CJOS

Vol 2.4 Suppl[Sept 2008]

Clinical Journal of Orthopaedic Surgery

Vasu Pai
Editor
Orthopaedic Surgeon

New Zealand

www.bonefix@co.nz

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11. Charcot Marie Tooth Syndrome. Beals Foot Ankle Clin N Am 13 (2008) 259–274

1. CMT is typically a progressive condition, so the treating physician must factor in the likelihood of deformity progression into the treatment plan.

2.Conventional radiographs under weight-bearing conditions are essential: the lateral view should be performed orthogonal to the ankle joint (film lateral to the hindfoot) and the dorso-plantar view inclined 15 to 20 degrees to assess the joint lines about the midfoot.

3.Muscle forces demonstrate very strong tibialis posterior and peroneus longus. Conversely, the peroneus brevis and tibialis anterior muscle are generally weak.

4. Reinforcing pronators and weakening the supinators can be achieved by transferring the long peroneus tendon onto the short peroneus on the lateral aspect of the foot.

5. Classically, the clinical findings of CMT include weakness of the intrinsic muscles of the hands and feet, and peroneal muscle atrophy and weakness.

6.Documentation of the strength of all the muscle groups of the lower extremities is important because it allows an assessment of the progression of the disease over time and helps the surgeon best understand the options for surgical reconstruction

7.An assessment of the range of motion of the ankle is important, with particular attention to determining if the ankle rolls normally or whether it functions more as a hinge.

8. The ankle must be assessed for evidence of ligamentous instability, which is a common presenting symptom of patients presenting with CMT. In all patients who have ankle instability, it is wise to assess for the presence of a contributory cavus or cavovarus deformity

9. To assess the degree of flexibility of the hindfoot in a patient who has a cavus deformity. The ‘‘Coleman block test’’ requires a patient to stand on a block of wood with the heel and the lateral forefoot supported by the block, which allows the plantar-flexed first ray to drop. This test allows the examiner, positioned behind the patient, to determine if the hindfoot varus deformity is corrected by this manoeuvre. Simply put, if dropping the first ray over the edge of the block allows the hindfoot to correct to a valgus position, the hindfoot is flexible. If correction of the varus is not observed, the hindfoot is rigid (Fig. 2). This single determination drives the decision making for treatment, whether it is for the manufacture of an orthosis or for surgical treatment..

10. Characteristically, muscle involvement in CMT progresses from distal to proximal. However, the described patterns of muscle function have limitations. Relative sparing of the extensor hallucis longus can be observed, which is felt to be contributory to the development of the clawed hallux.

11. Ankle dysfunction, most commonly manifested by a foot drop, is due to the relative loss of strength of the tibialis anterior relative to the superficial posterior compartment muscles.

12.Despite the relative weakness of the tibialis anterior, it can continue to be a powerful deforming force because of its static resistance to eversion in a patient who has a varus hindfoot. The hindfoot varus is presumed to be developing passively, secondary to the forefoot cavus from the described first ray plantar flexion

12 The development of the clawed hallux may be caused by the spared extensor hallucis longus muscle, which is often described as serving as an ankle extensor in the absence of the other anterior compartment muscles

13. It appears that soft tissue procedures alone do not offer significant lasting benefit. Bony procedures include the use of fusion of the ankle, hindfoot, midfoot, or the great toe interphalangeal joint, and all are performed in concert with deformity correction. Joint-sparing osteotomies, most commonly of the calcaneus and metatarsals or medial midfoot, have the same goals. The recent drift to joint-sparing procedures is driven by an appreciation that a significant degree of deformity correction can be achieved through osteotomy and an

acknowledged concern about ‘‘adjacent joint arthritis’’ that has been observed primarily in patients undergoing triple arthrodesis.

14. A common soft tissue technique in this population is a plantar fascial release. More formal plantarmedial stripping procedures have also been described. Transfers of multiple different tendons have also been applied to this patient population. Transfer of the tibialis posterior through the interosseous membrane to the dorsolateral foot (split or in isolation), transfer of the tibialis anterior centrally on the hindfoot, transfer of the extensor hallucis longus tendon to the neck of the first metatarsal done in concert with an interphalangeal fusion, transfer of the peroneus longus to the peroneus brevis, and flexor digitorum longus or Achilles tendon lengthening have been described. Younger and Hansen [25] published a thorough description of the in-phase and out-of-phase tendon transfers that can be considered in this scenario.

It is important that surgical reconstruction be done in a stepwise manner with reassessment throughout a procedure, rather than applying a given ‘‘recipe’’ of procedures to each foot with a cavovarus deformity. The degree and planes of correction of the hindfoot varus deformity that can be achieved through a translational or closing wedge (Dwyer) calcaneal osteotomy are more limited than those of more complex osteotomies Subtalar arthrodesis can also achieve a more valgus positioning with reduction through the subtalar joint, and triple arthrodesis is sometimes also required to put the foot in a proper position beneath the ankle.

16. Key principles appear to be to understand the specific features of a given patient in detail when creating a customized surgical plan that uses bony reconstruction procedures to create a mechanically balanced foot, and then to apply soft tissue releases and tendon transfers as necessary to maintain functional control of the foot and ankle, while appreciating the likelihood of progression of the neuromotor imbalance..

12.Cavus Foot. Foot Ankle Clin N Am. 13 (2008) 199–219
Assessment

Components of the surgical evaluation of the cavovarus foot

Evaluation point	Comment
Hindfoot position with block test	Varus, Neutral or Valgus
Presence of claw-toe deformity	
Rigidity of deformity	Is manual correction possible?
Strength of the muscles	Especially tibialis anterior, tibialis posterior and triceps surae
Stability of the neurologic disease	Progressive or nonprogressive
Patient age and skeletal maturity of the foot	Radiographic
Apex of the deformity	Radiographic
Type of cavus	Exclude calcaneocavus since treatment is radically different

Decision making

1.The decision to perform a first metatarsal osteotomy also can be based on intraoperative assessment of first metatarsal flexibility after release of the plantar fascia. The presence of calluses often suggests inflexibility of the forefoot. Ultimately, the decision to perform midfoot osteotomies may be based on the radiograph, which will localize the apex of the deformity and allow a measure of its magnitude
2.Critical to determining the appropriate surgical treatment is the assessment of hindfoot flexibility. If a varus hindfoot is correctible, then surgical management will be centered on the forefoot.
3.The presence of calluses often suggests inflexibility of the forefoot.
4. If the heel is found to be rigid, however, a concurrent hindfoot osteotomy or arthrodesis may be required to correct the deformity.[Coleman's test]

X ray
Meary's angle, typically 0 in the normal foot, suggesting a continuous longitudinal axis from the talus to the first metatarsal, is greater than 5° in the cavus foot. Note that the point of intersection of the lines drawn for Meary's angle corresponds to the apex of the cavus deformity on the lateral. Hibb's angle also describes the cavus position of the foot. It is normally less than 45°, but is greater than 45°
and near 90° in the cavus foot.
The calcaneal pitch angle differentiates between calcaneocavus (greater than 30°) and forefoot cavus (less than 30°), a critical point for surgical decision-making

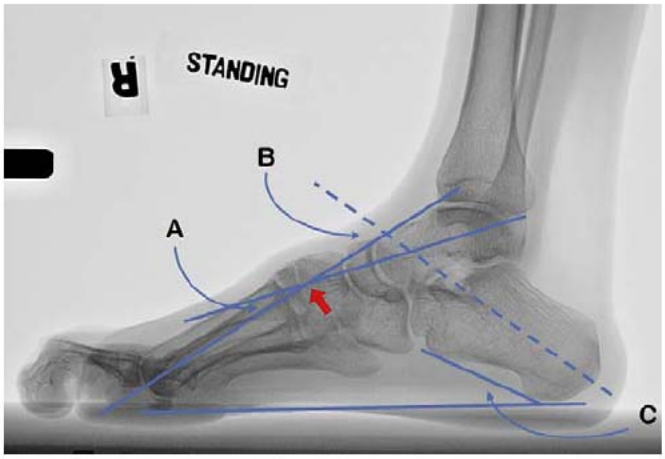

Fig. 4. Radiographic angles as measured on a standing lateral radiograph of an adolescent boy with Charcot-Marie-tooth. (A) Meary's angle, formed by the intersection of lines drawn through the longitudinal axes of the first metatarsal and talus (normal is between 0° and 5°, cavus greater than 5°). (B) Hibb's angle, formed by the intersection of lines drawn through the longitudinal axes of the first metatarsal and the calcaneus (normal less than 45°, cavus greater than 45° and typically 90°). (C) Calcaneal pitch angle, formed by the intersection of a line parallel to the floor and another line drawn along the plantar surface of the calcaneus from the tuber to the anterior process (calcaneocavus greater than 30°, forefoot cavus less than 30°).

