Anterior Interbody Fusion in Cervical Disc Herniation

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Combined anterior interbody fusion and cervical discectomy is a surgical technique to treat a variety of cervical spine disorders, such as nerve root or spinal cord compression. This technique permits the surgeon to decompress the spinal cord and nerve roots and perform interbody fusion to provide segmental alignment in lordosis and solid arthrosis with minimal surgical risk. The aim of this video is to show the anterior cervical disectomy and interbody fusion of a 55-year-old patient who was suffering from cervical pain associated with intractable radiculopathy of the left C6 root for six months. We took an anterior approach to the cervical spine and made a longitudinal skin incision on the medial border of the sternocleidomastoid muscle (SCM). We gently incised the platysma muscle and isolated the medial border of the SCM muscle. Then we isolated and partially retracted the homoyoid muscle and separated the longus colli to expose the C5-C6 space. We performed the discectomy, removed the posterior osteophyte, and removed the posterior longitudinal ligament expose the dural sac. With the arthroscope, it was possible to visualize and remove the posterior longitudinal ligament and expose the dura. We placed a 6-mm anatomic cage into the intervertebral space to achieve the correct height of the intervertebral space and correct the physiologic lordosis. Finally, we reattached the incised fascia and muscles.

Postoperative care consisted of having the patient wear a soft collar for four weeks and then undergo physiotherapy. Two-year clinical and radiographic follow-up demonstrated solid anterior interbody fusion of the C5-C6 space.

MEC02

Arthroscopic Transcapsular Axillary Nerve Decompression

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Symptomatic quadrilateral space syndrome is uncommon, but it can result in considerable pain, weakness, and decreased athletic performance in afflicted patients. Surgical intervention is occasionally required to reduce symptoms and avoid functional decline when non-surgical treatments fail. Surgeons have traditionally used open techniques to accomplish axillary nerve neurolysis, and they appear to provide satisfactory outcomes. Recent technical advances have allowed arthroscopic axillary nerve decompression techniques to be devised that may provide some benefits over open techniques. We describe the technique and early results of all-arthroscopic transcapsular axillary nerve decompression.

MEC03

Crossed Muscular Flap Technique- for the Treatment Gluteal Insufficiency

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Damage to the gluteus medius and minimus muscles is a severe complication of total hip arthroplasty. Such damage is a result of either direct muscular damage or indirect muscular degeneration following injuries to the superior gluteal nerve. The patient’s quality of life is severely reduced because of gluteal insufficiency with concomitant pelvic instability and Trendelenburg limping. The examiner can easily diagnose such defects by the clinical appearance of positive Trendelenburg sign and the patient’s inability to stabilize the pelvis during stance on the affected side, which results in a highly deficient gait pattern. An MRI usually reveals fatty degeneration of the gluteus medius and minimus muscles but intact gluteus maximus and tensor fasciae latae (TFL) muscles. This video demonstrates both the clinical and the radiographic findings in a patient with a severe gluteal deficiency. It explains our proposed concept of utilizing a portion of gluteus maximus and the TFL to replace the abduction force of the deficient gluteal muscles through the creation of crossed flaps mobilized and inserted into the proximal femur. In consecutive views, the video demonstrates the principal anatomy as well as the preparation of both flaps. After mobilizing the flaps, we demonstrate the way to cross the distal portions of the flaps underneath the vastus lateralis fasciae and fix them to the proximal femur using standard anchors. We also show reconstruction of the abductor cuff. At the end of the video, we present the clinical effects of the proposed technique. In order to demonstrate both the concept and the surgical technique, we use videos taken during surgery as well as extensive cadaver preparations. We use MRI still and movie sequences to demonstrate the pathology and the muscle quality preoperatively. We have labeled all video sequences in order to demonstrate details and allow for easy orientation and identification of anatomic structures. The video includes full narration.

MEC04

Cuboid Osteotomy Associated With Plantar Medial Release in Severe Untreated Clubfoot

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The idiopathic congenital clubfoot or equinovarus consists of a deformity of the foot in equinus, varus, and supination that appears at birth. If it is detected before the child is three years old, the deformity can be successfully treated conservatively; if it is detected when the child is between three and six years old, it can be treated by plantar medial release. If the deformity is observed later, it is usually stiffer and nonreducible. The lateral column of the foot (calcaneus and cuboid) grows faster than the medial column (talus, navicular, and cuneiform), so the lateral column is longer than the medial. The aim of this video is to show the treatment of neglected congenital equinovarus by plantar medial release in conjunction with cuboid osteotomy in a six-year-old patient. In neglected congenital...
equinovarus in patients older than six years, the posterior and medial tendons and capsules are retracted. The correction consists in lengthening the medial and posterior tendons associated with the talonavicular capsulotomy. The surgeon uses an oscillating saw to perform the osteotomy of the cuboid bone on the lateral aspect, removing a small wedge with the base on the superolateral aspect. The wedge osteotomy of the cuboid bone will lead to the shortening of the lateral column. This process permits the complete reduction of the varus and the adduction deformity of the foot. Combining planter medial release with cuboid osteotomy is a good technique to correct the deformity and relieve stiffness of the joints. Young patients can regain the neutral position of the foot so they can wear shoes, stand up, and walk correctly.

MEO5

Stay Out of Trouble in Elbow Surgery: Radial Nerve
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For several reasons, the elbow is a joint that the young surgeon might prefer to avoid in performing surgery, but principally because he or she lacks knowledge of the surgical anatomy of the elbow. This lack of knowledge can have dangerous consequences considering that, in the elbow, at least one of the three major nerves is always close to the surgical site, giving rise to a risk of transection. The radial nerve is probably the nerve that the surgeon fears most, either for the high rate of radial nerve injuries reported in the literature or for the severity of the functional impairment resulting from them. The aim of this educational video is to review the surgical anatomy of the elbow with particular emphasis on tips and tricks to avoid radial nerve injuries. We will provide real examples in which the radial nerve is potentially at risk, and we will support our examples with cadaver specimens and drawings. Using this combined approach, we will discuss distal humeral fracture, surgeries at the proximal part of the radius, and elbow arthroscopy.

MEO6

One Staged Reconstruction of Multi-ligament Injured Knee
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The multiligament injury is a complex problem with controversies in management. We present a one-stage surgical technique for ruptures of cruciate and collateral ligaments. We begin with transibial 1-incision single-bundle remnant-preserving posterolateral cruciate ligament (PCL) reconstruction with an Achilles tendon allograft. After we create the anterolateral tibial tunnel, we use an inside-out procedure to prepare the femoral socket in the footprint of the anterolateral bundle located 8 mm posterior to the articular junction. To reduce graft-socket divergence in the femur, the knee is flexed more than 100° with the proximal tibia pushed backward as much as possible. We introduce the cannulated reamer through the far anterolateral portal with a plastic sheath pushed back to contact the lateral femoral condyle. After graft passage we perform femoral fixation in 100° knee flexion. Next, we perform anterior cruciate ligament (ACL) reconstruction with a bone-patellar tendon-bone autograft. We create the tibial tunnel using the reamer counterclockwise just before perforation. Then we drill a femoral socket with a 9-mm diameter headed reamer to a depth of 35 mm. After graft passage, we perform femoral fixation in 90° knee flexion. The next step is the reconstruction of the lateral collateral ligament (LCL) and popliteal tendon with a tibialis posterior tendon allograft. We create a tibial tunnel from Gerdy’s tubercle to the point 10 mm inferior to the posterior joint line and 5 mm medial to the posterior aspect of the tibiofibular joint. We make the tunnel of the fibular head from the anteroinferior aspect of the fibular head 10 mm above the peroneal nerve to the point just postero medial to the LCL on the fibular head. We create the graft passage and then create femoral sockets on isometric points, after which the graft is fixed. Finally, we perform semitendinosus (ST) tenodesis for medial instability. We isolate the ST and section it at the musculotendinous junction by open tendon stripper. We drill a 3.2-mm hole 8 mm (the radius of the washer) proximal to the isometric point on the extended line of the rerouted tendon. We fix the looped ST to the distal edge of the washer and suture to the direct head of the semimembranosus muscle. In each step, we use simultaneous tensioning, applying constant force to the ACL and PCL with a graft-tensioning device. We fix the distal bone peg of the ACL first in full extension and then that of the PCL in 70° flexion.

