Clinical and experimental research are trying to find the optimal bone substitute to improve bone healing. Various materials and elements could be classified according to three functional properties: osteoconductive, osteogenic and osteoinductive. Osteoconduction is a property of a natural or artificial matrix (scaffold) that supports the attachment of bone forming cells for subsequent bone formation. Osteogenic property is the intrinsic capacity of cells to form bone. Osteoinduction is a property of materials or growth factors that can stimulate cells to produce bone. Although all these processes contribute in different ways to bone healing in nature, in the past a specific substance or material was singularly investigated. In later years orthopedic research has begun to evaluate combinations of various biomaterials and substances with different properties to simulate, in the best way possible, bone repair. This review analyses present knowledge and offers some new perspectives on bone substitutes. Narrative Review.
DIFFERENT TREATMENT OPTIONS IN GIANT CELL TUMOR OF THE WRIST: A REVIEW OF THE LITERATURE

G. MACCAURO, F. MURATORI\textsuperscript{1}, C. PERISANO, M.S. SPINELLI, C. GRACI and M. A. ROSA\textsuperscript{2}

Department of Orthopedics and Traumatology, Catholic University, Agostino Gemelli Hospital, Rome; \textsuperscript{1}Department of Orthopedics, Azienda Ospedaliera Reggio Emilia; \textsuperscript{2}Department of Orthopedics, Messina University, Messina, Italy

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The authors review the different management options for giant cell tumor of the distal radius. The goal of treatment of this lesion is the complete removal of the tumor. Curettage alone of giant cell tumor is associated with local recurrence independently of tumor grading. Adjuvant treatment of the bone bed with liquid nitrogen or phenol after removal of the tumor has been suggested to decrease the risk of local recurrence. The advantages of using cement include low cost, easy to use, lack of donor-site morbidity, no risk of disease transmission related to allograft use, immediate structural stability and it enhances an earlier detection of local recurrence. The authors recommend the treatment with curettage for grade I and II giant cell tumors as it offers a very good (90\%) rate of cure. A high rate of local recurrence and complications is to be expected with curettage alone in grade III tumors. The patient should be counseled about other options including resection and reconstruction. Narrative Review.
SURGICAL TECHNIQUE

ARTHROSCOPICALLY ASSISTED LATARJET – LAFOSSE PROCEDURE: HOW TO MAKE IT EASIER IN LATERAL DECUBITUS POSITION THROUGH 3 STANDARD PORTALS

O. MILENIN, A. BELOPOLSKY, A. KHAYRULLAEV and V. ARKOV

Department of Traumatology and Orthopedics #2, National Medical Surgical Centre in the name of Pirogov N.I., Moscow, Russian Federation

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Anteroinferior instability appears to be a significant problem nowadays. There is a variety of techniques, both open and arthroscopic used to deal with it. The Bankart procedure remains the most popular. Although when there are massive defects of the glenoid cavity and the humeral head, bony block procedures (1) are recommended. The Latarjet procedure (2) is considered to be an effective and reproducible method and has good long-term results (3). Arthroscopic modifications of the Latarjet procedure are becoming increasingly popular, but are rather difficult to perform and have a steep learning curve. We describe a new safe and reliable arthroscopically-assisted technique. It combines the advantages of the Lafosse (4) and the Boileau (5) arthroscopic methods and offers the possibility of treating anteroinferior instability with the patient in the lateral decubitus position through 3 standard portals and a 2.5-3 cm graft harvest incision. Our procedure was created to simplify the arthroscopic Latarjet method and to make it reproducible among those surgeons who prefer the patient in the lateral
BASIC SCIENCE AND RESEARCH

BACKWARD WALKING ALTERS THE STRIDE-TO-STRIDE VARIABILITY FOR HIP, KNEE AND ANKLE JOINTS

F. ZAMPELI, N. STERGIOU1,2, S. XERGIA and A.D. GEORGOULIS

Orthopedic Sports Medicine Center of Ioannina, Department of Orthopedic Surgery, University of Ioannina, Ioannina, Greece; 1Nebraska Biomechanics Core Facility, University of Nebraska at Omaha, Omaha, NE; 2Department of Environmental, Agricultural, and Occupational Health, College of Public Health, University of Nebraska Medical Center, Omaha, NE, USA

