wrist and finger extension, 207-208  
    author's preferred surgical procedure for, 207  
Radial nerve injuries, 198  
Radial nerve palsy  
    combined high (proximal), 224-225  
    extension of wrist, 218  
Radial head fractures, management of with implant arthroplasty  
    alternative procedures, 18-20  
        ORIF, 19-20  
        radial head excision, 18-19  
    anatomy and biomechanics, 12-13  
    associated injuries, 13-14  
    classification of, 14  
    complications, 14  
    history, 11  
    indications for radial head arthroplastic in acute fractures, 14  
    ORIF, 11-12  
    outcomes of radial head arthroplasty, 21-22  
    preoperative evaluation, 14-15  
    radial head arthroplasty, 15-16  
    rehabilitation, 20-21  
    surgical approach, 17  
    technical aspects, 16-18  
Radicular lesions, sequential changes in, 186  
Radiculopathy, 185-186  
Radiographs, for Preiser's disease, 103-104  
Radius malunion  
    compensatory lunate flexion due to, 270  
    malunion, 271  
Range of motion, as preoperative evaluation for radial head implant arthroplasty, 14  
Rapid growers infections, 43  
Recurrent median nerve compression, vein wrapping for carpal tunnel syndrome, 189  
    conclusions, 194  
    discussion, 193-194  
    history of vein wrapping, 190  
    results, 192  
    surgical technique  
        approach-exposure of median nerve, 190-191



- attachment and vein wrapping technique around median nerve, 191  
 harvesting and preparation of saphenous vein autograft, 191  
 postoperative treatment, 191  
 Regeneration of nerve, enhancing, 138-139  
 Rehabilitation, 53  
   of DRUJ construction, 39-40  
 Repetitive stress injuries, 157. See also carpal tunnel syndrome  
 Retrograde labeling studies, 139  
 Rhabdomyosarcoma, 67  
*Rhizopus* species, 48  
 Rigid plate and screw fixation, 52  
 Robert's view, 80  
 Rotational malunion of distal radius, 270  
 Russe's technique for inlay bone grafting, 240  
 Salvage surgery  
   procedures for long standing nonunions, 245-246  
   for previously operated scaphoid nonunion, 241-242  
 Saphenous vein autograft, harvesting and preparation of, 191  
 Sarcomas of hand. See bone sarcomas of hand; Soft-tissue sarcomas of hand  
 Scaphoid nonunion, to treat vascularized bone grafts from volar distal radius  
   conclusions, 10  
   experience, 11, 12  
   psuedoarthrosis, 8, 9  
   stabilizing, 8-9  
   technique, 6-9  
     bone graft, 9  
     capsule, 9  
     harvesting vascularized bone, 6, 8  
     scaphoid stabilized, 8-9  
   use of, 8-9  
 Scaphoid  
   grafting of, 106-107  
   idiopathic avascular necrosis of, 103  
   resection, 104-105  
 Scaphoid proximal pole fractures and nonunions  
   anatomy, 233-234  
   conclusions, 246-247  
   diagnosis, 235-236  
   electrical stimulation, 242  
   natural history, 234-235  
   nonunited fractures, 237-239  
   salvage procedures, 245-246  
   secondary of salvage surgery for previously operated scaphoid  
     nonunion, 241-242  
     treatment of acute fractures, 236-237  
     treatment of scaphoid nonunions, 239-241  
     vascularized bone grafts, 242-245  
 Scaphotrapeziotrapezoidal (STT) joint, 76  
 Scar tissues, blocking invasion of, 138  
 Scarring of nerve, recurrent symptoms secondary to, 193-194  
 Schwann cells  
   cell migration, 150  
   microanatomy of, 144, 145  
   proliferation of, 148  
   relation of to neuron, 143  
 Schwannomas, diagnosis of, 118, 120  
 Sciatica nerve injuries, 198-100  
 Scotochromogens, 43  
 Secondary or salvage surgery for previously operated scaphoid nonunion, 242-242  
 Semmes-Weinstein monofilament threshold testing, 159  
 Separated nerve ends direct end-to-end sutures of, 195  
 Short arm thumb spica splint, 89  
 Shoulder abduction  
   axillary nerves, 205-207  
   author's preferred surgical procedure for, 207  
   and external rotation, suprascapular nerve, 205  
 Sigmoid notch and ulnar bone tunnels, location, 38  
 Silicone implant arthroscopy, 90  
 Silicone implants, 245  
 Silicone syndrovitis, 90  
 Skin lesions, common, 45  
 Soft-tissue interposition, 246  
 Soft-tissue sarcomas of hand, 60-67  
   anatomic locations of lesions, 63-64  
     dorsum hand, 64  
     fingers, 63  
     palm 64  
     thumbs, 64  