MEO7

Endoscopic Repair of the Gluteus Medius: The Rotator Cuff of the Hip
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Greater trochanteric hip pain is a common ailment of middle-aged adults. Epidemiologic studies estimate a prevalence of up to 15%, with an incidence of 1 in 500 persons. Women have more than a three-fold increased risk compared to men, with the typical age distribution occurring in the fifth and sixth decades. Patients typically have atraumatic presentations; they often complain of chronic pain and tenderness over the affected greater trochanter. Walking, climbing stairs, or lying on the affected side usually exacerbates symptoms. The physical exam is often notable for point tenderness over the greater trochanter and a variable amount of weakness with hip abduction. The patient is best assessed while lying on his/her unaffected side as the examiner abducts the leg against active resistance. Some patients may progress to having a lurch with ambulation. The diagnosis of greater trochanteric pain syndrome (GTPS) is based on history and physical examination. However, MRI is indicated after conservative measure failure in order to surgically evaluate for gluteus medius tears. Plain radiographs are often unremarkable. However, they may demonstrate greater trochanteric sclerosis, osteophyte formation, and irregular cortical borders. An MRI is the preferred method of imaging. Identifying T2 signal hyperintensity at an area superior to the greater trochanter is the best diagnostic determinant. This approach has a sensitivity of 73% and a specificity of 95% for diagnosing gluteus medius tears. As in rotator cuff imaging, full-thickness tears demonstrate tendon discontinuity, whereas increased signal intensity or a thickened tendon is suggestive of tendinopathy or partial tears. Until recently, the treatment for GTPS was limited to conservative measures. Most patients find relief with anti-inflammatories, lifestyle...
modifications, physical therapy, and judicious local corticosteroid injections. However, many patients can be unresponsive to conservative treatments and, until recently, they had no other options. The differential diagnosis of calcific GTPS may include: trochanteric bursitis, coxa saltans externa, and chronic tears of the gluteus medius muscle. All are now amenable to endoscopic treatment. Hip arthroscopy is gaining momentum as a reliable, minimally invasive surgical option for hip disorders. Recent advances in experience, technology, and imaging have led to an expanding role in arthroscopic, and now endoscopic, surgery of the hip. Successful techniques can now address the central compartment; peripheral compartment; and the peritrochanteric spaces, specifically; tears of the gluteus medius. Authors first described gluteus medius tears in 1997, later calling the gluteus medius “the rotator cuff” of the hip. In recent years, recognition has expanded to endoscopic treatment with great promise. Voos et al report the prospective results of ten patients with endoscopic gluteus medius repair with suture anchors. At an average follow-up of 25 months and average age of 50 years, ten of ten patients had complete resolution of pain Moreover, subjects reported a mean 94 Modified Harris Hip Score and a mean of 93 Hip Outcome Score. The authors reported no complications. Understanding the anatomy of the peritrochanteric space is a surgical requisite. The greater trochanter is the center-piece of the peritrochanteric space, bordered by the tensor fascia lata and iliobibial band laterally, abductor tendons superiormedially, vastus lateralis inferomedially, and gluteus maximus muscle superiorly and posteriorly. The gluteus medius is a fan-shaped muscle that originates on the iliac crest from the anterosuperior iliac spine to the posterosuperior iliac spine. It has three different portions (anterior, middle, posterior), all innervated by the superior gluteal nerve and supplied by the superior gluteal artery. Importantly, it inserts at two distinct sites on the greater trochanter: the lateral facet and superoposterior facet. The posterior gluteus medius fibers insert onto the superoposterior facet; whereas, the anterior and middle portions insert onto the lateral facet. The anterior and middle gluteus medius aid in initiating hip abduction. They also aid in external and internal rotation, as well as pelvic stability. The posterior gluteus medius acts to stabilize the hip joint in early gait from heel strike to full stance. The gluteus minimus is located deep to the medius, and it inserts on the iliacus at the middle gluteal line of the outer table, spanning from the anteroinferior iliac spine to the posterosuperior iliac spine. This muscle is also innervated by the superior gluteal nerve and supplied by the superior gluteal artery. It divides into two heads at its insertion, with one capsular insertion at the medial lateral facet, and the other at the long head distal to the bicipit on the lateral facet. The gluteus minimus also acts in leg abduction, aids in external and internal rotation, and adds to pelvic stability. It also acts to stabilize the hip joint in mid and late cycles of gait. The following is the surgical technique: Under general anesthesia, position the patient in the lateral decubitus position lying on the unaffected hip supported by a beanbag. Prep and drape the patient, exposing the hip widely. Prep a portion of the medial half of the affected leg, both front and back, including from the knee to the abdomen. Next, place the leg with the hip in the neutral position. Consider placing the knee on a mayo stand to release tension on the iliobibial band (ITB). Inject the peritrochanteric space with epinephrine-soaked saline to extend the ITB and release adhesions. Set the pump pressures at 50-70 mm Hg saline with epinephrine. Use a 70° scope for optimal visualization. Place the portals in the shape of a diamond, with a posterior peritrochanteric portal, an anterior peritrochanteric portal, a superior portal, and a distal portal. Each portal can be used as a working or viewing portal; cannnulas are often unnecessary. Often the superficial bursa is exposed to direct portal placement below the ITB. Deep to the ITB, débride the trochanteric bursa with a shaver and then with a radio frequency device to address bleeding. This enhances visualization and may also be therapeutic. Finally, identify the tear at the lateral facet of the greater trochanter. Gently débride with a shaver to cortical bone to stimulate bleeding. Taking care not to be too aggressive because the greater trochanter cancellous bone is notoriously osteoporotic. Vigorous débridement could weaken anchor pull-out. Grasp the tendon with a grasper to ensure tendon-free insertion at the lateral facet. If necessary, employ margin convergence or tissue release. We prefer to insert one to two suture anchors inserted at 45° degrees to the bone and use trans-tendinous repair with medial row sutures backed up with lateral row anchors.

MEC08
Conversion of Fused Hips to Total Hip Arthroplasty
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The goal of the present study is to review the indications for conversion of fused hips into total hip arthroplasty (THA); to analyze the prognostic factors found in the literature; and to illustrate our experience with a series of 21 patients, in whom we used a posterolateral approach without extensile exposure. We explain the step-by-step details of the technique and describe our experience with illustrations from clinical cases. Especially with extra-articular defects, fluoroscopy can help to locate the center of rotation and define the limits of the fusion block. Metaphyseal modular prostheses may help in patients with proximal femoral deformity. Limb-length discrepancy up to 3 to 5 cm can be corrected without complications, depending on the patient’s age when the arthrodesis was performed, the extent of soft tissue retraction, or the existence of previous injuries. Correction of associated deformities may prevent early failures of the reconstruction. In our series, lower-back pain was mild or almost nonexistent after conversion. Patients with severe osteoarthritis of the knee required total knee arthroplasty (TKA) in a second procedure. Pelvic tilt improved despite severe scoliosis and degenerative spinal changes. Conversion of arthrodesis to THA is a successful procedure with a complication rate that is similar to that of revision THA. The surgeon must inform the patient that clinical and subjective improvement has to be balanced against residual limp, the need for crutches, or the possibility of TKA in patients with severe osteoarthritis of the knee. Prognostic factors should be used with caution when establishing indications and postsurgical expectations. The status of the gluteus muscles influences functional outcome, but other prognostic factors such as age, status of the neighboring joints, or position of the fusion may be more important. Younger patients may expect better functional results but more complications, as in any other THA. The relative influence of prognostic factors is, to some extent controversial, so to ensure the patient’s satisfaction, it is crucial for the surgeon to establish real expectations, as in any other elective procedure.
Cuneiform Osteotomy of the Femoral Neck for Treatment of Ossified Slipped Capital Femoral Epiphysis (SCFE).