Rx

Surgical treatment is the mainstay of managing cavovarus foot deformity in pediatric patients and consists of soft tissue procedures, osteotomies, and triple arthrodesis. Nonoperative treatment in a pediatric cavovarus deformity has a limited role

Surgical management is recommended for patients who have an anticipated progressive deformity or who have a deformity that is symptomaticand functionally limiting.

Surgical procedures may be categorized broadly as soft tissue, osteotomy, and triple arthrodesis.

The ultimate goal of surgery is to achieve a plantigrade foot with correction of the cavus deformity and preservation of all joints possible. In general, flexible deformities can be treated with soft tissue procedures; fixed deformities require osteotomies, and severe deformity with or without arthritis requires triple arthrodesis.

In progressive deformities, it is very important to not only correct the deformity through osteotomy, but to concurrently balance the muscle pathology. Recurrence has been observed even after triple arthrodesis in patients who have neurologic cavovarus and has been attributed to the persistence of unbalanced muscle action

Soft tissue releases consisting of either limited or radical plantar fascia resection for the correction of cavovarus are reserved for young patients, typically younger than 8 years, who have flexible deformities.

Dorsal tarsometatarsal (Jahss)	Proximal cut same as Cole but distal cut through TMTs	• Cannot correct greater than 20° to 25° of forefoot equinus • Perform osteotomy proximal to level of plantar callus
V-shaped (Japas)	Apex of V at navicular with limbs extending distally just proximal to cuboid/fifth MT, medial cuneiform/first MT; no resection performed but fixation required [24]	• Limited ability to correct cavus • Rarely used
Midtarsal dome (Wilcox and Weiner)	Dome osteotomy with bone resection through base of fifth MT, cuboid and three cuneiforms [49]	• Better correction of deformity than Japas • Only for patients older than 8 years
Calcaneal		• For inflexible hindfoot varus • Avoid medial approaches for wound problems
Lateral closing wedge (Dwyer)	Lateral incision creating a closing wedge with osteotomes, held with fixation; alternately, can slide distal fragment laterally	• Concomitant plantar fascia release also is done [50] • Complication: overcorrection into valgus • Results less predictable in neurologic causes of cavovarus [51]
Fusion (triple arthrodesis)		• Last resort, particularly in neuropathic foot with abnormal sensation • Reserved for patients 10 to 12 years of age and older • Muscle balance still required as recurrence is seen in patients with neurologic disease • Poor long-term results • Complications: nonunion, pain, residual deformity, recurrent deformity, talar avascular necrosis
Beak or Sifert	Dorsal wedge resection of talonavicular and calcaneocuboid joints, small shelf of dorsal talar head left under which is slid the navicular	• Less foot shortening • Talus vascular supply better preserved • Talar beak may be bothersome
Lambrinudi or Hoke	Triangular wedge (wider dorsal than plantar) from talonavicular and calcaneocuboid joints excised, laterally based wedge resected from subtalar joint; osteotomies require fixation.	

Abbreviations: EDB, extensor digitorum brevis tendon; EDL, extensor digitorum longus tendons; EHL, extensor hallucis longus tendon; FDL, flexor digitorum longus tendon; FHL, flexor hallucis longus tendon; IP, interphalangeal; PB, peroneus brevis tendon; PIP, proximal interphalangeal; PL, peroneus longus tendon; PT, posterior tibialis tendon; MT, metatarsal.

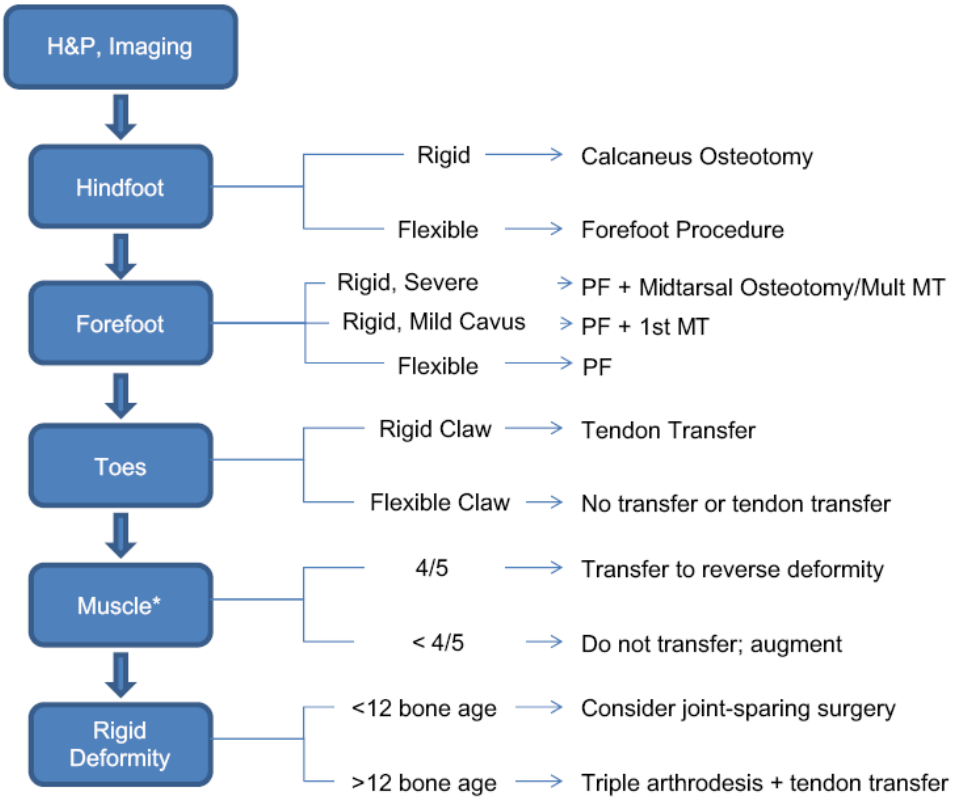

Fig. 5. Algorithm for surgical decision-making in the treatment of cavovarus feet. Each section of the foot is considered separately, and appropriate treatments are planned depending on clinical and radiographic findings. (*) designates that muscle strength evaluation will determine the appropriate transfer, and the step is critical in cavovarus feet with a neurologic cause. If rigid, large deformity is present in a low-demand patient with bone age greater than 12, then triple arthrodesis may be considered with concurrent tendon transfers for muscle balancing. If bone age is less than 12, consider extra-articular osteotomies.

Table 2
Surgical procedures for correction of the pediatric cavovarus foot

Procedure type	Description	Comment
Soft tissue		
Plantar fascia release	Percutaneous or open, medial approach, may require additional resection of intrinsics.	• Inadvertent plantar nerve injury, FDL and FHL tendon laceration possible [35] • Defer lengthening of Achilles tendon
PL to PB transfer	Proximal transfer to brevis	• May be helpful in maintaining correction in children [46]
PT transfer anteriorly	Transferred through interosseous membrane to the base of the second metatarsal	• For CMT or Duchenne's, with weak or paralyzed tibialis anterior (drop foot) [47] • Does not improve cavus; may improve a flexible hindfoot varus
EDL/EHL transfer to MT necks	Transfer extensor digitorum longus and hallucis longus to the corresponding metatarsal necks; either fuse IP of great toe and PIPs of lesser toes or attach EDB to stump of EDL/EHL	• Assists in dorsiflexion and improves forefoot cavus [38] • Osteotomy required concurrently for rigid cavus
FHL/FDL transfer to extensor mechanism (Girdlestone Taylor)	Transfer FHL/FDL to extensor hood	• Less predictable than EDL/EHL transfer [39]
Osteotomy		
Metatarsal		
First metatarsal	Dorsal, proximal closing wedge osteotomy with fixation	• Flexible hindfoot varus • Avoid damage to first metatarsal physis ⇒ shortening
Multiple metatarsal	Greenstick dorsal closing wedge osteotomy	• For global forefoot cavus, as opposed to just the first metatarsal • Complications: metatarsalgia, delayed union, nonunion, cross-union, residual varus, rocker-bottom deformity [40] • Z shape in skeletally mature patients • Concurrent plantar fascia release performed • 30% pseudarthrosis rate [37]
Midfoot		
Dorsal closing wedge (Cole)	Proximal cut through navicular and cuboid, distal cut near apex of deformity [48]	

