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I. Journal Club

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1.Squeaking in Ceramic-on-Ceramic Hips. The Journal of Arlhroplasty Vol. 22 No. 4 2007:496

Audible squeaking in THR with ceramic-on -ceramic hearings is a rare problem.
Acetabular component orientation was compared for 17 squeaking hips and 17 matched controls. 95% of control hips were in a range of 25 ± 10 anteversion and 45 ± 10 inclination, but only 35% of squeaking hips were in this range (P = .0003).

Eight hips squeak with bending. Four hips squeak with walking, and 5 hips squeak after prolonged periods of walking.

Hips that squeaked with walking had acetabular components that were more anteverted (40°) than hips that squeaked with bending (19) (P = .001) or prolonged walking (18) (P = .020).

The hips started squeaking after an average of 14 months. Patients with squeaking hips were younger, heavier, and taller than patients with silent hips. Key words: ceramic, squeak, alumina, hip.
Squeaking is like many other problems in joint arthroplasty, there are implant factors, patient factors, and surgical factors.
Implant factors include the bearing material with squeaking being evident in hard-on-hard bearings but not usually in polyethylene bearings.
Patient factors shown in this study to correlate with squeaking include younger age, taller height, and heavier weight. These demographic factors may simply indicate that increased mechanical demands are placed on the bearings in these patients.
The surgical factor shown in this study to correlate with squeaking is acetabular component orientation. We have clearly demonstrated that acetabular component orientation is important, but the observation that squeaking can still occur in a hip where the acetabular component is in the ideal range demonstrates that other factors are also at play. Too much Anteversion, leads to relative uncovering of the ceramic femoral head anteriorly and superiorly at the end of stance phase in normal walking, potentially causing anterior ceramic edge loading.

Possible causes for the squeaking noise in these patients are impingement of the neck of the femoral component against the rim of the acetabular component (titanium squeak) or edge loading of the ceramic head against the ceramic insert (ceramic squeak). With edge loading of ceramic bearings, there is a loss of congruency causing breakdown of fluid film lubrication, high local stresses, and grain pullout. Direct contact between the roughened ceramic surfaces moving under high loads may produce the sound.
We now pay careful attention to the anterior capsule, to ensure there is no interposition of the capsule between the superior margin of the greater trochanter and the anterior rim of the acetabulum as the hip is flexed. If such interposition is noted, we resect the offending infolded capsule.
There appears to be a group whose hips only squeak after prolonged walking, such as walking around the golf course. We have not found it necessary to reoperate on any of this group of patients, so we have not had the opportunity to inspect these bearings, and we are unsure of the cause of the squeak.
For most patients, squeaking is not problematic and the noise can often be avoided by activity modification (particularly in cases of bending squeak).
Occasionally, especially in patients who squeak with walking, the noise may be persistent enough to warrant revision surgery

2. **2.ACL METANALYSIS CANADA.** J Bone Joint Surg Am. 2007;89:1542-1552.

ACL reconstruction : Between bone-patellar tendon-bone or hamstring tendon
Methods: We performed a search of MEDLINE, the Cochrane
The quality of reporting was assessed with the Quality of Reporting of Meta-analyses (QUOROM) statement, and the internal validity was assessed with the Oxman and Guyatt index for methodological quality by at least two assessors. Assessor agreement was evaluated with intraclass correlation coefficients.We evaluated the sensitivity analysis that had been performed in the reviews.
Results: We identified eleven overlapping systematic reviews. Three reviews favored the patellar tendon graft for stability, and one favored the hamstring graft. Six reviews favored the hamstring graft to prevent anterior knee pain, and the rest were inconclusive. Only six reviews cited previously published systematic reviews on the same topic, and only two of these reviews cited all available systematic reviews that were available at that time. The quality of reporting ranged from 5 to 18 (median, 12; maximum score, 18). The internal validity ranged from 1 to 7 (median, 2; maximumscore, 7).
Reviewers reached almost perfect agreement (intraclass correlation coefficients, 0.83 and 0.94). Formal sensitivity analysis was utilized infrequently. The highest-quality review favored hamstring grafts to prevent anterior knee pain and showed weak evidence that bone-patellar tendon-bone grafts yielded better stability.

Conclusions:

When overlapping or discordant systematic reviews are encountered, each review must be appraised on the basis of its methodological quality before it can be used to guide clinical decision-making or policy making.
The currently available best evidence, derived from a methodologically sound meta-analysis, suggests that hamstring tendon autografts are superior for preventing anterior knee pain, and there is limited evidence that bone-patellar tendon-bone autografts provide better stability.

3.SLAP JBJS A 2007;89:1844-1855.

Biceps Anatomy and Function

The origin of the long head of the biceps is variableand is approximately 9 cm long2.
The capsuloligamentous structures of the rotator interval are responsible for restraining the biceps tendon within its proper anatomic location as it passes into the bicipital groove4,5. The coracohumeral ligament and the superior glenohumeral ligament are the two most important structures within the rotator interval forsecuring the biceps tendon2.