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Proximal femur deformity with untreated slipped capital femoral epiphysis (SCFE) is a cause of early hip osteoarthritis. We describe an original surgical technique of cuneiform osteotomy of the femoral neck to relocate femoral epiphysis in young patients with ossified severe SCFE, who presented with pain and restriction of movement. Through a surgical hip dislocation, we exposed the head-neck junction. Taking care to protect the retinacular vessels, at the site of deformity we identified and split the periosteum to perform a resective cuneiform osteotomy of the femoral neck. We relocated and fixed the femoral epiphysis in the normal anatomic position with two screws. This video provides a detailed description of the surgical technique, along with the surgical indications and contraindications. We also include a radiologic study. The video shows our radiologic and clinical results, and it depicts our rehabilitation program. We have treated seven hips in six male patients with sequelae of severe SCFE. Patients had a mean age of 15 years (ages 13 to 16 years), and a mean 9.2 months of hip pain and severe limp preoperatively. We achieved an epiphysis-shaft angle correction from 66° preoperative to 11° postoperative on average and a modified Harris Hip Score improvement from 37 preoperative to 96 postoperative on average. Osseous consolidation was achieved at 10.2 weeks on average. After a follow-up of an average 48 months, no patient has developed avascular necrosis of the femoral head. Resective cuneiform osteotomy of the femoral neck in young patients with ossified severe SCFE is an alternative treatment that achieves good results without risk of avascular necrosis.

Femur First for Perfect Acetabular Positioning in Hip Arthroplasty?

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Total hip arthroplasty (THA) is now a safe and effective procedure. Younger and more active patients require THA that provides high range of motion (ROM) and long survival. The positioning of the components is essential for implant survival. Malpositioning can lead to polyethylene wear, ceramic rupture, ion production in M-o-M, cup loosening, low ROM, luxations, and a high rate of revisions. Lewinnek introduced the concept of “safe zone” correlation between cup orientation and stem antversion in 1978. Many authors developed the concept, empirically obtaining the limits of these values using retrospective cohort studies of dislocated and nondislocated patients. The modern approach to this problem derives from the mathematical analysis of different factors involved. Researchers have proposed several formulas to calculate precisely the safe zone in every single implant. However, the formulas provide far more precise results than those the surgeon can obtain in the theater without navigational assistance. Even with a navigational tool, pelvic tilt can affect the accuracy of the measurements. The purpose of this video is to show a new surgical technique that ensures an accurate position of the cup, without any electronic assistance, through the measurement of the cup angles relative to the position of the stem. In our experience, the “femur-first” technique is easy to perform, and its use does not affect the duration of the procedure. It is also inexpensive since it can be performed using the normal instrumentation of an M-o-M prosthesis, even if the surgeon plans to implant a ceramic or polyethylene cup.

Minimally Invasive Anterior Approach for Simultaneous Bilateral Total Hip Replacement

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Minimally invasive total hip replacement (THR) has recently gained in popularity. One commonly used approach is the direct anterior approach (DAA). Advantages of the DAA include limited muscular disuse and improved joint stability, along with a simple postoperative regimen. There are also cosmetic advantages. These advantages suggest that indications for THR can be expanded. In patients with neuropathic disease for example, there is a reduced risk of dislocation. Another indication is simultaneous bilateral THR, in which minimized soft-tissue trauma and the postoperative regimen offer benefits. In our video, we present a simultaneous bilateral THR using a modified DAA performed in a 57-year-old woman with bilateral hip osteoarthritis. We used a short, oblique skin incision centered in the groin cleavage line, also called a “bikini incision.” We then performed a deep dissection like a W-plasty for appendectomy. With this technique, the surgical window can be moved up and down when preparing the acetabulum or the femur. This video illustrates the step-by-step surgical technique, and it highlights tips and tricks.

“T” Type Acetabular Fracture Treated through Surgical Hip Dislocation

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Although hip arthroscopy is the most-used treatment for femoroacetabular impingement (FAI), surgical dislocation maintains an important role in selected cases. In this video, we present the surgical technique for dislocation. The full access to the femoral head and to the acetabulum allows a complete treatment of the anatomic deformity of these structures. Various authors have reported that, if all the steps of this technique are followed, there is no risk of avascular necrosis. Although its invasivity is higher than arthroscopic one, it represents a safe and effective treatment when the arthroscopy could not restore a perfect anatomy.
Chronic avulsion or inflammatory destruction of the abductor portions of the gluteus medius and gluteus maximus in association with total hip arthroplasty (THA) causes severe limp and often pain. This study describes a repair technique and reviews initial results. To treat abductor deficiency, we transferred the anterior half of the gluteus maximus muscle to the greater trochanter and sutured under the vastus lateralis. We sutured both in the abduction and the V-Y repair of the gluteus maximus to ensure tight repair. We repaired and reconstructed 11 hips in 11 patients with complete loss of abductor attachment and followed them for 16 to 42 months. We performed the procedure in nine patients during THA and in two later as a secondary procedure. Preoperatively, all patients had severe limp, abductor lurch, absence of hip abduction against gravity, and positive Trendelenburg signs. Postoperatively, nine hips in nine patients have strong abduction of the hip against gravity, no abductor lurch, and negative Trendelenburg sign. One hip has weak abduction against gravity, negative Trendelenburg sign, and slight abductor lurch. One patient failed to achieve strong abduction, had severe limp after six months of protection and physical therapy, and became lost to follow up. Surgical technique is important, but gluteus maximus transfer can restore abductor function in THA with a high success rate.

There is universal agreement that mechanically aligned total knee arthroplasty (TKA) improves the quality of life of patients with end-stage knee arthritis. However, international arthroplasty registries in the United Kingdom, Canada, and New Zealand have shown that 20% to 25% of patients with mechanically aligned TKA are dissatisfied. An alternative to mechanical alignment is kinematic alignment, which strives to improve patient satisfaction by restoring the three rotational axes of the knee to normal. Kinematic alignment resurfaces the knee and corrects the deformity of the limb back to normal, which is accomplished by correcting for cartilage and bone wear when positioning the components. Restoring the three rotational axes maintains the normal flexion-extension kinematic relationship between the femur and tibia and between the femur and patella, as well as the normal internal-external rotational kinematic relationship between the femur and tibia. The technique of kinematic alignment with modified conventional instruments begins by calculating the thickness of the intended distal and posterior resections of the femur, which can be done from an MRI of the knee. Intraoperatively, the surgeon measures the thickness of each femoral resection with a caliper and adjusts until each equals the thickness of the condyle of the femoral component after correcting for wear and kerf of the saw blade. The tibial cut is set so the thickness of the medial and lateral sides of the tibial resection are equal after correcting for wear. The tibial resection is conservative, creating only a few degrees of posterior slope to preserve the PCL insertion. Kinematic alignment simplifies balancing the knee. Recutting the femur or releasing ligaments is rarely needed because the knee is balanced by removing osteophytes, releasing the posterior capsule when there is a flexion contracture, and adjusting the level and angle of the tibial resection. This video shows a typical patient displaying the return of knee function and mobility 24 hours after surgery on the day of discharge. The video also provides a comprehensive list of references related to kinematically aligned TKA.