13.Correction of Anteversion in Skeletally Immature Patients: Percutaneous Osteotomy and Transtrochanteric Intramedullary Rod. JPO 28[3]; 277-283

Background: There has been reluctance by some surgeons to accept antegrade femoral nailing in children and adolescents due to concerns about producing iatrogenic osteonecrosis or growth disturbance of the femoral neck. Others believe that with the recent advent of paediatric transtrochanteric intramedullary nails, femoral fracture and osteotomy fixation may now safely be accomplished using these devices. Extrapolating from experience treating mature patients, the senior author (P.S.) has adopted the technique of percutaneous femoral osteotomy and transtrochanteric intramedullary fixation in skeletally immature patients as a standard approach for the correction of anteversion, combining this with concomitant surgery as indicated.

Methods: With the institutional review board approval, we reviewed our experience using the Phillips intramedullary rod (EBI/Biomet, Inc, Warsaw, Ind), to secure femoral osteotomies in a series of 30 patients with 40 femoral osteotomies (10 bilateral). The aetiologies of anteversion included idiopathic and neuromuscular. There were 10 boys and 20 girls, ranging in age from 8 to 16 years and in weight from 32 to 60 kg. Additional surgical bony and soft tissue procedures were combined as indicated. These included supramalleolar osteotomy, hindfoot stabilization, tendon lengthening or transfers, and hemiepiphysiodesis in select patients. Two of the femoral rotational corrections were combined with shortening.

Results: Despite early mobilization without casts, each osteotomy healed primarily in an average of 3 months, and the complication rate was exceedingly low. One patient had removal of a loose distal interlocking screw at 6 weeks post insertion. By that time, he had formed good callus and had rotational stability; thus, the outcome was not compromised. Importantly, we have not observed osteonecrosis, growth disturbance of the femoral neck, or limb length discrepancy resulting from this treatment method.

Conclusions: In the skeletally immature patient, femoral anteversion can safely be corrected using the Phillips/Biomet antegrade locked intramedullary rod, placed through a transtrochanteric approach; growth disturbance has not been encountered. This device is well tolerated, with a low complication rate. Compared with alternative techniques, recuperation is rapid and fixation problems seen with plates or crossed pins/spica are largely circumvented. The advantages include quadriceps sparing, minimal blood loss, and the use of a load-sharing, low-profile implant.

DISCUSSION

Femoral anteversion is a clinical finding that is frequently encountered in growing children and adolescents. Although the natural history is benign for most children, the deformity may persist, whether it be due to idiopathic or neuromuscular aetiology, and become symptomatic in others. After the appropriate period of observation, select patients with persistent anteversion may best be treated with osteotomy of one or both femora. The relative indications for surgical intervention have been well described in the literature, although the optimal timing and means of fixation remain a matter of surgeon preference. The preferred level of osteotomy is still controversial, with some surgeons preferring distal and some proximal

Plate and blade-plate fixation have traditionally enjoyed widespread popularity. However, these methods require extensile exposure with significant quadriceps elevation and periosteal stripping, concomitant blood loss, and sometimes keloid scarring. These plates are not load-sharing devices and occasionally may lose purchase in the early postoperative period, especially if bone density is diminished, a prevalent trait in children with neuromuscular compromise.

The advantages of intramedullary fixation in this age/size population are self-evident [use in children between 8 and 12 years of age and up to 60 kg in weight]. No cast immobilization is required, and early, protected weight-bearing is permitted. With reduced operating time and blood loss, bilateral and concomitant surgery is better tolerated. The most important theoretical drawback of antegrade intramedullary nailing is the risk of growth disturbance and the potential for causing osteonecrosis. Although some authors have documented dysplasia and narrowing of the femoral neck, this has had no apparent adverse effects on function. The risk of such disturbance is higher in children younger than 8 years, when the trochanteric physis is still actively growing. There seem to be several risk factors implicated including piriformis fossa starting point, using the awl to open the femur, reaming to 12 to 14 mm, and inserting a large diameter nail. Although the Phillips nail is small diameter (5.5 or 6.5 mm), there is no need to ream large or attempt to fill the endosteal canal. In this age group, using a small nail with an anatomic radius of anterior curvature, hoop stresses and femoral comminution are not likely. We carefully avoid the piriformis fossa and we "ream" by hand, thus eliminating the risk of heat necrosis. Consequently, we have not observed osseous necrosis or growth disturbance. Furthermore, the percutaneous technique for osteotomy avoids quadriceps stripping and minimizes periosteal damage. This promotes rapid healing (typically 3 months) and facilitates recovery.

The paediatric intramedullary rod is a load-sharing device that permits a mid-diaphyseal osteotomy, while obviating some of the problems encountered with plates (broken screws/plates, pullout, etc). Excellent results have been previously reported in skeletally mature as well as immature patients Based on our low complication rate with trauma patients and in adolescent osteotomies, we have since adopted the use of an antegrade intramedullary rod as the fixation of choice for rotational osteotomies in children older than 8 years.

14. Radial fracture and Osteoporosis J Bone Joint Surg Am. 2008;90:953-961.
The purpose of this study was to determine the rates of evaluation and treatment of osteoporosis following distal radial fractures and to test two interventions in the outpatient
Results: The first part of the study revealed that, following a distal radial fracture, 21.3% of 240 patients had a bone mineral density examination and 78.7% were never screened. Osteopenia was the most common diagnosis among those screened (57%).
Most (72.5%) of the 240 patients received no medication, whereas 6.7% received calcium and vitamin D; 11.3%, bisphosphonates; 2.5%, HRT; 7.1%, a combination
The treatment rate for the patients who had undergone a bone mineral density examination was 2.5-fold higher than the rate for those who had not had bone mineral density testing (53% compared with 21%, $p < 0.001$).
In the second part of the study, the patients randomized to Ortho had two to threefold greater rates of bone mineral density testing than with their primary care physician and initiation of osteoporosis therapy (74% compared with 26%, $p < 0.001$) compared with patients randomized to Intervention 2.
Conclusions: Rates of evaluation and treatment for osteoporosis after fragility fractures remain low (21.3% and 27.5%, respectively). Patients who undergo a bone mineral density examination are more likely to receive treatment. Ordering a bone mineral density examination in the orthopaedic clinic can dramatically improve osteoporosis evaluation and treatment rates following fragility fractures of the distal part of the radius
The rates of evaluation and treatment for osteoporosis six months after a fragility fracture are alarmingly low In addition, we confirmed that patients who undergo a screening bone mineral density examination are more likely to be subsequently treated for osteoporosis. While 21% of patients without a bone mineral density test were treated, 53% with a bone mineral density test were started on preventive medication ($p < 0.001$).With a rate of 57%, osteopenia was the most common diagnosis after a distal radial fracture; this presents treating orthopaedic surgeons chance to treat. Majumdar: Female >50 years presenting to ED with a wrist fracture and faxed treatment guidelines for osteoporosis to the GP : 40% of the patients were being treated for osteoporosis compared with 10% of a control

National Osteoporosis Foundation recommends the following guidelines to address your patient's skeletal health:

1. A total calcium intake of at least 1200 mg/day and adequate vitamin D intake (400-800 mg/day).

2. A bone mineral density (DXA of the hip and spine) test to confirm the diagnosis of osteoporosis and determine disease severity in appropriate patients.

The National Osteoporosis Foundation recommends initiating therapy for osteoporosis in the following patients:

1. BMD T-scores below -2.0 by hip DXA in patients without risk factors.

2. BMD T-scores below -1.5 by hip DXA in patients with one or more risk factors, including prior fragility fractures.

3. Patients with a prior vertebral or hip fracture.

15. Acute elbow dislocation. Orthop Clin N Am 39 (2008) 155–161

1. The elbow is the second most commonly dislocated major joint in the adult age group

2.The incidence of elbow dislocation is 6 of every 100,000 individuals during their lifetime

3.Approximately 40% of elbow dislocations occur during sports.