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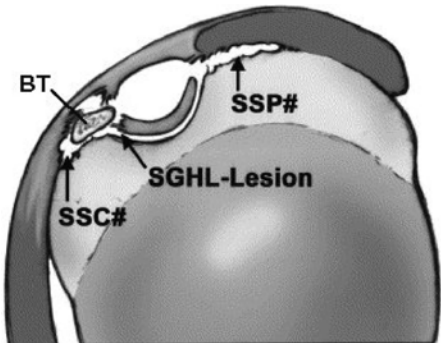
Medial subluxation or dislocation of the tendon can occur with repetitive wear or trauma to the restraining structures and is commonly associated with rotator cuff lesions, especially subscapularis Tears

Biceps Tendinitis and Instability

Is a relatively common
Primary or II
Clinical:
Popping and an audible or palpable snap during the arc of shoulder motion. Biceps tendon instability is almost always associated with pathological changes in the subscapularis



The most common finding in patients with biceps tendinitis or instability is point tenderness in the bicipital groove.

Several provocative tests

Yergason test, the Speed test, the biceps instability test, the lift-off test, and the O'Brien active compression test.
Coexisting impingement and rotator-cuff- rupture

Investigation

Ultrasonography has become a useful tool.
Magnetic resonance imaging
Arthroscopic evaluation

Nonoperative Treatment

RICE

Intra-articular injections are sometimes beneficial for older, sedentary patients.
Younger, more active individuals almost always require surgery to address the rotator cuff lesions and the biceps instability.

Operative Treatment of Biceps

1. Biceps Débridement

A simple debridement of the tendon in association with an arthroscopic subacromial decompression is appropriate for the treatment of mild tendon fraying. If the patient has a partial tear, involving <50% of the tendon, and an inactive lifestyle, a simple debridement and decompression may be sufficient.
In younger active patients, partial tears should be treated more aggressively, with any tear involving >25% of the tendon being managed with tenodesis. Tenotomy should be avoided in younger active patients, whereas it is a reasonable option for more sedentary patients.

2.**Biceps Decompression**

Biceps tendon decompression can relieve the symptoms of primary biceps tendonitis through a tenosynovial release. A release of the transverse humeral ligament, sparing the coracohumeral ligament, and an arthroscopic or open release of the bicipital tendon sheath

3.Tenotomy

There is controversy about the choice of tenotomy or tenodesis. Tenotomy is currently a more popular option for the treatment of a diseased biceps tendon but the decision regarding treatment of an inflamed but otherwise intact biceps tendon is not an easy one.
Tenotomy has obvious advantages: It is technically very easy to perform, rehabilitation is simple, and there is no need for immobilization.
The disadvantage of a tenotomy is the potential for a residual Popeye deformity caused by retraction of the biceps muscle distally. In addition to this deformity, cramping and weakness with vigorous activities.

In several studies, patients over sixty years of age did not experience this fatigue2

4.**Tenodesis**

Tenodesis can be performed either open or arthroscopically, with use of soft-tissue or osseous fixation, and above or below the bicipital groove.

The advantages of a biceps tenodesis are a better cosmetic result and restoration of strength, whereas the disadvantages include a more difficult operation, the possible need for costly implants, a longer rehabilitation, a period of immobilization, and the possibility of the tenodesis failing.

Investigators comparing the mechanical strength values following tenodesis fixation techniques concluded that the interference screw and bone tunnel technique provides the greatest initial fixation strength.

5. **Biceps Instability**

Subluxation or dislocation of the biceps tendon is almost invariably associated with rotator cuff tearing, particularly of the subscapularis, and pathological involvement of the rotator interval.

The treatment options for biceps instability include tenotomy, tenodesis, or reconstruction of the stabilizing structures that support the biceps tendon.

Tenodesis of the biceps, in conjunction with a subscapularis repair, is appropriate if a patient is young and active, whereas a tenotomy is an appropriate intervention for a less active patient structures in the rotator interval

The SLAP Injury

Superior glenoid labrum injuries were apparently first defined as SLAP (superior) labrum anterior and posterior) tears by Snyder.

A type-1 SLAP lesion has fraying on the inner margin of the labrum: Rx is debride

A type-2 SLAP lesion is the most common clinically relevant abnormality. It occurs when the superior labral attachment of the biceps tendon pulls off the superior glenoid tubercle The most common of these subtypes is the anterior lesion

A type-3 SLAP lesion is a superior labral bucket-handle tear often extending from anterior to posterior at the biceps insertion

In a type-4 SLAP lesion, the bucket handle tear extends into the biceps tendon

Type-5 SLAP lesion is a Bankart lesion extending superiorly to the biceps attachment

A type-6 SLAP lesion has a labral flap with a type-2 biceps elevation

Type-7 SLAP lesion is a lesion of the middle glenohumeral ligament extending to the biceps

Clinical Presentation

Trauma, in swimmers, or in long-time overhead-throwing athletes

The patients describe clicking and popping often associated with anterior shoulder pain and reduced function, including decreased throwing or serving velocity or slower swimming

The dead-arm syndrome

Proper patient selection is critical.

A SLAP lesion should be anticipated prior to surgery so that it is not an unexpected finding at arthroscopy.

<40 years of sportsman

Physical Examination

Several tests have been proposed for the diagnosis of a clinically relevant SLAP These tests often provide inconsistent results.

The modified O'Brien test, the crank test, the anterior slide test, the Jobe relocation test, the biceps load test

Nonoperative Treatment

RICE

Stretching, and strengthening to address muscular imbalances.