Femoroacetabular impingement (FAI) is a well-recognized cause of substantial joint damage and secondary osteoarthritis among young, active adults. Arthroscopy can often be effective in assessing and addressing this secondary damage as well as in correcting the underlying impingement. This is a technically demanding procedure that requires a systematic stepwise method in order to assure an optimal outcome. This illustrative example of pincer and cam impingement with an os acetabulum details the technique of arthroscopic correction of FAI. This includes access and survey of the joint; labral mobilization for removal of the os acetabulum and concomitant acetabuloplasty, followed by labral refixation with multiple suture anchors; and correction of the cam lesion from the peripheral compartment.

There are unique anatomic challenges to arthroscopic surgery of the hip. These include the constrained ball and socket architecture of the joint, its dense surrounding soft-tissue envelope, and the limitations on joint-space separation. Surgeons can meet these challenges by following the fundamental principles that have been developed for access to the joint; these are important for effective hip arthroscopy. Proper portal placement is essential for performing the procedure asatraumatically as possible and is also critical to the proper access that is necessary for performing more advanced techniques within the constraints of the hip region. This video details the stepwise progression of patient positioning, landmarks, portal placement, and systematic inspection of the central and peripheral compartments of the hip.

Cam and pincer lesions found in femoroacetabular impingement (FAI) serve as bony substrates for the development of labral tears and can progress to early osteoarthritis. Studies have shown that the labrum serves a key role in preserving normal joint function. Prior acetabuloplasty techniques have described surgical detachment of the labrum at the chondro-labral junction to facilitate osteoplasty. Histologic studies have reported that healing at the chondro-labral junction may be limited, and surgical labral detachment may compromise the vascular supply to the labrum. Because it is an ideal modality for the complex anatomy of the hip joint, we present a computer-assisted interactive module to demonstrate maintenance of the chondro-labral junction during acetabuloplasty. We elevated the labrum/chondral complex subperiosteally off the acetabular rim and contoured the acetabular shelf with fluoroscopic guidance. We used intermittent traction on the extremity to minimize total traction time and used vertical mattress stitches to repair the labrum. The goal of our technique is to preserve the chondro-labral junction while...
performing acetabuloplasty. The main advantage of this technique is that it allows contouring the underlying pincer deformity commonly found in FAI without compromising the contiguous transition zone between the articular surface of the acetabulum and labrum. The interactive presentation uses video, illustration, text, and sound to teach this new surgical technique in an engaging multimedia environment. It relies heavily on three-dimensional animation, which is a powerful tool to orientate the surgeon, who, in turn, is the key to successful hip arthroscopy.

MEC18
Calcaneal Fractures: Evaluation and Surgical Treatment
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The calcaneus is one of the most complex bones in the human body. If fractured, restoration of its anatomy is demanding. Displaced fractures may have permanent consequences affecting both daily living and work activities of the patient. Good clinical results could be obtained with surgical treatment. The indications for open reduction and internal fixation (ORIF) of the calcaneus remain controversial. The best indication is an intra-articular fracture with displacement of the posterior facet in a young, active patient with no medical problems. Middle-aged patients should be considered surgical candidates based on their lifestyles and fracture patterns. Surgery also improves the functional result in less active patients if the fracture displacement produces significant widening or shortening of the heel. The basis for the Sanders classification, which has been predictive of outcome, is the ease of reduction and fixation through the lateral approach. In this video, we explain the evaluation of calcaneal fractures, the guidelines for management in relationship to the severity of the fracture, and methods of avoiding surgical problems related to the lateral approach.

MEC19
◆Charcot Reconstruction with Medialis System 3.5 and the CBS System 7.5
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Management of musculoskeletal pathology in diabetic patients represents a significant challenge to the orthopaedic surgeon. For instance, diabetes mellitus has a known profound deleterious effect on bone healing, which can lead to a high rate of delayed union or nonunion in injured patients or patients undergoing elective surgery. Therefore, surgeons should pay special attention to appropriate surgical fixation techniques to reduce the risk of delayed union and soft tissue complications. In our video presentation, we show our technique for reconstruction and stabilization of the collapsed medial arch in Charcot foot (Sanders pattern II or III) using 7.5-mm cannulated screws and 3.5-mm arrow-formed plates. The desired outcome of the surgery is a stable, plantigrade foot without skin ulcerations. Postoperatively, the patient can wear a specially fitted shoe, and the foot can bear the patient’s full weight.

MEC20
Elastic Stable Intramedullary Nailing (ESIN) for Femoral Shaft Fracture-Surgical Technique
Shital Parikh, MD, Cincinnati, OH

Elastic stable intramedullary nail (ESIN) for pediatric femoral shaft fractures has become the standard of care for patients 5-12 years of age and for those weighing less than 112 pounds. From 2005 through 2010, we have treated 347 patients with femoral shaft fracture with ESIN at our institution. The video describes the surgical technique of flexible nailing in pediatric femoral shaft fracture. This technique details principles of nailing, preoperative planning, positioning of the patient, sizing of the nail, entry points for the nail, reduction maneuvers for safe passage of nails through the fracture site, and postoperative management.

MEC21
Hip Spica Cast: The Technique
Shital Parikh, MD, Cincinnati, OH
Junichi Tamai, MD, Cincinnati, OH

Hip spica cast is the standard of care for fracture management and postoperative immobilization in pediatric orthopaedic surgery. The technique of application of hip spica cast is an art. Surprisingly, educational material focusing on the principles of hip spica cast application is sparse. This video provides technical tips for proper application of hip spica cast. It demonstrates patient positioning on the spica table and proper application of a stockinet. It also discusses webril and fiberglass casts and how to trim them. It describes the figure-of-8 reinforcement of the spica cast with recommendations on how to avoid pressure points and skin-related complications. It demonstrates various options that could be used during hip spica application including pantaloon liner, bar between the legs, and finishing touches with tapes. This video provides educational material for residents, fellows, and orthopaedic surgeons.

MEC22
Four Steps to Prevent Wrong-Site Surgery in Orthopaedics
Eric Olson, MD, Waterbury, CT

Wrong-site surgery continues to be a problem in orthopaedics. Preventing this avoidable surgical error is a focus of quality improvement efforts. This video demonstrates four steps prior to each operation to ensure that the correct patient and site will be operated upon. First, “sign Your site” before entering the operating room. Second, have patients identify themselves and their correct sites when they enter the operating room. Third, have all team members agree on the site that will be prepped before the surgeon scrubs. Fourth, perform a “stop-before-incision” check, during which team members state their names and indicate the correct site.

MEC23
Anterior Plating of Clavicle Fractures With a Limited Incision
Robert Orfaly, MD, Portland, OR

Fractures of the middle third of the clavicle are common injuries and appear to be increasing in incidence. Until recently, it was widely held that most clavicle fractures could be successfully treated nonsurgically. However, recent research suggests that the nonunion rate for displaced fractures is higher than previously reported and excellent patient satisfaction is not always achieved with nonsurgical management. The Canadian Orthopaedic Trauma Society...
demonstrated in a randomized trial that surgeons can achieve improved functional outcome and a lower malunion and nonunion rate with plate fixation compared to non-surgical treatment. While internal fixation of displaced clavicle fractures may have its advantages, certain complications are unique to surgery. Most reports focus on the potential for infections and major neurovascular injury. More common surgical complications include pain caused by the hardware, tender or cosmetically unacceptable scars, and injury to the supraclavicular nerves. Compared to superior plating, hardware irritation can be decreased with anteroinferior plating or intramedullary devices. Intramedullary devices also typically allow for smaller incisions placed in Langer’s lines and hence produce more cosmetic scars and less potential for sensory nerve injury. In cases that I believe are best treated with plate fixation, I currently prefer anteroinferior plates. I also believe that some of the advantages of intramedullary pins can be achieved with plating through a limited exposure with an incision in Langer’s lines. While the incision is longer than that typically required for pins, and the potential for hardware irritation remains, surgeons can successfully use this technique for even severely comminuted fractures. Since the entire plating surface is not exposed simultaneously, planning of the incision, reduction, and plate placement are critical for success.