4.Traditionally, the mechanism of injury was believed to be a hyperextension moment.

O'Driscoll's

Stage 1 involves the ulnar component of the LCL Posterolateral rotatory subluxation

Stage II: disruption anteriorly and posteriorly; an incomplete posterolateral dislocation

Stage III :Stage 3A, all soft tissues are disrupted; the anterior band of the MCL remains intact

Stage 3B, the entire medial collateral complex is disrupted. Varus, valgus, and rotator instability are present.

Classification

Posterolateral is the most common dislocation, followed by lateral, and least commonly posteromedial. A divergent dislocation is a rare injury

Diagnosis

1. Assessment of neurovascular status is mandatory
2. 2.Anteroposterior and lateral radiographs should be obtained
3. Look for associated injuries: occur in 10% of dislocations. The incidence of associated fractures in children is high, approaching 50%
4. Median nerve entrapment has been reported with relocation of a dislocated elbow

A late radiographic sign known as Matev sign

Treatment

An expeditious Atraumatic reduction is the goal.

Reduction is usually achieved by extending the elbow with counter traction on the arm, and a thumb is used to manipulate the coronoid, clearing the trochlea.

The elbow is examined for valgus, varus, and posterolateral rotatory instability. Varus and valgus instability are performed with the elbow in full extension and flexion up to 30 degrees. Most dislocated elbows are unstable to a valgus stress. Widening of the joint space may indicate entrapped osteochondral fragments, which must be removed surgically.

Immobilization. Immobilization greater than 3 weeks resulted in a high incidence of contractures.Sixty-five percent reported loss of motion, especially in extension.

Good results, defined as less than 15 degrees of motion loss, minimal discomfort, and normal stability, may be expected in one third of patients.

Most patients note continued improvement up to 6 months, and rarely up to 18 months.

16.Bushnell. Repair of ligamentum patella. [J Knee Surg. 2008;21:122-129.]
Rupture of the patellar tendon traditionally has been repaired via transpatellar suture tunnels.
82 cases of patellar tendon disruption in 71 patients were repaired.
14 cases involved basic primary repair with suture anchors of an acute isolated rupture of the patellar tendon and had an average follow-up of 29 months (range: 3-112 months).
There were 3 (21%) failures of repair. The remaining 11 patients had excellent range of motion and strength and
returned to their preoperative level of function.
These results are comparable with other reports in the literature.
The suture anchor technique thus represents a viable option for repair of patellar tendon ruptures and should be investigated further with a randomized, controlled trial.

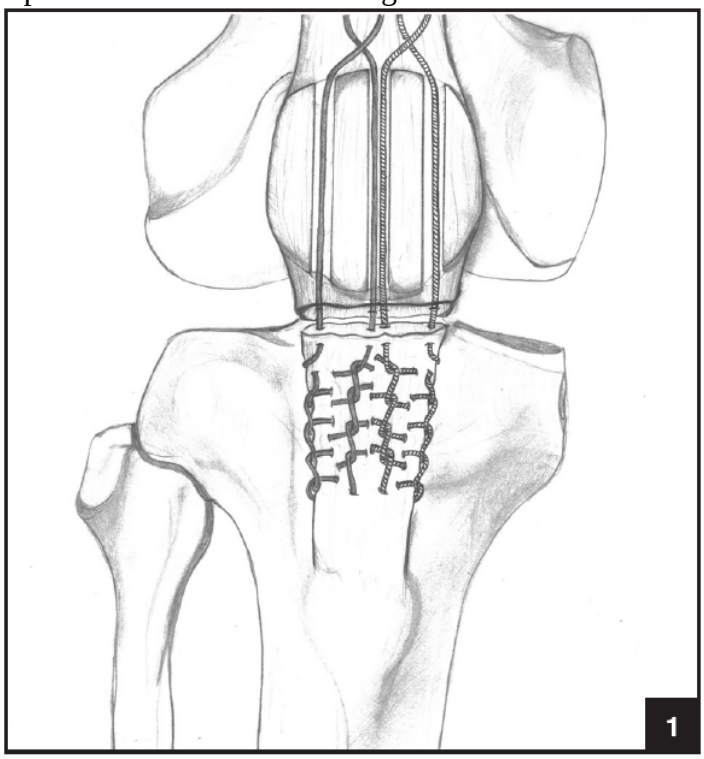

Figure 1. Illustration showing transpatellar suture tunnels. Patellar tendon ruptures traditionally are repaired using sutures passed through transosseous tunnels in the patella and tied over the superior pole. The tendon is captured using a Krackow whipstitch (pictured) or other locking-type suture weave. This technique requires exposure of the entire patella and ruptured patellar tendon as well as disruption of the quadriceps tendon.

All patients diagnosed with patellar tendon rupture had a mean age of approximately 34 years and were overwhelmingly male. More than two-thirds of the patients treated were African-American men.
Ruptures occurred most commonly at the junction of the tendon with the inferior patellar pole and almost always involved a retinacular tear.
Sports accounted for approximately two thirds of the injuries, with more than half of the injuries occurring while playing basketball.

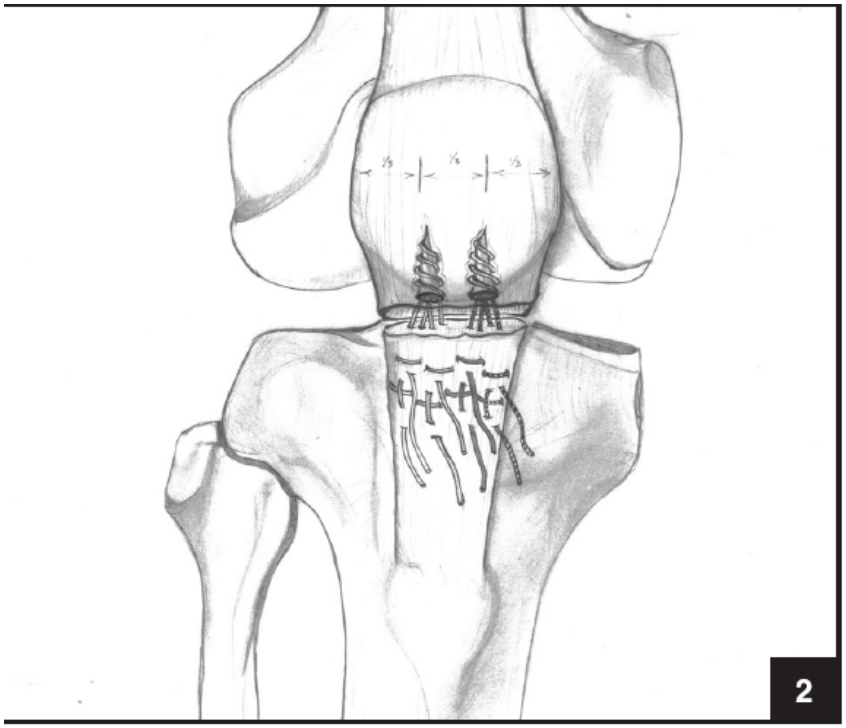

Figure 2. Illustration showing suture anchors. With our technique, 2 suture anchors are placed into predrilled pilot holes in the inferior patellar pole, roughly dividing the patella into thirds. The tendon is captured with a modified Mason-Allen locking stitch. This technique requires exposure only of the inferior pole of the patella and the proximal portion of the ruptured patellar tendon.

Overall, most of the patients with ruptures had no medical or surgical history, and only a few had a history of patellar tendonitis.
All of them returned to their previous level of function and activity, with normal or near-normal range of motion and full strength compared with their uninjured limbs.
The 3 patients who suffered the complication of re-rupture also had favorable ultimate results after revision repair using transosseous tunnels.
A recent biomechanical study comparing the suture anchor and transosseous tunnel techniques showed a statistically significant advantage in favor of the suture anchor technique in terms of cyclic gap formation and no difference in terms of ultimate failure load.

17. Lumbsden. PRC for IV Kienbock's J Hand Surg 2008;33A:493

Operative Technique

A dorsal longitudinal incision was used.