Surgical Treatment

The arthroscopic treatment of a SLAP lesion depends on the type of lesion.

A type-1 SLAP debridement

A type-2 Reattachment of the superior aspect of the labrum

A type-3 SLAP lesion requires removal of the bucket-handle tear.

A type-4 lesion requires débridement of any flap or bucket-handle tear + a biceps tenodesis.

Types-5, 6, and 7 SLAP lesions are associated with shoulder instability, which should be corrected at the same time as the SLAP lesion is repaired and any flap should be débrided.

The suture anchors are currently the preferred method of biceps-labral fixation.

4.The Outcome and Structural Integrity of Arthroscopic Rotator Cuff Repair with Use of the Double-Row Suture Anchor Technique JBJS A 2007; 89: 1533 Laurent Lafosse

Evaluates the functional and anatomic results of arthroscopic rotator cuff repairs performed with the double-row suture anchor technique on the basis of computed tomography or magnetic resonance imaging arthrography in order to determine the postoperative integrity of the repairs.

Methods: A prospective series of 105 consecutive shoulders undergoing arthroscopic double-row rotator cuff repair of the supraspinatus or a combination of the supraspinatus and infraspinatus were evaluated at a minimum of two years after surgery.

Conclusions: Arthroscopic repair of a rotator cuff tear with use of the double-row suture anchor technique results in a much lower rate of failure than has previously been reported in association with either open or arthroscopic repair methods. Patients with an intact rotator cuff repair have better pain relief than those with a failed repair. After repair, large and massive rotator cuff tears result in more postoperative weakness than small tears do.

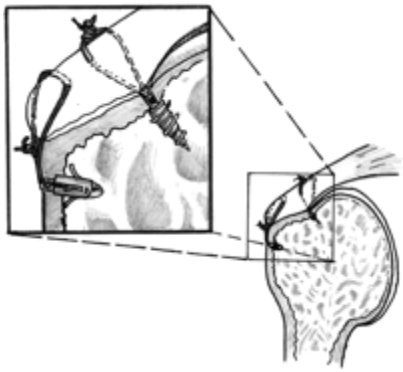
More recently, investigators have attempted to correlate the integrity of the arthroscopic repair with postoperative function and have demonstrated widely varying results, with generally high failure rates All of those previous studies were performed with use of a simple single-row suture repair technique.

Inclusion and Exclusion Criteria
Between 1999 and 2003, 197 all-arthroscopic rotator cuff repairs.

Exclusion criteria
Open repair, a concomitant subscapularis tear,
The refusal of the patient to have a postoperative arthrogram, and a duration of clinical follow-up of less than two years. 115 cases included

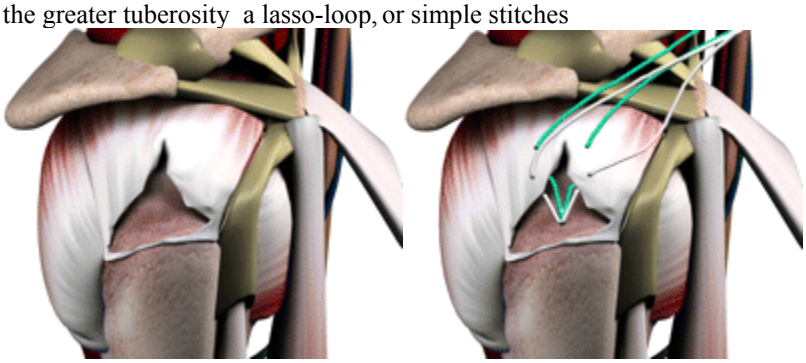
An intact repair
A **complete anatomic reconstruction** of the footprint.
Intratendinous leakage
Structural failure of the rotator cuff repair was considered to have occurred when there was any extravasations of contrast medium into the subacromial space.

L**eakage of contrast medium into the subacromial space after rotator cuff repair could not be used as a method to evaluate the structural integrity of the large repairs**

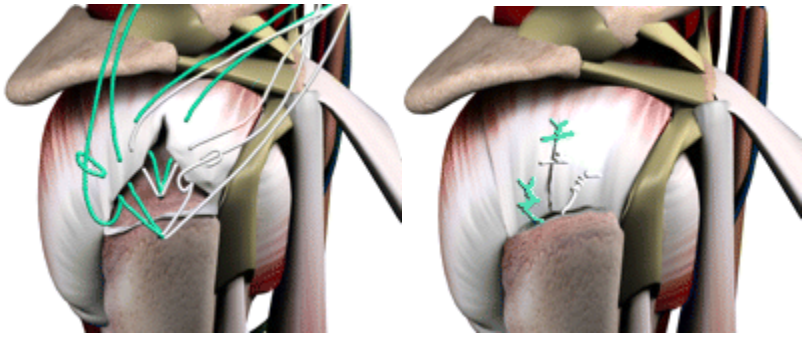


Arthroscopic Rotator Cuff Repair
The beach-chair position [3 kg of traction].
Portals were placed posteriorly, posterolaterally, laterally, anterolaterally, anteriorly

The subacromial space was cleared of bursa
The coracohumeral ligament, the superior capsule, and/or the rotator interval were released as needed in order to maximize the mobility
The greater tuberosity had been gently decorticated with a burr
The first anchor was placed at the junction of the articular cartilage and the medial aspect of the footprint on the greater tuberosity a lasso-loop, or simple stitches



In our experience, double-row suture anchor fixation is used for tears that have complete or near complete detachment of the tendon footprint in the sagittal plane. (Permission to reproduce this figure must be obtained from T.A.G. Medical Products, Kibbutz Gaaton, Israel.) **Fig. 4-B** The medial row of sutures is passed through the cuff prior to passing the sutures through the lateral edge of the torn tendon.