MEC24
Arthroscopic Suprascapular Nerve Decompression: Etiology, Diagnosis, and Surgical Technique
Sanjeev Bhatia, MD, Chicago, IL
Adam B. Yanke, MD, Chicago, IL
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Seth Sherman, MD, Columbia, MO
Anthony A. Romeo, MD, Chicago, IL
Nikhil N. Verma, MD, Chicago, IL

The purpose of this video is to update surgeons on the current state of diagnosis and arthroscopic treatment of suprascapular nerve (SSN) compression at the suprascapular or spinoglenoid notch. Although entrapment of the SSN is an infrequent presentation of shoulder pain, proper diagnosis and treatment are critical to maintain function, reduce or eliminate pain, and prevent chronic supraspinatus and infraspinatus atrophy. Our video discusses key history and physical examination findings, along with appropriate diagnostic testing and etiology, to help elucidate signs and symptoms of SSN compression. We also present a technique that allows SSN decompression at the spinoglenoid notch or suprascapular notch, either through the subacromial space or the glenohumeral joint. This method allows for facile decompression of the SSN after repair of concomitant shoulder pathology and direct visualization of the medial neck of the glenoid to avoid complications from iatrogenic SSN nerve injury related to aggressive medial capsule dissection. Finally, we discuss outcomes from the authors’ experience, as well as others, and give pertinent pearls and tips.

MEC25
Arthroscopic Transosseous Rotator Cuff Repair
Umasanthan Srikumaran, MD, Hanover, MD
Eric Black, MD, Boston, MA
Jessica Wells, Providence, RI
Jeffrey Tompson, BA, Boston, MA
JP Warner, MD, Boston, MA

The gold standard in the repair of rotator cuff tears is an open transosseous approach. Nevertheless, arthroscopy has become the preferred approach to rotator cuff repair, but this method relies on suture anchors for rotator cuff fixation. Drawbacks of anchors include retained hardware, risk of hardware migration, and risk of an adverse reaction to anchor biomaterials. Large rotator cuff tears require several anchors, but in revision surgery, poor bone stock often precludes the use of additional anchors. Emerging technology has allowed for a fully arthroscopic transosseous repair that eliminates the need for anchors. This approach blends the benefits of transosseous repair, including restoration of the anatomic footprint and compression across the rotator cuff tendon, with arthroscopic technique. In patients that require multiple suture anchors, a transosseous approach can provide substantial cost savings. We reviewed the scientific literature and our experience with arthroscopic transosseous rotator cuff repair. We demonstrate a step-by-step video technique using several case examples. We also discuss indications and contraindications and demonstrate complications and their solutions. We identified 35 patients with an average age of 56 years who underwent arthroscopic transosseous rotator cuff repair. Of these procedures, 65% were primary repairs and 35% were revision repairs. We had three intraoperative complications including suture cut-out through the lateral bone tunnel. Early clinical outcomes were equivalent to rotator cuff repair with anchor fixation. This multimedia video presentation discusses and demonstrates arthroscopic transosseous rotator cuff repair. The orthopaedic surgeon will benefit from review of the surgical technique and potential complications.

MEC26
Humeral Avulsion of the Glenohumeral Ligament (HAGL) Lesion: Current Concept in Treatment and Management.
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Edward Tang, MD, Baltimore, MD
Joshua Namm, BA, New York, NY
Saqib Hasan, BS, New York, NY
Abiola Atanda, MD, New York, NY
Kunal Kalra, MD, New York, NY

Humeral avulsion of the glenohumeral ligament (HAGL) is a rare, but increasingly recognized, cause of recurrent shoulder instability in young patients. The HAGL lesions are the result of acute traumatic glenohumeral subluxation or dislocation, usually in the setting of combined hyperabduction and external rotation. Anterior avulsion of the inferior glenohumeral ligament is the most common lesion. However, posterior lesions (reverse HAGL) can also occur, and they are a cause of recurrent posterior instability. The HAGL lesion is commonly associated with other shoulder pathology, and it may therefore be easily overlooked. Early diagnosis is critical to preventing long-term morbidity. Careful history and physical exam, as well as MRI aided by intra-articular contrast, provide the diagnosis. Most untreated HAGL lesions cause recurrent instability and require surgical repair. According to the literature, surgeons have achieved excellent results using arthroscopic, open, and mini-open/subscapularis-sparing approaches. The purpose of this video is to provide a comprehensive review of the HAGL lesion and its treatment.
**MEC27**

**Physical Examination of the Shoulder**

Jordan Case, MD, Winston Salem, NC  
Sandeep Mannava, MD, Winston-Salem, NC  
Stephanie Cheetham, MD, Winston Salem, NC  
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Allston Stubbs, MD, Winston-Salem, NC

Despite many advances in imaging modalities in orthopaedic surgery, the physical examination remains a cornerstone of patient evaluation. The multimedia presentation is a video demonstration of physical examination of the shoulder. In the video, we demonstrate the proper techniques required to evaluate the shoulder in the clinic setting. Additionally, this video uses a human biodynamics and performance laboratory to track the clinical movement and biomechanics of shoulder motion during the physical examination. After watching this video, the viewer should be able to perform a detailed shoulder examination. In particular, this video demonstrates examination techniques for evaluation of shoulder range of motion, scapular motion, strength, impingement, biceps pathology, acromioclavicular pathology, labral pathology, rotator cuff dysfunction and integrity, glenohumeral stability, and capsular stability.

**MEC28**

**Reverse Shoulder Prosthesis for Fractures**

Mark Mighell, MD, Temple Terrace, FL  
Mark Frankle, MD, Temple Terrace, FL

We present a case study demonstrating a standard technique for the use of a reverse shoulder prosthesis in the management of a proximal humerus fracture. The primary indication for reverse shoulder arthroplasty in this patient was the delayed presentation of a displaced four-part fracture. This instructional video highlights tuberosity management when using the reverse prosthesis for a four-part fracture.

**MEC29**

**Rotator Cuff Sparing Total Shoulder Arthroplasty**

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Surgeons have used total shoulder arthroplasty (TSA) to treat patients with osteo and inflammatory arthritis of the shoulder. A number of studies have demonstrated that this procedure is associated with good to excellent outcome in a majority of patients. As a result, TSA has become the treatment of choice for elderly patients with shoulder arthritis. Despite this clinical success, there are concerns that subscapularis tendon integrity may be compromised in some patients, which can lead to inferior outcomes. Therefore, LaFosse et al. introduced a novel surgical technique for TSA where the prosthesis can be inserted through the rotator interval. In this fashion, all of the rotator cuff tendons, including the subscapularis, can remain intact during the procedure. Theoretical advantages of this approach include improved subscapularis function, decreased failure rate, and accelerated postoperative rehabilitation. In this multimedia program, we illustrate a modification of this published technique and discuss its advantages and limitations to provide a comprehensive update of this promising surgical concept.

**MEC30**

**“Simple” Arthroscopic Pan-capsular Plication of the Shoulder**

Stephen J. Snyder, MD, Van Nuys, CA  
Nirav Sha, MD, LaFayette, CO

This video demonstrates a proven technique that uses figure-of-8 permanent sutures to perform an arthroscopic capsular plication for multi-directional instability of the shoulder. This technique has been used in clinical practice for more than 15 years with good success.