The extensor retinaculum was divided at the fourth extensor compartment.

A T-shaped capsulotomy was created.

If articular degeneration was absent or minimal on both the head of the capitate and the lunate fossa of the radius, PRC was performed.

Small (3 mm) full-thickness cartilage defects of the lunate fossa were drilled. Cystic lesions of the capitate and distal radius were curetted and bone grafted.

Limited radial styloidectomy was carried out to prevent radial trapezial impingement.

Postoperatively, a bulky dressing with an anterior plaster splint was used for 10 days followed by a short-arm cast for a total of 4 to 6 weeks immobilization.

Patients were started on supervised motion and strengthening exercises. A removable splint was subsequently worn for a variable period of time, depending on symptoms.

Methods Seventeen patients with a minimum of 10 years of follow-up were identified who met criteria for

inclusion. Thirteen of these patients were located and agreed to participate. Patients were seen, examined, and queried regarding their wrists. Range of motion, grip strength, and subjective patient satisfaction were all obtained and quantified using a clinical outcomes scale.

Results Twelve of 13 patients demonstrated excellent or good results based on the clinical outcomes scale used (5

excellent, 7 good, 1 fair, and none poor). Total arc of motion averaged 73% of the uninvolved side. Grip strength averaged 92% of the uninvolved side. Compared with preoperative values, range of motion improved an average of 16% and grip strength improved an average of 129%, an overall average improvement of 12° and 18 kg, respectively. At the most recent follow-up, all patients remained employed.

Conclusions This study demonstrates proximal row carpectomy to be a reliable motion-preserving procedure with good clinical results maintained out to an average of 15 years postoperatively.

18. Unstable elbow dislocations, Ring. J Shoulder Elbow Surg March/April 2008,280

17 patients with a posterior dislocation of the elbow and either no fracture or a minimal capsuloligamentous avulsion fracture were treated operatively for persistent redislocation after manipulative reduction. Fifteen had open reduction and ligament repair (3 with ancillary hinged external fixatin), and 2 infirm patients had closed reduction and cross pinning of the elbow joint. Among the 12 patients treated with ligament repair alone, 1 redislocated (treated with a second surgery for hinged external fixation) and 4 had residual subluxation (treated with temporary casting.

A concentric, stable elbow was eventually achieved in all 17 patients. The average flexion arc was 113_. The average Broberg and Morrey score was 88, with 3 excellent, 10 good, and 2 fair results. A small percentage of elbow dislocations require operative treatment. Ligament repair alone may not be sufficient, and protection with a hinged external fixator is recommended.

The standard treatment of posterior dislocation of the elbow without associated fracture of the radial head is manipulative reduction, followed by immobilization for no longer than 2 weeks, then active exercises to regain mobility.

The inherent stability of the elbow joint makes recurrent subluxation or dislocation uncommon. The dynamic muscular forces across the elbow help to stabilize and align the elbow by forcing the joint surfaces together.

It remains unclear which patients are at risk for instability of the elbow.

Our data suggest that unstable simple elbow dislocation occurs in some elderly women after low energy falls and some younger patients with high energy injury mechanisms. We have been impressed by the ability of the elbow to dislocate in a rigid cast with the elbow in 90° or greater flexion and are concerned that an extension block cannot be relied upon for stability in these very unstable elbows.

Cross pinning of the joint was useful when there was a need to shorten the operative time or avoid general anesthesia, as was the case in 2 of our patients. In general, we prefer hinged external fixation to cross pinning of the joint in order avoid articular damage, limit the potential for intra-articular pin track infection or pin breakage, and to allow active functional use of the elbow and exercises to help limit stiffness.

The finding (in retrospect) of a very small fracture (capsular avulsion) of the anteromedial facet of the coronoid process may be important. These probably represent a variation of varus posteromedial rotational instability.

Alternatively, it is possible that the coronoid fracture, although very small, is important to elbow stability. Ligament repair alone was associated with residual subluxation or dislocation in 5 of 17 patients (29%), including 2 in whom both the medial and lateral collateral ligaments were repaired. Ligament repair alone may not be sufficient; it may be preferable to protect the repairs with hinged external fixation. Repair of the anterior capsule with sutures through drill holes (particularly when anterior coronoid avulsion fractures are present) may provide additional stability; however, greater dissection is needed and may contribute to the potential for heterotopic be formation.

19.Beals Foot Ankle Clin N Am 13 (2008) 259–274

1. CMT is typically a progressive condition, so the treating physician must factor in the likelihood of deformity progression into the treatment plan.

2.1.Conventional radiographs under weight-bearing conditions are essential: the lateral view should be performed orthogonal to the ankle joint (film lateral to the hindfoot) and the dorso-plantar view inclined 15 to 20 degrees to assess the joint lines about the midfoot.

3.Muscle forces demonstrate very strong tibialis posterior and peroneus longus. Conversely, the peroneus brevis and tibialis anterior muscle are generally weak.

4. Reinforcing pronators and weakening the supinators can be achieved by transferring the long peroneus tendon onto the short peroneus on the lateral aspect of the foot.

5. Classically, the clinical findings of CMT include weakness of the intrinsic muscles of the hands and feet, and peroneal muscle atrophy and weakness.

6.Documentation of the strength of all the muscle groups of the lower extremities is important because it allows an assessment of the progression of the disease over time and helps the surgeon best understand the options for surgical reconstruction

7.An assessment of the range of motion of the ankle is important,with particular attention to determining if the ankle rolls normally or whether it functions more as a hinge.

8. The ankle must be assessed for evidence of ligamentous instability, which is a common presenting symptom of patients presenting with CMT. In all patients who have ankle instability, it is wise to assess for the presence of a contributory cavus or cavovarus deformity

9. ITo assess the degree of flexibility of the hindfoot in a patient who has a cavus deformity. The ‘‘Coleman block test’’ requires a patient to stand on a block of wood with the heel and the lateral forefoot supported by the block, which allows the plantar-flexed first ray to drop. This test allows the examiner, positioned behind the patient, to determine if the hindfoot varus deformity is corrected by this maneuver. Simply put, if dropping the first ray over the edge of the block allows the hindfoot to correct to a valgus position, the hindfoot is flexible. If correction of the varus is not observed, the hindfoot is rigid (Fig. 2). This single determination drives the decision making for treatment, whether it is for the manufacture of an orthosis or for surgical treatment..

10. Characteristically, muscle involvement in CMT progresses from distal to proximal. However, the described patterns of muscle function have limitations. Relative sparing of the extensor hallucis longus can be observed, which is felt to be contributory to the development of the clawed hallux.

11. Ankle dysfunction, most commonly manifested by a foot drop, is due to the relative loss of strength of the tibialis anterior relative to the superficial posterior compartment muscles.

12.Despite the relative weakness of the tibialis anterior, it can continue to be a powerful deforming force because of its static resistance to eversion in a patient who has a varus hindfoot. The hindfoot varus is presumed to be developing passively, secondary to the forefoot cavus from the described first ray plantar flexion

12 The development of the clawed hallux may be caused by the spared extensor hallucis longus muscle, which is often described as serving as an ankle extensor in the absence of the other anterior compartment muscles

13. It appears that soft tissue procedures alone do not offer significant lasting benefit. Bony procedures include the use of fusion of the ankle, hindfoot, midfoot, or the great toe interphalangeal joint, and all are performed in concert with deformity correction. Joint-sparing osteotomies, most commonly of the calcaneus and metatarsals or medial midfoot, have the same goals. The recent drift to joint-sparing procedures is driven by an appreciation that a significant degree

of deformity correction can be achieved through osteotomy and an acknowledged concern about ‘‘adjacent joint arthritis’’ that has been observed primarily in patients undergoing triple arthrodesis. Given the young age of 14. A common soft tissue technique in this population is a plantar fascial release. More formal plantarmedial stripping procedures have also been described. Transfers of multiple different tendons have also been applied to this patient population. Transfer of the tibialis posterior through the interosseous membrane to the dorsolateral foot (split or in isolation), transfer of the tibialis anterior centrally on the hindfoot, transfer of the extensor hallucis longus tendon to the neck of the first metatarsal done in concert with an interphalangeal fusion, transfer of the peroneus longus to the peroneus brevis, and flexor digitorum longus or Achilles tendon lengthening have been described. Younger and Hansen [25] published a thorough description of the in-phase and out-of-phase tendon transfers that can be considered in this scenario. The reader must be cautious in applying the specific capabilities of a given patient to this outline because of the phenotypic variability. Even in this population of patients who have often-inflexible cavus, soft tissues releases done with excessive vigor can result in profound collapse of the foot architecture, and a planus foot shape can develop 15. it is important that surgical reconstruction be done in a stepwise manner with reassessment throughout a procedure, rather than applying a given ‘‘recipe’’ of procedures to each foot with a cavovarus deformity. The degree and planes of correction of the hindfoot varus deformity that can be achieved through a translational or closing wedge (Dwyer) calcaneal osteotomy are more limited than those of more complex osteotomies

15. Subtalar arthrodesis can also achieve a more valgus positioning with reduction through the subtalar joint, and triple arthrodesis is sometimes also required to put the foot in a proper position beneath the ankle.