The lasso-loop technique was used on the lateral row of sutures. We believe that this technique provides superior fixation in comparison with the simple suture configuration for the lateral row.

1. Pain Score
Marked pain relief after rotator cuff repair.
Visual analogue 4.7 ± 4.2 (range, 0 to 15) ➔ 12.8

2.The active range of motion
Improved after rotator cuff repair.
Flexion : 108° ± 39° ➔ 147° ± 12°
Abduction: 94° ± 40.5° ➔ 142° ± 18°

3.Strength
also improved significantly
2.9 ± 1.4 kg ➔ 6.3 ± 2.7 kg.

Constant Scores
43.2 ± 15.1 ➔ 80.1 ± 11.1 points

Analysis of Structural Integrity of Repair with Computed Tomography or Magnetic Resonance Imaging Arthrography
Only 12 of the 105 shoulders in the present study had structural failure of the double-row suture anchor

repair as assessed with computed tomography or magnetic resonance imaging arthrography after a mean of twenty-three months of follow-up

Comparison of Clinical Outcome Measures According to Tear Size
We could not identify any significant differences in the outcome measures between shoulders with large rotator cuff tears and those with massive rotator cuff tears.

However, when the clinical outcome measures from the group of shoulders with small rotator cuff tears were compared with those for shoulders with either large or massive rotator cuff tears, there were several significant differences. The group of shoulders with small rotator cuff tears achieved a mean strength of 7.19 ± 3.0 kg (range, 2 to 12.5 kg) after rotator cuff repair, compared with only 5.4 ± 1.92 kg (range, 3 to 9 kg) for the group of shoulders with massive tears and 6.11 ± 2.53 kg (range, 2.0 to 12.0 kg) for the group of shoulders with large tears ($p < 0.05$ for both comparisons).

DISCUSSION
The technique for double-row suture anchor fixation described by Lo and Burkhart[3]. Those authors proposed that by placing two rows of suture anchors, one on the medial side of the footprint and the other on the lateral side, a more anatomic repair configuration could be achieved. The result, they hypothesized, would be a stronger repair construct and a larger contact area for healing, yielding superior clinical outcomes and a more durable rotator cuff repair.

To our knowledge, the present report describes the first study to prospectively evaluate the structural integrity of arthroscopic rotator cuff repairs performed with use of the double-row suture anchor technique and to correlate the integrity of these repairs with clinical outcomes.

The rate of structural failure after double-row fixation was only 11% and, to our knowledge, this value represents the lowest rate of structural failure after either open or arthroscopic repair as reported in the literature.

Tuohet: single-row suture anchor fixation, transosseous repair, and double-row suture anchor fixation[11]. The authors reported that the contact pressures for double and single-row suture anchor fixation were not significantly different and that both generated significantly higher contact pressure than did the transosseous repair.

5. TKR. Patients preference. JBJS B 2004, 86-B VOL. 86-B, No.7, SEPTEMBER 2004

Patients may have preferences as to the type of knee prosthesis which they receive and surgeons certainly have preferences for different designs.

The most popular prostheses, however, have been the posterior cruciate-substituting (PS) implant which calls for the excision of both cruciate ligaments and that which retains only the PCL.

PS is done either with a central post or a symmetrical deep dished tibial polyethylene insert.3-6 The PCL implant is usually called a cruciate-retaining prosthesis but in reality the ACL has been sacrificed.

The medial and lateral pivot (MLP) prostheses (Fig. 1) are a new concept.7 These have an asymmetrical tibial polyethylene component. Anterior and posterior translation is limited in either the medial or lateral compartment. Translation in the other compartment is unrestricted.

In this study bilateral knee replacements were performed using a different prosthesis on each side. The patients were questioned and examined to determine their preference. A comparison of the results in the same patient eliminated any variability introduced by differencesin age, weight, gender, comorbidities, quality of bone, and level of activity.

ACL	**201**
MLP	**142**
PCL	**199**
PCS	**146**

Patients and Methods

Beginning in June 1987 all patients who underwent bilateral staged primary TKRs

Prospective study which was randomised with two exceptions.

The MLP prosthesis was not used until 1999.

The study protocol was approved by the Institutional Review Board

The patients served as their own controls. One surgeon (JWP) performed all the operations.

The primary exclusion criteria were a history of patellectomy, high tibial osteotomyor previous septic arthritis. In addition, patients with flexion of less than 90°, flexion contracture of 20° or greater valgus deformity greater than 15°, or varus deformity of greater than 20° were excluded as were those with a unicompartmental, bicompartmental, mobile-bearing, or afixed or rotating hinge prosthesis.