**MEC31**

**Surgical Anatomy of the Shoulder: Deep Inside for a Safe Surgery**

Filippo Castoldi, MD, Torino, Italy  
Francesco Caranzano, MD, Torino, Italy  
Davide Blonna, MD, Torino, Italy  
Roberto Rossi, MD, Torino, Italy  
Marco Assom, MD, Rivoli-Torino, Italy  
Davide Bonasia, MD, Torino, Italy  
Antongiulio Marmotti, MD, Torino, Italy  
Federico Dettoni, MD, Torino, Italy

The aim of this video is to illustrate the macroscopic surgical shoulder anatomy to help the surgeon during open and closed procedures. The cadaver labs provide opportunities to learn the surgical techniques, but it is mandatory to know the entire anatomy at 360°. In order for the surgeon to better understand how to perform a safe approach to the shoulder, our video illustrates anterior and posterior sides and points out anatomic landmarks, various surgical intervals, and neurovascular structures and their distances from the fixed bony landmarks.

**MEC32**

**How to Perform a Lumbar Discectomy**

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Mohammadreza Chehrassan, MD, Bologna, Italy  
Francesco Acri, MD, Bologna, Italy  
Maria Teresa Miscione, MD, Bologna, Italy  
Valentina Persiani, MD, Bologna, Italy  
Paola Capra, MD, Bologna, Italy  
Camilla Pungetti, MD, Bologna, Italy  
Antonio Mazzotti, MD, Bologna, Italy  
Sandro Giannini, MD, Bologna, Italy

Herniated disc syndrome in the lumbar spine is the consequence of a conflict between a spinal root or cauda equina and a fragment of nucleus pulposus that has migrated through the annulus fibrosus. The rapid compression of one or more spinal roots produces severe pain and/or sensitive or motor deficits. Lumbar discectomy is usually indicated after 6 to 12 weeks of conservative treatment if pain remains intractable or severe sensitive or motor deficits persist. The aim of this video is to show the lumbar discectomy of a 36-year-old patient, who suffered from 12 weeks of intractable low-back pain associated with right S1 root radiculopathy. We made a 3-cm median skin incision from L5 to S1 and detached the paravertebral muscles from the right lamina of L5 and S1. Then we performed a small laminectomy of right L5, sparing the paravertebral muscles from the right lamina of L5 and S1. After identifying the herniated fragment, the surgeon to better understand how to perform a safe approach to the shoulder, our video illustrates anterior and posterior sides and points out anatomic landmarks, various surgical intervals, and neurovascular structures and their distances from the fixed bony landmarks.
we carefully removed it. Throughout, we were careful to extract the disc fragments in order to decrease the risk of disc herniation or fragmenting that would leave residual fragments inaccessible. The herniated disc syndrome in the lumbar spine can be successfully treated by discectomy. This procedure leaves the articular facet intact and minimizes bone removal.

MEC33
Low profile Trans Iliac Pelvic Stabilization (Low-T.I.P.S.) Technique in Neuromuscular Scoliosis
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Francesco Turturro, MD, Rome, Italy
Luca Labianca, MD, Rome, Italy
Vincenzo Di Sanzo, MD, Rome, Italy
Silvio Giannetti, MD, Rome, Italy
Cosma Calderaro, MD, Rome, Italy
Andrea Ferretti, MD, Rome, Italy

Patients with neuromuscular diseases frequently develop progressive scoliosis. Severe scoliosis causes discomfort and compromises respiratory function and balance when seated. Spinal surgery is considered the primary treatment option for correcting severe scoliosis in neuromuscular disorders, and pelvic fixation is mandatory in patients with pelvic obliquity. Since P. Harrington first developed his instrumentation system, there have been considerable advances in fixation techniques. The greatest advance has been the development of the segmental instrumentation technique described by E. Luque, which was further refined in the early 1980s when Allen and Ferguson developed the Luque-Galveston technique to provide a better means of achieving secure fixation to the pelvis to correct pelvic obliquity. This technique has proven to be an effective treatment for neuromuscular scoliosis and pelvic obliquity, but it has the following disadvantages: the design of the pelvic arm has a high profile, which leads to cutaneous sores and pain; the procedure for three-dimensional bending of the rods is difficult and time-consuming; and the “windshield wiper effect” of the rod’s pelvic arm causes the appearance of radiolucent areas. In the year 2000, King described an alternative to the Luque-Galveston technique: the spinopelvic transiliac fixation (STIF) technique. This technique employs a device that consists of L-shaped paravertebral rods with threaded distal ends and specially designed washers and mating locking nuts. Its design provides better long-term control of pelvic imbalance. Two disadvantages of the STIF technique are the requirement for additional retraction or dissection of tissue laterally to allow placement of the washer-and-nut hardware and an increased prevalence of cutaneous sores in the gluteus region. We describe a low-profile Trans Iliac Pelvic Stabilization (T.I.P.S.) technique that requires no additional dissection. This procedure simplifies the surgical technique and reduces operative time and blood loss. The clinical results are equal to those reported in the literature, as we showed in our study presented at the AAOS in 2010.

MEC34
Failed MPFL Reconstruction - Analysis of Failure Factors
David Shneider, MD, East Lansing, MI

Reports of failed medial patellofemoral ligament (MPFL) reconstruction have focused on technical aspects of patellar graft position, femoral position, and patellar fracture. I have evaluated and treated two patients with failures after MPFL reconstruction due to continued instability and pain. Similar findings were present in both, including trochlear dysplasia, which was severe in one and moderate in the other; uncorrected lateral position of the patella; uncorrected Q angle; and significant patellar arthritis and surface deformity due to instability. Radiographic evaluation showed trochlear dysplasia. Arthroscopy showed severe patellar surface damage and confirmed that the patella remained unstable on the edge of the lateral femur because of lateral patellar tightness in flexion. Each patient underwent revision, including lateral release to center the patella in the trochlea, tibial tubercle transfer to align the patellar tendon with the bony tubercle, repair of the lateral release by iliotibial band rotation flap, patellofemoral joint replacement in one patient because of severe dysplasia and patellar arthritis, and revision MPFL reconstruction using quadriceps tendon in the other. Both patients have improved significantly with resolution of pain and instability. This video presents details of both cases, along with the arthroscopic findings and a summary of the surgical procedures. In both patients, failure to center the patella in the trochlea led to inability of the MPFL graft to control patellar position or stability.

MEC35
Bony Bankart Bridge Technique
Peter Millett, MD, Vail, CO
Trevor Gaskill, MD, Chesapeake, VA

Surgeons who treat shoulder instability frequently encounter acute glenoid bone loss. If bone loss is of sufficient magnitude, soft tissue repairs are at high risk of failure. Traditionally, surgical options would include open reduction and internal fixation of the fragment or anterior glenoid bone transfer. More recently, arthroscopic techniques have been introduced. In this video, we describe a technique for arthroscopic management of acute glenoid bone loss using a bridging suture technique.

MEC36
Arthroscopic Management of Glenohumeral Arthrosis
Peter Millett, MD, Vail, CO
Trevor Gaskill, MD, Chesapeake, VA

Shoulder arthroplasty for glenohumeral arthrosis provides reliable pain relief in older, less active populations. However, younger patients who desire to continue participation in high-demand activities may not be optimal candidates for glenohumeral arthroplasty. Reports indicate that arthroscopic debridement provides incomplete symptomatic relief in this cohort of patients and also that it is less successful in patients with large humeral osteophytes. Cadaveric studies show that the axillary nerve runs in close proximity to the inferior glenohumeral capsule. Compression may potentially contribute to posterior shoulder pain in a manner similar to that shown by quadrilateral space syndrome. We present a joint-preservation procedure using a technique that combines traditional glenohumeral debridement and capsular release with inferior humeral osteoplasty and arthroscopic transcapsular axillary nerve decompression.
The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an off-label use). For full information refer to page 14. An alphabetical faculty financial disclosure list can be found starting on page 19.