16. Key principles appear to be to understand the specific features of a given patient in detail when creating a customized surgical plan that uses bony reconstruction procedures to create a mechanically balanced foot, and then to apply soft tissue releases and tendon transfers as necessary to maintain functional control of the foot and ankle, while appreciating the likelihood of progression of the neuromotor imbalance..

20.Difficult THR. Warrick. Journal of Bone and Joint Surgery; Apr 2008; 90, 4

This prospective study presents the ten-year (5 to 16) clinical and radiological results of 55 primary total hip replacements (THR) using a cementless modular femoral component (S-ROM). All patients had a significant anatomical abnormality which rendered the primary THR difficult.

The mean Harris hip score was 36 (12 to 72) pre-operatively, 83 (44 to 100) at five years, and 85 (45 to 99) at ten years. The Western Ontario and McMaster Universities osteoarthritis index (WOMAC) and short-form (SF)-12 scores were recorded from the year 2000. The mean SF-12 score at five years after surgery was 45.24 (22.74 to 56.58) for the physical component and 54.14 (29.20 to 66.61) for the mental component. By ten years the SF-12 scores were 42.86 (21.59 to 58.95) and 51.03 (33.78 to 61.40), respectively. The mean WOMAC score at five years post-operatively was 25 (0 to 59), and at ten years was 27 (2 to 70).

No femoral components were radiologically loose, although five had osteolysis in Gruen zone 1, three had osteolysis in zone 7, and two showed osteolysis in both zones 1 and 7. No osteolysis was observed around or distal to the prosthetic sleeve. No femoral components were revised, although three hips underwent an acetabular revision and two required a liner exchange. At a mean of ten years' follow-up the S-ROM femoral component implanted for an anatomically difficult primary THR has excellent clinical and radiological results.

S ROM [DePuy] Ti stem; with a coronal slot; it is HA coated 18% osteolysis. Higher in patients less than 50 years. Usually in zone 1 and 7 Gruen zone.
Proximal sleeve geometry provides stability: 35 Nm rotational resistance.

21**. Hand. Long-term outcome of frozen shoulderJ Shoulder Elbow Surg 2008:231**

269 shoulders in 223 patients with a diagnosis of primary frozen shoulder were studied. The main outcome measure was the Oxford shoulder score. The mean follow-up from symptom onset was 4.4 years (range, 2-20 years). The mean age at symptom onset was 53.4 years; with women affected more commonly than men (1.6:1.0).Twenty percent of patients reported bilateral symptoms, but there were no recurrent cases. In the long term, 59% of patients had normal or near normal shoulders and 41% reported some ongoing symptoms. The majority of these persistent symptoms were mild (94%), with pain being the most common complaint. Only 6% had severe symptoms with pain and functional loss.Those with the most severe symptoms at condition onset had the worst long-term prognosis.

Primary frozen shoulder is a common:prevalence is reported as 2-5%
Frozen shoulder has been reported to be associated with a number of conditions: Dupuytren's disease, thyroid disease, Parkinson's disease,osteoporosis and osteopaenia, respiratory disease stroke, hyperlipidaemia,9ACTH deficiency, upper limb minor trauma, cardiac and neuro-surgery,5 and diabetes, where the condition is often longer lasting.
Full resolution of symptoms does not always occur, but persistent symptoms are most commonly mild. At the mean follow-up of 52.3 months, 59% had a near normal shoulder, 35% had mild/moderate symptoms, and 6% had severe symptoms.
Arm dominance has been suggested as affecting the prognosis, but no evidence of a difference was found in this study. Minor trauma to the affected limb was noted in 22% of patients prior to the onset of their symptoms; this was most frequently in the form of a very mild soft tissue injury to the upper extremity.

22. Kang. Open Vs Arthroscopic excision ganglion. ***(J Hand Surg 2008;33A:471***

Purpose The purpose of this study was to compare the postoperative rates of ganglion recurrence between arthroscopic and open techniques of dorsal ganglion (DG) excision.

Methods A total of 72 patients had either arthroscopic or open excision of a primary, simple DG by 1 of 2 senior hand surgeons. Three prospective postoperative assessments were performed. The first examination was performed at 5 to 7 days, the second at 4 to 8 weeks, and the third assessment was performed at a minimum of 1 year after surgery. Percentages of ganglion recurrence at the second and third assessments were recorded.

Results Forty-one patients had arthroscopic excision, and 31 patients had open excision. Baseline patient age, gender, and surgical side were similar between the 2 groups. Recurrence of the DG at the second postoperative assessment was 1 of 41 patients in the arthroscopic group and none in the open excision group, and, after a minimum of 12 months after excision, recurrence was 3 of 28 in the arthroscopic group and 2 of 23 in the open group.

Conclusions This study compares the rates of ganglion recurrence between arthroscopic and open DG excision.Our results demonstrate that at 12 months follow-up, the rates of recurrence with arthroscopic DG excision are comparable with and not superior to those of open excision. Our results suggest that additional long-termcomparative studies are needed to accurately differentiate the efficacy of open and arthroscopic techniques.

23. Steinbach. CPPD; HADD Radiol Clin N Am 42 (2004) 185– 205

Calcific periarthritis is was first described in 1870 in the shoulder and this remains the most commonly affected joint. There is the potential for deposition around any joint (Steinbach 2005). Crystal deposits are often asymptomatic and detected as incidental findings, but may cause acute calcific periarthritis (thought to be due to rupture of the deposit into surrounding soft tissues leading to an inflammatory response) with localised pain, tenderness and loss of function.

One of the confusing aspects of periarticular calcification is the associated nomenclature. A variety of terms have been used. A very characteristic homogeneous cloudlike appearance distinguishes HADD [as the present case] from most other disorders.

HADD should not be confused with the more linear and diffuse CPPD crystal calcifications [Table 1]. Gouty tophi are more faintly calcified and are associated with elevated urate levels. Heterotopic bone and myositis ossificans have a trabecular pattern with a cortical rim that can be distinguished from HADD and CPPD calcifications. Tumoral calcinosis, either primary idiopathic or secondary to renal disease, may mimic HADD if it presents in small amounts. Collagen vascular disease such as scleroderma or dermatomyositis can also produce calcifications that can mimic HADD. Periarticular metastatic calcification may be seen in association with sarcoidosis, hypervitaminosis D, hyperparathyroidism, and milk–alkali syndrome.