Patients requiring bilateral knee replacement received one type of prosthesis in one knee and another type in the other. The four types of prosthesis used were as follows:
1)the ACL-PCL prosthesis (Biopro Inc, Port Huron, Michigan
2) the MLP prosthesis (Encore Orthopaedics, Austin,
Texas and Wright Medical Technology)
3) the PCL prosthesis (Biomet, Warsaw, Indiana; Biopro; Depuy, Warsaw,
4) the PS prosthesis (Biomet, Depuy, Howmedica, Wright Medical and Zimmer).

In all patients, implantation of the prosthesis involved cementing the components and resurfacing the patella witha polyethylene button.

The same technique was used for each TKR including the balancing of ligaments, the use of guides, and the handling and exposure of tissues.

Results
Radiologically, all the implants appeared to be soundly fixed. There were no progressive radiolucent lines at the cement-bone or prosthesis-cement interfaces.
Post-operative alignment was between 0° and 7° of valgus. All the patients had a tibial polyethylene thickness of between 10 and 14 mm

Discussion
1. It is clear from this study that patients often have a preference for one prosthesis over another**, but the reasons are not obvious**.

In simplest terms, knee prostheses may be divided into anatomical or functional designs. ACL-PCL and some PCL prostheses try tosimulate normal anatomy while PS, MLP and many PCLknees aim for improved function without retaining or recreating=normal anatomy and are therefore functionaldesigns.

The purpose of this study was to provide **information only on patients' preference.**

No attempt was made to make conclusions about loosening or wear of the implant

The post-operative knee scores in this study were higher than those usually reported because the fair and poor results were excluded. This was necessary so that a poor result on one side would not be compared with a goodresult on the other.

Clinical results
The PCL have shown no clear advantage for retaining the PCL or substituting it with a PS prosthesis.2-5 The results of both techniques are excellent in most series. This was true even in bilateral paired series.

The tibial component of the PCL prosthesis was significantly posterior with respect to the femur in extension,demonstrated anterior translation with flexion and had exaggerated medial condylar translation on deep knee flexion.

Posterior stabilised knees remained stable in the midsagittal area through the positions in which the central post was engaged.13,14 **The PCL-retaining knees had the most abnormal k**inematics.14

Since all the current knee prostheses perform well, paired bilateral studies may be the best way to determine the subtle differences which a patient may experience. The conclusion of this study is that patients with bilateral procedures are more likely to prefer retention of their ACL and PCL or substitution with the medial or lateral pivot prosthesis..

6.Fractures of the Radial ead and Neck: Current oncepts in ManagementJ Am Acad Orthop Surg 2007;15:380-387

Abstract

Despite advances in surgical techniques, fractures of the radial head are challenging

Most radial head fractures can be managed nonsurgically, with emphasis on early ROM

Treatment of more complex radial head fractures, however, especially those associated with elbow instability,remains controversial.

The choice for such injury is between open reduction and internal fixation and arthroplasty. Modern implants and techniques have led to improvements in both of these technically demanding procedures.

With proper care and understanding of the mechanism of elbow function, better longterm results can be achieved.

The current literature suggests that the Mason classification guides choice of the best treatment modality to achieve optimal long-term function.

Fracture complexity also should be used as a guide when selecting treatment, and proper surgical technique is critical for success.

Hotchkiss modification Mason Classification*

Type I Minimally displaced fracture, no mechanical block to forearm rotation, intra-articular displacement <2 mm
Type II Fracture displaced >2 mm or angulated, possible mechanical block to forearm rotation
Type III Severely comminuted fracture, mechanical block to motion
Type IV22 Radial fracture with associated elbow dislocation

Approach

The global approach begins with a 20- to 25-cm posterior midline incision centered on the olecranon. Fullthickness fasciocutaneous flaps are elevated to expose the lateral and medial side of the elbow, as required.23 Once these flaps are raised, the approach continues using the same lateral interval as for theKocher approach.
The advantage of the global approach is the ability to address problems on both the medial and lateral sides. It also allows fixation of associated proximal ulna fracture.
The disadvantages are the long incision and the creation of large flaps on either side for visualization.

ORIF

Kocher's
The fracture that extends into the radial neck requires plate fixation with a mini-fragment T-plate
The plate is placed in the safe zone: This 45° arc should be confirmed by testing forearm rotation after temporarily fixing the plate with K-wires.
Careful to ensure extra-articular screw placement.
The bicipital tuberosity is the distal limit of the plate placement. Anything distal to that structure endangers the posterior interosseous nerve.
Excision of the radial head
Acute excision of the radial head without replacement is contraindicated in the presence of concomitant disruption of the MCL or the interosseous membrane.

Radial Head Arthroplasty

Comminuted radial head fracture when stable internal fixation is not possible and the fracture involves more than one third of the radial head, when associated ligament injury

The controversy is in deciding exactly which fractures of the radial head meet these criteria.

Technical Considerations The metallic prosthesis should replicate as closely as possible the native radial head

A prosthesis with a too-large diameter will load the margins of the sigmoid notch, whereas a too-small prosthesis will point load on the sigmoid notch. Additionally, a radial head with an incorrect diameter has a cam effect, producing abnormal loading on the capitellum.29 The correct diameter of the radial head prosthesis is selected by comparing the excised radial head fragments with the trial prosthesis. The height of the prosthesis is also important. Fortunately, most fractures occur at the head-neck

The patient with associated elbow fracture-dislocation is prescribed a 6-week course of indomethacin to minimize the risk of heterotopic bone formation.26 Use of radiation is controversial. Stein et al32 reported good results in 10 of 11 patients with elbow trauma who were treated with 700 cGy radiation within 72 hours of surgery.