**Mec38**

**One-Step Full-Thickness Knee Chondral Lesions Repair with BMAC and Collagen Matrix**

**Alberto Gobbi, MD, Milano, Italy**

**Georgios Karnatzikos, MD, Milano, Italy**

**Somanna Malchira, MS, Milan, Italy**

Orthopaedic surgeons have long considered cartilage damage a difficult clinical problem because of its limited intrinsic healing potential. In this video, we present a novel technique of one-step cartilage repair with bone marrow-derived mesenchymal stem cells (MSC) and a collagen I/III matrix. We also present a case series of 15 patients with a minimum follow-up of 2 years. We prospectively followed up 15 patients (mean age, 48 years) who underwent surgery for grade IV cartilage lesions of the knee. The average lesion size was 9.2 cm². All patients underwent a mini arthroscopy and concomitant transplantation with bone marrow aspirate concentrate (BMAC) covered with the collagen matrix (Chondro-Gide®Geistlich Wolhusen, CH). We harvested bone marrow from the ipsilateral iliac crest and subjected it to concentration and activation with batroxobin solution (Plateltex®act-Plateltex S.R.O. Bratislava, SK). We treated coexisting pathologies before or during the same surgery. All patients followed the same specific rehabilitation program for a minimum of 6 months. We collected radiographs and MRI images preoperatively, at 1 year, and at final follow-up. We collected Visual Analog Scale, International Knee Documentation Committee, Knee injury and Osteoarthritis Outcome Score, Lysholm, Marx, and Tegner scores before surgery and at 6 to 12 months, and at final follow-up. Four patients gave their consent for second-look arthroscopy and three of them for a concomitant biopsy. We noted no adverse reactions or postoperative complications. Patients showed significant improvement in all scores at final follow-up (P < 0.005). In accordance with clinical results in all patients, MRI showed good coverage of the lesion and good tissue quality. Examiners reported good histological findings for all the analyzed specimens that presented with hyaline-like features. This study showed that bone marrow-derived MSC and collagen I/III matrix in a one-step procedure could represent an improvement on the currently available techniques for the treatment of grade IV chondral lesions of the knee.

**Mec39**

**Primary Repair With Healing Stimulation Technique for Acute Partial Tears of the Anterior Cruciate Ligament**

**Alberto Gobbi, MD, Milano, Italy**

**Somanna Malchira, MS, Milan, Italy**

**Georgios Karnatzikos, MD, Milano, Italy**

We present a novel treatment option for partial anterior cruciate ligament (ACL) tears in young patients that combines primary repair with healing stimulation using bone marrow-derived cells (BMS). The video clearly elucidates the rationale behind this approach, the selection criteria for the patients, and the steps of the surgery. We also present a case series with results at 3 years of follow up. From January 2003 to December 2009, 40 patients (mean age, 25 years) with partial ACL rupture underwent acute primary ACL repair of the torn ligament. The senior author performed all the surgeries within 3 weeks of injury. All patients underwent a specific rehabilitation protocol. We analyzed various parameters, including the standard knee scales (International Knee Documentation Committee, Noyes, Lysholm, and Tegner), computer knee laxity analysis, and deep flexion tests. In four patients, we performed second-look arthroscopy. Preliminary results revealed an average Lysholm score of 81%, a Tegner score of 6.8, a Noyes Score of 82% and a subjective score of 73.25%. The IKDC score demonstrated that 60% of the patients had normal knee function, and 40% had nearly normal function. Pivot-shift testing was negative, and 80% of patients had less than 3 mm anteroposterior laxity. Based on the results, primary ACL repair with BMS can lead to favorable results. However, we recommend further evaluation at longer follow-up to validate these findings.

**Mec40**

**“Simple” Arthroscopic Anterior Capsulo-Labral Reconstruction of the Shoulder**

**Stephen J. Snyder, MD, Van Nuys, CA**

**Jeffrey D. Jackson, MD, Salt Lake City, UT**

This video shows the steps of a “simple” case of anterior capsulolabral (Bankart) reconstruction of the shoulder. We believe it is critical for the arthroscopy surgeon to master the simple steps before moving on to the more complex procedures. This case also demonstrates an excellent example of a sublabral foramen, a normal anatomic variant in the shoulder. After performing the standard 15-point diagnostic arthroscopy via the posterior and anterior mid glenoid portals, we made an anterior superior portal. Then we mobilized the Bankart lesion and removed the soft tissue from the anterior glenoid using a Liberator elevator, a “Tommy Bar” lever rod, and 4.2-mm shaver. We made three drill holes and tapped on the edge of the anterior inferior glenoid. We then placed the anchors and sutured the capsule and labrum to the anchor using suture passers. We tied the knots, which secured the labrum and capsule and restored anterior shoulder stability. This educational video shows an efficient technique for performing an anterior capsulolabral reconstruction of the shoulder.
**Simplified Technique for Repairing Upper and Partial Subscapularis Tendon Tears**

Keith Nord, MD, Jackson, TN  
Richard Duey, MD, San Antonio, TX  
William Garrett, BS, Brownsville, TN

Identification and subsequent repair of subscapularis tears can be difficult. It is necessary to rapidly recognize the tear during arthroscopy and repair it before anterior swelling occurs because swelling makes the repair more difficult. To avoid recurrent subscapularis tears, the surgeon must also treat associated pathology such as coracoid impingement and biceps tear or dislocation. This DVD shows a simplified approach to identification and repair of upper and partial subscapularis tendon tears, which frequently appear as fraying. Overlying capsular tissue may make it more difficult to identify tears. A partial tear often looks like a mushroom cloud with the upper portion of the subscapularis peeling medially. This DVD shows the anatomy of the subscapularis attachment to the lesser tuberosity. It also demonstrates how to identify a subscapularis tear, from either the posterior or anterior view, during rotation of the arm. The “comma sign” can also help identify the subscapularis as it retracts, but the sign is more helpful in complete tears with retraction of the subscapularis tendon, frequently to the glenoid. The procedure includes evaluation of the distance between the coracoid and subscapularis, followed by coracoplasty if necessary. The optimal clearance is 8 mm to eliminate the ringer effect of the subscapularis against the coracoid. The simplified approach to performing a subscapularis repair involves visualization from the post portal, using the shaver to abrade the lesser tuberosity, tapping and inserting the anchor through an anterosuperolateral portal, “preplacing” the sutures further into the joint, using a penetrating suture retriever through an anterior inferior portal, and then passing the sutures through the subscapularis as a simple suture. The surgeon then makes a second pass through the same portal (or the anterosuperolateral portal) and ties through the cannula. Although a mattress suture works well for a complete tear, simple patterns work very well for partial and upper subscapularis tears. The surgeon can also perform this simplified approach if there is no need for coracoplasty because it requires less room than using most antegrade passers. The video also describes the rehab protocol for standard repairs.

**Surgical Technique: Medial Collateral Ligament (MCL) - Acute Meniscotibial Repair**

David Gordon, MB, ChB, MD, Radlett, United Kingdom  
Leo Pinczewski, FRACS, Wollstonecraft, Australia

Grade 3 medial collateral ligament (MCL) injuries involve tearing of both the superficial and deep components of the MCL. These structures may be torn from either the femur or the tibia. Tibial-sided (meniscotibial) injuries require surgery to close the knee capsule and stop synovial fluid extrusion, which prevents adequate healing of the MCL. In this video, we show and describe the surgical technique for repair of acute meniscotibial MCL injuries, including diagnosis, operating theater set-up, surgical steps, and rehabilitation.