Calcium pyrophosphate [CPPD]	**Calcium hydroxyapatite crystal [HADD]**
The most common crystalline arthropathy,	Less common
Usually polyarticular . Sites: knee >hip,>shoulder , elbow	Usually monoarticular and most commonly presents: Shoulder> elbow. MPJ, Wrist
Tendon: The sites more frequently involved include: the supraspinatus , triceps, quadriceps, Achilles	The most common site of deposition is in the flexor carpi ulnaris tendon near its attachment to the pisiform
Acute/subacute/chronic and usually self limiting	Acute/subacute/chronic and usually self limiting
X ray: Prominent linear or punctuate deposits and parallel the subjacent subchondral bone	X ray: Calcifications in HADD are more homogeneous or cloudlike,

24. Bushnell. Comorbidity and stratification J Am Acad Orthop Surg 2008;16:216-227

Evaluation and management of medical comorbidities in the perioperative period can help improve surgical morbidity and mortality.Perioperative evaluation essentially is risk assessment and minimization. Patients undergoing orthopaedic treatment may benefit from temporizing measures to reduce systemic complications associated with some procedures. Patients at increased risk of cardiac ischemia should undergo risk stratification to determine possible perioperative interventions. Use of perioperative medications and/or consultation with specialists can help to address heart murmurs, bacterial endocarditis, prior stenting, heart failure, and hypertension. Patients with severe or unstable chronic obstructive pulmonary disease require the involvement of pulmonary care specialists. Renal failure can require nephrology consultation, particularly in cases of worsening renal function or urinary outflow obstruction. Hematologic considerations include bleeding and clotting. Prophylaxis should be used in patients with risk factors for peptic ulcer, as well as respiratory failure and hypotension. Nutritional status and liver disease also must be monitored and treated preoperatively. Orthopaedic diabetic patients should be placed on modified oral hypoglycemic or insulin regimens; recalcitrant cases merit consultation. Effective communication among all members of the patient's caregiving team is paramount.

Pre-0perative treatment

Meanwhile, delaying orthopaedic surgery for the sake of cardiac evaluation has been shown to have negative effects on outcome.

The decision whether to perform revascularization thus should be driven by the patient's symptoms, not by the fact that surgery is pending.

Patients with a clear indication for coronary artery bypass grafting (CABG) undergo bypass prior to other surgeries.

Preoperative percutaneous catheterization (ie, percutaneous coronary intervention [PCI]) for angioplasty or stenting is recommended only when

Surgery then should follow within 2 to 6 weeks, depending on the need

Any elective surgery that would require stopping the use of antiplatelet agents should be delayed until 12 months after stent implantation because of the risk of stent thrombosis. If necessary or emergent surgery requires stopping the use of antiplatelet agents in a patient with a recent stent, the length of interruption should be kept to a minimum, and the patient should remain on a daily full-strength aspirin

Use of Beta Blockers

Many studies have evaluated the efficacy of perioperative beta blockers in preventing perioperative cardiac ischemia. According to 2007 ACC guidelines, patients who already take beta blockers for cardiac disease should continue taking them perioperatively. However, patients with contraindications to beta blocker use (eg, decompensated heart failure, severe asthma/chronic obstructive pulmonary disorder [COPD]) should not receivethem as a part of perioperative management.

Atrial Fibrillation

For patients with preexisting atrial fibrillation, rate-control medications should be continued in the perioperative period. Anticogulation can be interrupted for up to 7 days in patients without other risk factors for thrombosis6 . Patients with additional risk factors for thrombosis should be bridged with some form of heparin in the perioperative period.

New onset of atrial fibrillation or other arrhythmias within the perioperative period merits consultation with an internist or a cardiologist.

Hypertension

Current guidelines recommend that only patients with stage III hypertension (>180/110) receive immediate treatment before surgery.4 The most common cause of postoperative hypertension is inadequate pain control.

Hypertension generally can be managed by continuation of scheduled medications with “hold parameters” to prevent hypotension. 3,4 Patients with asymptomatic mild to moderate hypertension do not require aggressive therapy before necessary or emergent surgical procedures.

Congestive Heart Failure

Patients with congestive heart failure (CHF) should remain euvolemic during the perioperative period. These patients may not tolerate large amounts of intravenous fluids perioperatively. Fluid intake therefore should be minimized, though not at the expense of causing significant volume depletion. Heart failure medications should be continued in the

Chronic Renal Failure

Patients with chronic renal failure (CRF), defined as a glomerular filtration rate (GFR) of <60 (Table 4), have higher rates of perioperative morbidity and mortality because of complications precipitated by the renal failure.

For patients with a decreased GFR, review of medication doses with a pharmacist or nephrologist may help prevent medication-induced complications.

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Cardiac Conditions That May Alter Preoperative/Perioperative Management[4]

Active cardiac conditions*
Unstable or severe stable angina
Myocardial infarction within the past 6 weeks
Decompensated heart failure
Significant arrhythmia
High-grade atrioventricular block (Mobitz II or complete)
Symptomatic ventricular arrhythmias
Symptomatic bradycardia
Supraventricular tachycardia with sustained ventricular rate >100 bpm
Ventricular tachycardia
Severe valvular lesion
Severe aortic stenosis
Symptomatic mitral stenosis
Clinical risk factors†
History of prior coronary artery disease/myocardial infarction
History of heart failure
Prior cerebrovascular disease
Diabetes mellitus
Chronic kidney disease

* For any of the following, cardiac risk evaluation is needed prior to all nonemergent surgery.

† In the presence of three or more of any of the following in a sedentary patient, obtain preoperative noninvasive cardiac testing if it has the potential to change patient management.

25. Fulkerson. Anteromedialisation for PFA.J K nee Surg. 2008;21:101-105.
This is a retrospective study of one surgeon's experience performing anteromedialization of the tibial tubercle for the treatment of isolated patellofemoral arthritis in active older patients. Patients were included if they were 50 years at the time of the surgery and had a minimum follow-up of 2 years.
Outerbridge classifications were documented by arthroscopy, and patellofemoral alignment was evaluated clinically and radiographically.
Lysholm and Fern pain scores were obtained via mailed questionnaire or phone survey. A total of 22 anteromedialization procedures were performed on 17 patients who met the inclusion criteria; 82% of patients completed the follow up survey. Mean age was 55 years. Mean follow-up was 77 months.
Based on Lysholm scores, there were 12 good to excellent, 6 fair, and 1 poor outcomes.
Anteromedialization of the tibial tubercle is a definitive treatment option for isolated patellofemoral arthritis in active older patients.
Isolated patellofemoral arthritis is present in 5% to 8% of individuals with symptomatic osteoarthritis of the knee.
Anteromedial tibial tubercle transfer produces good long-term results in patients with patellofemoral arthritis who have healthy cartilage onto which the patellar tracking may be transferred.

The **anteromedial** tibial **tuberosity** osteotomy, as described by **Fulkerson** [Am. J. Sports Med. 1990; 18; 490], is a modification of the Maquet operation. The procedure is carried out with an oblique osteotomy of the tibial **tuberosity** that is sloped in an **anteromedial**-to-posterolateral direction. The tibial **tuberosity** is **transfer**red both medially and anteriorly, with the relative proportion of each **transfer** being determined by the slope of the cut. A relatively flat, horizontal cut across the tibial **tuberosity** leads to mostly medial displacement, whereas a more vertical cut leads to greater vertical displacement. A 45° cut leads to equal medial and vertical displacements. Fixed with 2 fully threaded 4.5 cortical screws.

This operation has the disadvantage of not allowing the same amount of anterior displacement as Maquet's procedure permits, and it displaces the tibial **tuberosity** medially even in patients in whom the need for such medialization is unclear (for example, patients with a normal quadriceps [Q] angle). Medial displacement of the **tuberosity** in this setting may increase the medial femorotibial forces, resulting in pain in that compartment.

This procedure does offer a number of advantages. A single osseous cut achieves both anterior and medial displacement in patients who need this combined effect. A bone wedge is not required at the osteotomy site to maintain the displacement. If the screws used for fixation of the shingle are oriented perpendicular to the plane of the osteotomy, both the drill and the screws will be oriented toward the medial aspect of the posterior part of the tibia and the popliteal space, where injury to the popliteal artery or vein is unlikely[62]. Most importantly, in the setting of patellofemoral arthritis this operation shifts the patellofemoral contact area medially, an advantageous displacement when the arthritis is located on the lateral aspect of the patella.

If the tibial **tuberosity** were displaced 11 mm along a 45° degree plane, which is a substantial displacement, this would lead to 8 mm of medial displacement and 8 mm of anterior displacement. Ateshian and Hung[7] calculated that this would result in only a 10% reduction in

stress. This would explain why the procedure is not well suited for the treatment of global arthritis of the patellofemoral joint[63], although the correlation between clinical success and stress reduction has yet to be established. Moreover, an 8-mm **anteromedial** displacement of the tibial **tuberosity** would lead to a 4.5-mm medial displacement of the patellofemoral contact area[7], which, in some cases, may be enough to provide clinical improvement.