The problems of using a too-large or too-small prosthesis, including the dangers of overstuffing the joint, have been described in biomechanical studies.29 However, no reports are available to confirm that these issues are clinically relevant.

Another shortcoming in the literature on radial head fracture management is the absence of direct comparison between the results of ORIF versus arthroplasty. We found no reports in the English-language literature directly comparing the results of these two treatment modalities or reporting on the long-term effects

7.Tarsal Coalition in Adults. Foot&Ankle internation. 21(8), August 2000, pp 669-672

32 feet in 27 adults 1993-1998
There were 18 subtalar coalitions, 14 calcaneonavicular coalitions and 1 naviculocuneiform coalition.
The average age was 40 years.
Clinically, 22 feet had a neutral heel, 7 had a valgus heel with flattening of the longitudinal arch, 1 had a varus heel and 2 heels had an unknown position. Subtalar motion was decreased in 23 feet. Peroneal spasm was only seen in 2 patients. 11 feet were asymptomatic.

Nonoperative treatment consisting of activity modification, nonsteroidal anti-inflammatory medications and casting was successful in the majority of patients. Subtalar fusion was performed in 4 feet and coalition resection in 1.

The treatment of a symptomatic tarsal coalition in the adult is as in children but the clinical presentation may differ.

INTRODUCTION^

Tarsal coalition is a well-described entity in the pediatric and adolescent population.
The incidence of tarsal coalition has been estimated by many authors to be less than 1 percent.
Talocalcaneal and calcaneonavicular coalitions are by far the most common, occurring with approximately equal frequency. These occur bilaterally in about 50 percent of cases.2

MATERIALS AND METHODS^

The clinical diagnosis was confirmed by radiography.
Treatment was initially nonoperative in all symptomatic patients. This included a trial of activity modification and nonsteroidal anti-inflammatory medications, shoe modifications or orthotics. Physical therapy was attempted in one patient whose main complaint was ankle instability. A six week trial of a below the knee weightbearing cast was tried if all other nonoperative measures had failed. If symptoms persisted after exhausting all nonoperative modalities, surgery was performed. Surgical treatment consisted of either a coalition resection for calcaneonavicular coalitions, or subtalar arthrodesis for talocalcaneal coalitions.

RESULTS

Of the 27 adults identified, there were 16 males and 11 females. There were 33 coalitions in 32 feet with 1 foot having a talocalcaneal as well as a calcaneonavicular coalition (Table 1). The average age was 40 years with a range from 16 to 81 years. Only 2 patients were under 20 years of age, both males and both skeletally mature. There were 13 left, 10 right and 5 bilateral coalitions. 18 coalitions were talocalcaneal, (all middle facet), 14 were calcaneonavicular and 1 was naviculocuneiform. Nine patients with 11 feet were asymptomatic in regard to the coalition, which was noted as an incidental finding. Follow-up ranged from 4 to 62 months, averaging 28 months.
Plain radiography suggested the coalition in 30 feet. The diagnosis was made based on either definitive identification of a bony bar or secondary radiographic findings. These secondary findings include dorsal beaking of the neck of the talus, broadening of the lateral process of the talus or narrowing of the posterior talocalcaneal joint space.2,6,21 In 2 feet, the plain radiographs were negative and the coalition was diagnosed with a CT scan. ACT scan was used to confirm a coalition in another 5 feet and MRI was used to confirm a fibrous or nonosseous coalition in another 7 feet.
Of the 11 feet in whom the tarsal coalition was asymptomatic and an incidental finding there were 5 feet (4 patients) who were seen for forefoot pain not related to their coalition, 2 feet (2 patients) who were seen for plantar fasciitis, one patient who had the bilateral calcaneus fractures, one patient who was seen for a bimalleolar ankle fracture on the opposite side of the coalition, and one patient who had an acute ipsilateral flexor digitorum longus injury during a sporting event. The remaining 18 patients with 21 feet were evaluated for symptoms referable to their coalition such as ankle sprains, instability or lateral foot pain in the sinus tarsi.

DISCUSSION

The peroneal spasm, when present, has been attributed to adaptive shortening of the peroneal tendons. When attempting to invert the hindfoot in this situation a reflex spasm of the muscles occur. However, the more neutral heel position in adult feet with coalitions may prevent the shortening of the peroneals and may account for the lower incidence of peroneal spasm.

The number of asymptomatic coalitions was 11 of 32 feet (34 percent). This does not, however, represent the prevalence of this condition, as this population of patients was selected based upon a co-existing foot complaint. This does show that there are a significant number of patients with other foot pathology that also have an incidental tarsal coalition.

Talocalcaneal and calcaneonavicular coalitions are, by far, the most common and this was demonstrated in this study in adults.

In conclusion, tarsal coalition in the adult presents somewhat differently that in children. **Neutral heel alignment without pes planus or peroneal spasm is the usual presentation**. Many are asymptomatic but the diagnosis can be made based on the physical exam, demonstrating diminished or no subtalar motion, and routine radiographic studies. Treatment is the same as in children with nonoperative modalities being successful in many and surgical intervention reserved for those with persistent symptoms after a trial of nonoperative therapy.