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This study aimed to examine stride-to-stride variability in healthy individuals during backward walking (BW). We aimed to determine the temporal structure of stride-to-stride variability and not the amount measured by linear statistical tools (i.e. standard deviation). The variation of how motor behavior emerges in time is best captured by tools derived from nonlinear dynamics, for which the temporal sequence in a series of values is the facet of interest. Nine healthy volunteers walked on a motorized treadmill forwards and backwards at their self-selected pace while hip, knee, and ankle kinematic data were collected (50Hz) continuously for two minutes with an eight-camera optoelectronic system. The nonlinear measure of the Lyapunov Exponent (LyE) was estimated from the joint flexion-extension time series to assess stride-to-stride variability. Our results revealed that BW displayed significantly (p<0.001) increased LyE group values for the three joints. In conclusion, hip, knee and ankle joints of healthy individuals during backward walking exhibit significantly larger Lyapunov Exponent values compared to corresponding values during forward walking revealed a noisier and more unstable walking pattern. Compared to FW, BW leads to an altered variability, which could imply a decreased functional responsiveness to environmental demands for lower limb joints which may make them more susceptible to injury. Therefore, BW should be used with caution in rehabilitation programs after lower limb injuries and in the exercise regimens of several sports where it has been included for injury prevention and to improve the BW pattern and the ability of the athletes since this movement is often required during competition.
CASE REPORT

UNUSUAL PRESENTATION OF CLAW HAND FOLLOWING ULNAR NERVE PALSY

G. SUDHAKAR and M. LEBLANC

Hamad Medical Corporation, Doha, Qatar

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The common cause for ulnar nerve palsy is injury to the ulnar nerve by forearm fractures, laceration to the fascicules of the medial cord and leprosy (1). Other causes include poliomyelitis, syringomyelia or Charcot Marie-Tooth Disease and neglected cubitus valgus deformity that progresses to tardy ulnar nerve injury (2). Inflammatory diseases like rheumatoid arthritis and osteoarthritis have also been reported as the cause of the ulnar nerve palsy (3-4). The anatomic causes could be anomalous accessory muscles, fibrous bands or ligaments in the cubital or Guyan channel (5-7). Depending on the location of the injury the ulnar nerve presents with predictable motor and sensory deficits (8-9). In proximal nerve palsy all the extrinsic and the intrinsic muscles are affected. The sensory loss is on the palmar and dorsal side of the little finger and the ulnar half of the ring finger. In distal ulnar nerve palsy the extrinsic muscles are spared and the intrinsic muscles are affected with sensory loss on the palmar side of the medial third of the palm, the entire palmar side of the little finger, the ulnar half of the ring finger and the dorsal side of both the little and ring finger distal to the proximal interphalangeal joint (PIP). The difference in sensory loss compared to proximal lesions is the sparing of the dorsal cutaneous branch of the ulnar nerve. When the deep branch of the ulnar nerve is involved only the intrinsic muscles are affected, the hypothenar muscles are spared with no sensory loss. The patient with ulnar nerve injury usually presents with the claw or benediction hand; a flattened palm, wasting of hypothenar muscles as well as shallow mid-palmar receptacle distal to thenar and hypothenar eminences. The dorsum of the hand shows wasting with the shallow concavities in the intermetacarpal spaces more prominent in the thumb web. The mechanism of the paralytic claw hand was studied by Landsmeer (10); the metacarpal phalangeal joint and interphalangeal joint (IP) are normally independent whereas in the case of the paralytic claw hand he observed the IP joint movements to be limited or somewhat coordinated.

He considered this to be a biarticular system comprising the MP joint and PIP joint with proximal phalanx forming the intercalated bone. This biarticular system remains stable when the flexors and the extensors of the opposing tendon are equally balanced when the intrinsic system are functioning. If the intrinsic system is not functioning the long extensors function is blocked at the MP joint by diversion of this tension to the sagittal band providing hyperextension at the MP joint which effectively blocks the extensor’s ability to extend the PIP joint (11-13). The aim of this case report is to report an unusual presentation of claw hand following ulnar nerve palsy.