     web space, 64  
   biopsy procedures, 62-63  
   chemotherapy, 64-66  
   conclusions, 71  
   epitheloid sarcoma, 66-67  
   presentation of, 61  
   principles of surgical treatment, 63  
   radiographic evaluation, 61-62  
   radiation, 64  
   rhabdomyosarcoma, 67  
   synovial sarcoma, 67  
*Sporothrix* species, 47, 48  
*Sporotrichosis* species, 47, 254  
 Stability at DRUJ, 36  
 Staging system for thumb, 78  
*Staphylococcus* species, 45  
   and AIDs, 123  
   and diabetes, 124  
   infections of hand, 4  
 Stark et al technique of iliac bone graft and K-wire fixation, 241  
 Steroid injection for carpal tunnel syndrome, 159  
 Stiffness, as complication of radial head arthroplasty, 22  
*Streptococcus* infections of hand, 42  
 Subcutaneous fungal infection, 47, 250, 251  
 Supination syndrome, oblique radial osteotomy technique  
   conclusions, 53  
   historical treatment  
     tendon transfer, 51  
     transverse pronation osteotomy of radius, 51  
   rehabilitation, 53  
   series review, 53  
   supination syndrome, 50-51  
   surgical technique, oblique pronation osetomy of radius, 51-52  
 Suprascapular nerve, shoulder abduction and external rotation, 205  
   author's preferred surgical procedure for, 205

- Surgery  
 and bone lesions, 263-264  
 for carpal tunnel syndrome  
 management, 160-161  
 postoperative management, 162  
 technique, 161-162  
 and ligament disruption, 264  
 for nerve injury, future of, 151  
 for Preiser's disease  
 considerations, 104  
 scaphoid resection, 104-105  
 techniques, 104-105  
 vascularized bone grafts, 105  
 Surgical management of thumb, 81  
 Suspensionplasty procedures to salvage failed silicone arthroplasties, 86-87  
 Synovial sarcoma, 67  
 Systemic and deep fungal infections, 47-48  
 caused by *Candida*, 48
- Tendon transfer, 51  
 Tendon transfers for traumatic nerve injuries  
 combined high (proximal) median and radial nerve palsy, 224-225  
 combined high (proximal) median and ulnar palsy, 223-234  
 combined high (proximal) ulnar and radial nerve palsy, 224  
 combined low (distal) median and ulnar palsy, 222-224  
 combined nerve palsies of forearm and hand, 222  
 isolated median palsy, 219-220  
 isolated ulnar palsy, 220-221  
 isolated wrist palsy, 218-219  
 long-term follow-up evaluation, 225  
 low median palsy, abduction of thumb, 218  
 low ulnar palsy, thumb abduction, clawed fingers and metacarpal, 218  
 complete lesions of individual nerves, 218  
 motor-muscle, 215-216  
 muscle-tendon amplitude and tension, 216  
 patient evaluation, 214-215  
 preoperative rehabilitation, 215  
 radial palsy, extension of wrist, 218  
 reconstructive procedures, 214  
 surgical techniques, 216-218  
 early tendon transfers as internal splints, 217-218  
 timing of, 215  
 Tendon fixation, 217  
 Tenosynovectomy, 161  
 Tenuous fixation in setting of associated ligamentous injuries, 20  
 Theimann's disease, 114  
 Thumb, hypoplastic, reconstruction. *See also* Hypoplastic thumb  
 alternative procedures, 287  
 classification and terminology, 276-277  
 complications, 287  
 conclusions, 289  
 genetics and epidemiology, 276  
 outcomes, 288  
 prenatal hand development, 275-276  
 rehabilitation, 287  
 surgical considerations, 277-287
- Thumb carpometacarpal arthrosis  
 anatomy of thumb, 73, 74-75  
 conclusions, 91-92  
 conservative management, 78-81  
 etiology, 75-76  
 examination of, 76-78  
 ligament reconstruction tendon interposition arthroplasty (LRTI), 84-87  
 LRTI technique, 87-89  
 metacarpophalangeal joint, 91  
 pathology, 75-76  
 prevalence of, 73  
 radiographic evaluation, 78  
 silicone implant arthroplasty, 90  
 staging, 78  
 surgical management, 81  
 trapezial excision, 83-84  
 Thumb opposition, 208-209  
 trapeziometacarpal arthrodesis, 89-90  
 Thumbs, lesion of, 64  
 Tinea negra, 46  
 TMC stress test on thumb, 76  
 Toe phalangeal bone grafts  
 to reconstruct hypoplastic digits, 28, 29  
 secondary lengthening of, 29  
 Transverse carpal ligament (TCL), 157, 158, 162  
 Transverse pronation osteotomy of radius, 51  
 Trapezial excision, 83-84  
 Trapeziometacarpal articulation, 73  
 arthrodesis, 89-90  
 congruity, 78  
 Trapezium AVN, 113  
 Trapezoid AVN, 113  
 Traumatic nerve injuries, tendon transfers for  