8. The 2007 ABJS Nicolas Andry Award: Three Decades of Clinical, Basic, and Applied Research on Thromboembolic Disease after THA: Rationale and Clinical Results of a Multimodal Prophylaxis Protocol. Salvati, New York. CORR459:246 Abstract

> 5000 THR/last on4 decade; Observed a decrease of antithrombin III THA was greater than in general surgery. Therefore, we began administering intraoperative unfractionated heparin intravenously and conducted three prospective clinical trials (one of which was randomized and double blind).
In the early 1990s, and with the advent of faster markers of thrombosis, we showed thrombogenesis is strongly activated as soon as the femoral canal is invaded, increasing progressively with rasping, cementation, and insertion of the femoral stem. Accordingly, we tested the efficacy of a low dose (1000 U) of unfractionated heparin administered intravenously a few minutes before a femoral preparation and found it suppressed fibrin formation during femoral preparation and insertion of the femoral component. In a subsequent dose-response study, 10 U/kg of unfractionated heparin inhibited fibrin formation, whereas 20 U/kg completely suppressed fibrin formation.

In another retrospective study, we observed in-hospital deaths resulting from PE declined sixfold from 0.12% with general anesthesia (1981-1986) to 0.02% with epidural anesthesia (1987-1991).79 These benefits were observed regardless of the type of postoperative chemoprophylaxis, emphasizing further the importance of anesthetic and intraoperative factors in the genesis of thrombosis.

The Effects of Femoral Preparation and Limb Positioning During Surgery
As the femoral canal is instrumented, intramedullary contents, including procoagulants, are forced to the static femoral venous system, activating the clotting cascade.

In a randomized crossover study of 19 patients undergoing one-stage bilateral THAs, we showed the severity of reduction in S_vO_2 was in direct relationship to the duration that the leg was kept in flexion and internal rotation. Changes in positioning of the leg influenced the total volume of unsaturated blood and the way it was released to the general circulation. If the thigh is flexed and internally rotated throughout the femoral work, the drop on S_vO_2 is deeper than if the thigh is brought to the midline while maintaining only internal rotation after insertion of the femoral component

We also showed active ankle dorsiplantar flexion increases femoral venous flow by 50% compared with baseline resting values. Thus, we strongly encourage such exercise throughout the entire recovery period. The postoperative pain relief provided by patient-controlled analgesia

Pharmacologic Prophylaxis in the Postoperative Period
From the mid1970s, entericcoated aspirin has been our preferred postoperative che-moprophylaxis for patients with no additional factors for VTE. Aspirin prophylaxis is safe, inexpensive, well tolerated, easy to administer, requires no monitoring, has analgesic and antipyretic effects, and reduces the risk of ectopic ossification.55 Aspirin also reduces the risk of arterial complications, including unstable angina, cerebrovascular accidents, and transient ischemic attacks. Two recent studies showed ischemic heart disease was the most frequent cause of death, which supports the use of aspirin prophylaxis in view of its beneficial arterial effects.

We indicate warfarin for patients who have recognized predisposing factors for VTE or who already were prescribed warfarin for preexisting comorbidities. Effective prophylactic anticoagulation occurs only after a few days of warfarin administration, and there is no protection during the immediate postoperative period when the thrombogenesis is maximally activated. Warfarin has numerous drug interactions, the dose-response is variable as a result of multiple factors, including genetic factors, and with the current short hospital stay, it is difficult to achieve an adequate prophylactic level before discharge.

During the last decade, low-molecular-weight heparin (LMWH) has been advocated as a sole method of prophylaxis. Aggressive marketing programs, including sponsored publications, instructional courses, and enclosure of reprints in recognized orthopaedic journals, have contributed to their initial popularity. Low-

molecular-weight heparin anticoagulant effect is immediate and requires no monitoring. However, the risk of wound drainage and hemorrhagic complications has exceeded that of warfarin and IPC. In addition, severe thrombocytopenia develops in approximately 1% of patients receiving heparin for longer than 4 days. Successful therapy requires immediate cessation of heparin, and if not promptly recognized, antibody-mediated thrombocytopenia carries a 40% mortality rate.
The meta-analysis showed potent anticoagulation did not prevent PE and was associated with the highest mortality (0.47%). The multimodal approach (regional anesthesia, pneumatic compression, and aspirin) was associated with the lowest all-cause mortality (0.19%; p = 0.003); warfarin was associated with an intermediate mortality (0.41%).

Safety and Efficacy of our Multimodal Prophylaxis Protocol for Venous Thromboembolism after THA^

We studied prospectively 1947 patients with 2032 consecutive, nonselected primary THAs (85 one-stage bilateral THAs) who followed our multimodal prophylaxis.
The THAs were performed from 1994 to 2003 by the two senior surgeons (EAS, TPS) and HEA was given by one anesthesiologist (NES). Surgery was performed expediently through a posterolateral approach.
The dose of intraoperative heparin is small, has a short biologic half-life (± 30 minutes), and is administered a few minutes before the thrombogenesis is maximally activated, obliterating thrombogenesis.
There is no increased risk of bleeding during surgery or in the postoperative period with HEA. In our consecutive series, the prevalence of major bleeding was 0.05% (one of 1976), which compares favorably with that reported for warfarin and LMWH. No patient had an epidural hematoma develop.