**The Role of Platelet-Rich Plasma Injection**

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Platelet-rich plasma is defined as autologous blood with a concentration of platelets above baseline values. Surgeons have been using platelet-rich plasma in maxillofacial and plastic surgery since the 1990s. Its use in sports medicine is also growing, which is not surprising given its potential to enhance muscle and tendon healing. In vitro studies suggest that growth factors released by platelets can recruit reparative cells and may augment soft-tissue repair. Although there is minimal clinical evidence available, the use of platelet-rich plasma has increased, given its safety and the availability of new devices for outpatient preparation and delivery. The purpose of this video is to review the clinical evidence of the role of platelet-rich plasma injection in tendon problems. As the marketing of platelet-rich plasma increases, orthopaedic surgeons must be informed regarding the available preparation devices and their differences. Many controlled clinical trials are under way, but surgeons should approach clinical use cautiously until there is high-level clinical evidence supporting platelet-rich plasma efficacy.

**The Treatment of Posteromedial Corner Injuries**

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Matteo Bruzzzone, MD, Torino, Italy  
Federico Dettoni, MD, Torino, Italy  
Antongiulio Marmotti, MD, Torino, Italy  
Davide Blonna, MD, Torino, Italy  
Davide D’Elicio, MD, Torino, Italy  
Filippo Castoldi, MD, Torino, Italy  
Roberto Rossi, MD, Torino, Italy

Our video illustrates the anatomy of the posteromedial ligamentous structures of the knee and the different surgical techniques described in the literature for posteromedial corner repair/reconstruction. We divided the techniques into acute repair, capsular procedures, and posteromedial corner reconstruction using either autograft or allograft. The aim of the DVD is to show step by step the key points of each procedure. We also discuss indications and outcomes. A section of the video describes the different methods of finding the isometric point on the femur, which is probably the most important step in order to avoid stiffness of the knee. This video is particularly intended for knee and sport-medicine surgeons.
a diagnosis of spiral or oblique fracture of the distal tibial shaft and underwent reduction by percutaneous wiring and minimally invasive plate osteosynthesis from August 2007 to June 2010. The patients’ mean age was 50.4 years (24–96), and the mean follow-up period was 22.6 months (12–46). Our investigation included time to bone union and the degree of the angulation angle. We also noted complications. Postoperatively, we evaluated patients with the Olerud and Molander Scoring System for activities of daily living. On anterior/posterior (AP) radiograph, the mean varus/valgus angulation after bone union was 1.01° (0–1.5), and the mean AP angulation on lateral radiograph was 1.60° (0–4.8). The mean Olerud and Molander ankle score was 92.2 points (65–100). For spiral or oblique fractures of the distal tibial shaft, percutaneous wiring provides a simple method of anatomic reduction that is easily maintained by the wiring itself without additional manual reduction to fix the plate.

MEC46

**Femoral Osteocondroplasty and Acetabular Labrum Re-fixation in Femoroacetabular Impingement**

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Reinhold Ganz, MD, Guemligen, Switzerland

Surgical dislocation is currently widely accepted as an effective treatment of femoroacetabular impingement in selected cases and, if properly performed, has not shown major complications such as avascular necrosis. Recently this technique has also gained popularity in certain types of acetabular fracture because of its 360° access to the acetabulum. Combined transverse and posterior wall fractures, transverse multifragmentary fractures, and T-type fractures are the most common indications for this technique. Surgical dislocation allows direct reduction of the intra-articular fragment; posterior-wall and column fractures can be fixed with one or two plates and the anterior column with two screws; and extra-articular screw placement can be verified. Various authors have shown that in selected acetabular fractures, surgical dislocation can be safe and effective. In this video, we present all the steps to perform this technique.

MEC47

**Interactive Atlas of Musculoskeletal Radiology**

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Josianne Lepine, MD, Sherbrooke, Quebec, Canada
Patrick Hamel, St-Bruno, Quebec, Canada
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Radiographs constitute a cornerstone of the usual investigation process in orthopaedics, and their rigorous interpretation is a skill critical to appropriate management. We present here an interactive atlas of musculoskeletal radiographs designed for clerks and junior residents. The program encompasses more than 50 common diagnoses through more than 150 cases, each interpreted by both a radiologist and an orthopaedic surgeon, to ensure that the content is not only technically impeccable, but also clinically relevant. Medical students also reviewed and commented on the complete database to make sure that the discussion remains understandable to the undergraduate. The user can access the collection either through a web browser or through a dedicated app on any iOS device, including an iPad, iPhone or iPod Touch. On all of these platforms, we classified cases according to either their diagnosis (e.g., Galeazzi fracture, rheumatoid arthritis) or the technical finding (e.g., linear hypodensity, plate and screws, irregular joint surface). The student has access to all appropriate views (e.g., anteroposterior, lateral, oblique) and has the ability to highlight each anomaly discussed in the accompanying interpretation. We have also drawn various measurements (e.g., angulation, displacement) directly on the radiographs; these measurements can be toggled on and off. This highly interactive interface creates not only a more engaging experience, but also a more effective one, where students actually see the discussed findings. In addition to the cases, the program also includes short flashcard-type chapters about each major diagnosis. Those resources, which can be accessed directly or from any linked case, provide a more structured learning path for those students wishing to learn more about a diagnosis’ usual clinical presentations, diagnostic criteria, and simple management principles. Together, all of those features, packaged under a user-friendly interface, make for a great introductory module on musculoskeletal radiology. The mobile device compatibility allows students to enjoy the content on the go, while the “quiz” mode adds a little challenge to the whole process. We hope the audience will like this new experience and that the project will help demonstrate how multimedia and well-balanced interactivity can enhance the learning experience.

MEC48

**Giant Cell Tumor of Proximal Tibia: Resection, Cryosurgery and Fixation with Intramedullary Rods, Cement and Screws**

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Andrew Silverman, BS, New York, NY
Camilo Villalobos, MD, New York, NY
Brett Hayden, BA, Clifton Park, NY

This video describes partial resection and curettage of a proximal tibia giant-cell tumor using intramedullary rods, cement, and screws. The surgeon performs meticulous curettage and resection, followed by cryosurgery to remove any remaining tumor cells. Cement and hardware provide stability, protection, and mobilization to maximize postoperative limb function.

MEC49

**Proximal Humerus Resection for Parosteal Osteosarcoma**

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Camilo Villalobos, MD, New York, NY
James Wittig, MD, New York, NY

This video details the surgical technique for an intraarticular proximal humerus resection and endoprosthetic reconstruction for parosteal osteosarcoma. We review the patient’s preoperative imaging and discuss indications for the procedure. We also illustrate the surgical steps using the extended deltopectoral approach. The surgical steps are as follows: We release the pectoralis major from the humerus and the short head of the biceps and coracobrachialis from the coracoid. Then we expose the brachial plexus and mobilize the vessels from the tumor. We incise the rotator cuff and perform a humeral osteotomy with a 2-cm margin distal to the tumor. After assembling and inserting the prosthesis, we reconstruct the joint capsule with an aortic graft and muscle transfers for soft-tissue coverage. In the video, we also discuss postoperative treatment.
Our video describes a 57-year-old man who presented with an enlarging mass on his left shoulder girdle. The mass had been painful and growing for 5 years, but for several months his symptoms had gotten worse and the mass much larger. On the physical exam, the patient presented with very good range of shoulder motion, although there was deltoid atrophy. Radiologic studies demonstrated a large mass (20 x 17 x 10 cm) arising from his left scapula. There was a stalk that had a radiographic appearance consistent with a secondary chondrosarcoma. The cartilaginous cavity was very thick, up to 5 cm in some areas. A biopsy demonstrated cartilaginous neoplasm. The patient underwent a wide resection of the left scapula and multiple muscle rotation flaps for soft tissue reconstruction and closure of dead space, including rotation of the latissimus dorsi muscle, rhomboid muscle, serratus anterior muscle, trapezius muscle, deltoid muscle, and teres major muscle. All margins were free of neoplasm. Four years after resection, the patient is pain-free. He is doing well, playing golf, and doing all exercises without any difficulty.