 combined high (proximal) median and radial nerve palsy, 224-225  
 combined high (proximal) median and ulnar palsy, 223-234  
 combined high (proximal) ulnar and radial nerve palsy, 224  
 combined low (distal) median and ulnar palsy, 222-224  
 combined nerve palsies of forearm and hand, 222  
 isolated median palsy, 219-220  
 isolated ulnar palsy, 220-221  
 isolated wrist palsy, 218-219  
 long-term follow-up evaluation, 225  
 low median palsy, abduction of thumb, 218  
 low ulnar palsy, thumb abduction, clawed fingers and metacarpal, 218  
 complete lesions of individual nerves, 218  
 motor-muscle, 215-216  
 muscle-tendon amplitude and tension, 216  
 patient evaluation, 214-215  
 preoperative rehabilitation, 215  
 radial palsy, extension of wrist, 218  
 reconstructive procedures, 214  
 surgical techniques, 216-218  
 early tendon transfers as internal splints, 217-218  
 timing of, 215  
 Treatment for nerve injury, 150-151  
 Triceps brachii inserts, 94  
*Trichophyton mentaglyphes*, 46  
*Trichophyton rubrum*, 46

- Tuberculosis (TB), 257  
 diagnosis of, 43  
 infections of hand, 43
- Tumors of brachial plexus  
 clinical findings, 117-119  
 conclusions, 120  
 diagnostic tools, 117, 119-120  
 historical background, 117  
 surgical considerations, 120  
 symptoms, 118
- Tzanck smear, 43
- Ulnar and/or median nerve injuries, 197-198
- Ulnar nerve  
 compression at elbow, 119  
 intrinsic muscle function and ulnar sensory loss, 209-211  
 author's preferred surgical procedure for, 210-211  
 palsy, 220-224  
 sensory loss and intrinsic muscle function, 209-211  
 variance, 269
- Ulnar-innervated flexor carpi ulnaris (FCU), 219
- Ulnohumeral articular bare area, 95
- Upper extremity, fungal infections of, *see* Fungal infections
- Upper extremity, nerve transfers in  
 background, 200-201  
 classification of nerve injuries, 201  
 complex upper-extremity nerve injuries, 200  
 indication for, 202-203  
 motor and sensory re-education, 212  
 motor and sensory transfers for isolated nerve injuries  
 axillary nerves, shoulder abduction, 205-207  
 first web space sensation, median nerve, 211-212  
 median nerve, forearm pronation, thumb opposition, and finger flexion, 208-209  
 musculocutaneous nerve, elbow flexion, 203-205  
 radial nerve, wrist and finger extension, 207-208  
 suprascapular nerve, shoulder abduction and external rotation, 205  
 ulnar nerve, intrinsic muscle function and ulnar sensory loss, 209-211  
 planning of, 203  
 principles of nerve transfer, 201-202  
 summary, 212
- Valgus stabilizer of elbow, 13
- Vascularized bone grafts, 105, 242-245  
 data on, 245
- Vascularized bone grafts from volar distal radius to treat scaphoid nonunion  
 anatomic basis for volar vascularized bone grafts, 4-6  
 conclusions, 10  
 experience, 11, 12  
 technique, 6-9  
 use of, 4
- Vascularized stabilizer of elbow, 13
- Vein wrapping for recurrent median nerve compression  
 carpal tunnel syndrome, 189  
 conclusions, 194  
 discussion, 193-104  
 history of, 190  
 results, 192  
 surgical technique, 190-191
- Verucal skin lesions, 45-46
- Viral infections, 45-46  
 herpes simplex, 45  
 papillomavirus, 46  
 parapoxvirus, 46
- Volar distal radius to treat scaphoid nonunion, vascularized bone grafts from  
 conclusions, 10  
 experience, 11, 12  
 pseudoarthrosis of, 8, 9  
 stabilizing, 8-9  
 technique, 6-9  
 use of, 4
- Volar ligament of thumb carpometacarpal joint, 74, 75  
 reconstruction, 83
- Volar tilt, 268
- Voluntary contraction, minimal to moderate, 182-183
- Waveform generation, 177-178
- Web space of hand, lesions of, 64
- Wrapping material for vein, ideal, 189
- Wrist  
 AVN of, excluding scaphoid and lunate, 110-115  
 chronic pain of, 104  
 extension  
 author's preferred surgical procedure for, 207  
 and finger extension, radial nerve, 207-208  
 gout of  
 case reports, 256-260  
 conclusions, 264  
 discussion, 260-264  
 medical history of, 256  
 palsy  
 extension of and radial palsy, 218  
 isolated, 218-219  
 range of motion, 106
- Y-shaped chamber, to determine specificity for nerve regeneration, 135
- Z-plasty, incorporation of, 30, 31
- Zaidenberg et al technique, 243-245
- Zaidenberg-type vascularized bone graft, 105
- Ziehl-Neelson staining, 44