Pidoriano correlated the results of this procedure with the specific location of the arthritic lesions. They noted the best results in patients with arthritis isolated to the lateral portion of the patella, even when there was a complete loss of articular cartilage at that site, and the worst results in patients who had diffuse involvement of the patella, extensive involvement of the trochlea, diseased cartilage at the proximal portion of the patella, and crush injuries.

Complications associated with this operation include postoperative fracture of the tibial shaft and nonunion of the osteotomy site. The osteotomy incorporates a substantial portion of the proximal tibial cortex, thus greatly diminishing the tibia's ability to withstand torque. Stetson et al.[66] reported that six patients and Bellemans et al.[67] reported that four patients sustained a fracture of the tibia at the distal junction of the osteotomized tibial **tuberosity** and the tibial shaft. All fractures occurred as the patients progressed to full weight-bearing status. Bellemans et al. recommended that patients remain nonweight-bearing for eight weeks.

Fulkerson: Based on radiographs alone, previous reports have found malalignment present in 40% to 86% of patients with isolated patellofemoral arthritis. We found this number increases with a careful clinical examination and history. This implies that nearly all patients with atraumatic isolated patellofemoral arthritis should require some form of realignment procedure regardless of whether the primary operation is arthroplasty, unloading osteotomy, or patellar resurfacing. 40% required additional lateral release or medial plication.

26. Sharkey. THR Instability.J Bone Joint Surg Am. 2008;90:1134-1142

Dislocation occurs after 0.3% to 10% of primary THR and after up to 28% of revision THR

The surgical options

1. Consist of Revision
2. Modular component exchange
3. Bipolar arthroplasty
4. Use of a larger femoral head
5. Soft-tissue reinforcement
6. Advancement of the greater trochanter
7. Use of a constrained liner
8. Excision arthroplasty

Late dislocation occurs after five years and generally requires surgical treatment. Late dislocations account for one-third of all dislocations: wear of poly or # trochanter

Modular component exchange

This surgical treatment involves exchanging the acetabular liner and the femoral head with the main intention being to ‘‘upsize’’ the femoral head or use an elevated liner.

Bipolar arthroplasty

Problems associated with the use of bipolar arthroplasty : the potential for medial or superior migration of the prosthesis with time. In addition, groin pain appears to be not an infrequent

We do not utilize bipolar arthroplasty as main-line treatment of recurrent dislocation.

Large head

Although the early use of jumbo femoral heads has been successful, the downside to the use of a very large femoral head is the necessity to simultaneously insert a thin polyethylene liner. In addition, the longevity of total hip prostheses with a jumbo head has not been determined.

Soft tissue reinforcement

The main problem associated with these procedures is the variability in outcome. These procedures can also be technically demanding and are likely to fail if used in patients with component malpositioning.

Therefore, soft-tissue reinforcement and trochanteric advancement are being used with less and less frequency and only in cases in which component position has absolutely been determined to be acceptable.

Additionally, these procedures should be reserved for patients who are poor candidates for other options such as the use of a constrained liner.

For example, soft-tissue enhancement should be considered for a young, high demand patient or a patient with a well fixed cemented acetabular component in whom other options cannot be utilized.

Constrained liners

Its success has been widely demonstrated .

This device is especially suited for the treatment of recurrent dislocation secondary to soft tissue (abductor) deficiency. It is also an excellent option for patients with recurrent dislocation of unknown etiology, elderly patients in whom the components are well fixed, and patients :with neurological impairment,. A success rate of 72%

Disassembly and disengagement of the constrained component accounted for failures. The only factor predictive of failure was an increased acetabular abduction angle of the metallic acetabular cup.

The importance of proper preparation of the liner, correct sizing of the component, and the use of optimal cementing technique.

First, the acetabular component needs to be well exposed and the previous liner must be removed to allow assessment of the positioning of the component. Any previously placed screws also need to be removed to allow testing of the fixation of the acetabular component. If the acetabular liner is well fixed and the locking mechanism is intact, then a matching constrained liner may be snapped into place. When the cup has a suboptimal or non-functioning.locking mechanism, a constrained liner may be cemented in place. Cementation of a constrained liner into a secure cementless shell provides a suitable solution to the problem of recurrent total hip dislocation.

27.Arthur. Tibial osteotomy for chronic posterolateral instability. Am. J. Sports Med. 2007; 35; 1844

Methods: 21; observed prospectively. II stage ligamentous reconstruction was performed if required after 3months

Results: At a mean follow-up of 37 months,

40% Subsequent posterolateral corner reconstruction was not necessary.

60% underwent a second-stage ligament reconstruction at an average of 13.8 months

Seven of 9 patients with high-velocity knee injuries required a second-stage reconstruction.

Ten of 14 patients (71 %) with multiligament knee injuries required a posterolateral corner reconstruction.

In contrast, 4 of 6 patients (67%) with an isolated posterolateral corner injury did not require a second-stage ligament reconstruction.

Conclusion: Proximal tibial opening wedge osteotomy can be an effective first method of treatment for patients with chronic combined posterolateral knee injuries and genu varus alignment. Patients with low-velocity knee injuries and isolated chronic posterolateral knee injuries may not require a second-stage soft tissue ligament reconstruction after healing the osteotomy and undergoing a program of rehabilitation.

All patients were initially treated with a proximal tibial opening wedge osteotomy using a medial plate (Arthrex, Naples, Fla) and allograft bone graft

An attempt was made to correct the genu varus alignment such that the corrected mechanical axis passed through the downslope of the lateral tibial spine.

Plates with an anterior sagittal plane slope were used in patients with a concurrent ACL deficiency in an attempt to decrease the sagittal tibial slope, and plates with a posterior sagittal plane slope were used in patients with a concurrent PCL deficiency in an attempt to increase the posterior tibial slope.

After the osteotomy, patients were prescribed a knee immobilizer and given instructions on isometric quadriceps exercises and straight-leg raises performed with the knee immobilizer in place. Patients were nonweightbearing for the first 8 weeks.

Patients were encouraged to remove the knee immobilizer and to work on full knee motion out of the immobilizer 4 times daily. The use of a stationary bicycle and leg presses at one-quarter body weight were started at 8 weeks postoperatively. Patients then slowly progressed on weightbearing by one-quarter body weight per week at 8 weeks until they were full weightbearing by 12 weeks postoperatively. They were then allowed to wean off of crutch use once the osteotomy showed good evidence of radiographic healing starting at 12 weeks postoperatively. Patients were then enrolled in a progressive strengthening program.

Posterolateral knee injuries generally do not heal and often function poorly if left untreated.9’18’2° In patients with chronic PLC injuries, it is recommended to correct any concurrent genu varus alignment before any attempt at ligamentous reconstruction.

In patients with combined genu varus alignment and chronic PLC deficiency, we found that correction of the genu varus alignment alone will create sufficient clinical functional improvement and subjective stability such that a subsequent second-stage ligament reconstruction was unnecessary in 38% of the patients we studied.

It is well recognized that the best outcomes for posterolateral knee injuries occur in patients who are treated acutely with surgical repairs. It has been recommended to treat acute posterolateral knee injuries within the first 2 to 3 weeks after injury for the best outcomes.

A primary repair is very difficult to perform 3 months after injury, and these patients must be treated for a chronic posterolateral knee injury at this point. In patients with ligamentous injuries occurring greater than 3 months before initial examination, it is our practice to obtain long leg standing radiographs to assess the mechanical axis and the mechanical axis action point before any ligamentous reconstruction procedure.

In contrast to a lateral closing wedge proximal tibial osteotomy, an opening wedge osteotomy has the theoretical advantage of tightening the posterior capsule and oblique popliteal ligament complex, which can ultimately foster additional posterolateral stability.
In addition, it has been demonstrated in a cadaveric biomechanical study that the opening wedge proximal tibial osteotomy increases both varus and external rotation stability. Also, an opening wedge osteotomy allows for the potential of improved sagittal plane correction to address instability associated with either an ACL or PCL deficiency.
Plates with an anterior sagittal slope were used in patients with solely a concurrent ACL deficiency, and plates with a posterior sagittal slope were used in patients with solely a concurrent PCL deficiency because has been demonstrated that improved knee stability is seen in patients under these conditions.6 However, in our study, there was no significant difference between the preoperative and postoperative posterior tibial slopes for any the patients or within any of the groups, so no definitive conclusion can be made.