We concluded patients who had VTE after THA were more likely than matched control subjects to have heritable thrombophilia with antithrombin III or protein C deficiency or homo-heterozygosity for the prothrombin gene mutation. Preoperative screening for these three tests should improve identification of patients with reduced risk of VTE, who may only need mild thromboprophylaxis, and those with heritable thrombophilia/hypofibrinolysis in whom prophylaxis should be more aggressive.

DISCUSSION

Regional anesthesia reduces the risk of thromboembolism by approximately ½ by enhancing blood flow. Stasis also is reduced by minimizing the duration and extent of femoral vein occlusion caused by extreme flexion and internal rotation of the lower extremity. Local trauma to the endothelium of the femoral vein also is limited by expeditious surgery, in part aided by the bloodless field provided by HEA and by preheating the femoral stem and the cement polymer to reduce the time of polymerization.
The intraoperative hypercoagulable state, which is strongly activated by femoral instrumentation, is minimized by repeated lavage and aspiration of intramedullary contents and by a small dose of intravenous intraoperative heparin.
The highest efficacy of heparin occurred when the administration was closest to the time of surgery.
1. Intermittent pneumatic compression
2. Active ankle ROM
3. Aspirin is administered to patients with no predisposing factors for VTE
3. Our current multimodal prophylaxis protocol is safe and effective
4. Identification of patients with reduced risk of VTE who may need only mild thromboprophylaxis

In the near future, additional improvements in preoperative identification of patients' predisposition as a result of genetic and acquired thrombophilia and hypofibrinoly-sis will allow tailoring chemoprophylaxis to the patient's thromboembolic risk

9.A Randomized Prospective Study Evaluating the Effect of Patellar Eversion on the Early Functional The Journal of Arthroplasty Vol. 22 No. 4 2007

Abstract: A prospective, randomized, blinded study
122 randomized by 2 surgeons:receive a mid-vastus split with or without patellar eversion
For surgeon A, a significantly earlier return of straight leg raise was noted when patellar eversion was avoided. Significant correlation existed between an earlier return of straight leg raise and decreased length of stay. Avoiding patellar eversion enhanced the return of quadriceps function and led to a decreased length of stay in the hospital. Key words: minimally invasive, total knee arthroplasty, patellar eversion, straight leg raise, mid vastus.

Materials and Methods

From April 1, 2004, to October 1, 2004, 122 consecutive patients treated by 2 surgeons

Discussion

Total knee arthroplasty has classically been performed through a median parapatellar approach.
Bonutti et al [12j noted the negative effects of patellar eversion (20% increased tension in quadriceps tendon)
In contrast, Keating et al [3j noted no significant differences in a prospective study comparing the mid-vastus split to the median parapatellar approach.

Our results confirmed the findings of Keating et al in that no significant difference between groups in regard to early return of quadriceps function was noted. The modified mid-vastus split did not limit the early postoperative rehabilitation of patients undergoing TKA when patellar eversion was avoided in the present study. The median parapatellar approach without patellar eversion appears to result in equivocal results when compared to the mid-vastus split without patellar eversion, suggesting that patellar eversion may be more adverse than proximal extension of the arthrotomy through the quadriceps tendon.
In conclusion, patellar eversion for the majority of the case has a negative effect on the early return of quadriceps strength after TKA and should be avoided except to resurface the patella. Whether or not a modified mid-vastus split is indicated as opposed to a traditional median parapatellar approach is less clear, but a median parapatellar approach without patellar eversion appears to offer similar benefits to a modified mid-vastus split without patellar eversion. Ability to perform a SLR is a good indicator of return of quadriceps function and correlates with an early discharge from the hospital. Less invasive approaches to the knee should continue to be evaluated for the potential benefits in improving the early outcomes after TKA.

10. Anterior knee pain after Tibial Nail. J Orth Trauma

The source of pain is often not known, although it correlates with a simultaneous decrease in thigh muscle strength. No long-term follow-up study has assessed whether weakness of the thigh muscles is associated with anterior knee pain after the procedure in question.

Prospective study.

The muscular performance of 40 consecutive patients with a nailed tibial shaft fracture was tested isokinetically in a follow-up examination an average of 3.2 ± 0.4 (SD) years after the initial surgery. An 8-year follow-up was possible in 28 of these cases.

Isokinetic muscle strength measurements were made in 28 patients at an average 8.1 ± 0.3 (SD) years after nail insertion and an average 6.6 ± 0.3 (SD) years after nail extraction. All nails were extracted at an average 1.6 ± 0.2 years after the nailing.

Results

7	Painless [never had pre-op or post op pain]
13	Pain at removal of nail and no longer present at final follow-up
8	Always had pain

With reference to the hamstring muscles, the mean peak torque difference between the injured and uninjured limb was -2.2% ± 12% in the NP group, 1.6% ± 15% in the PNP group, and 10.3% ± 30% in the AP group at a speed of 60 degrees/second (Kruskal-Wallis test; $[chi]^2 = 1.0$; $P = 0.593$). At a speed of 180 degrees/second, the corresponding differences were -2.9% ± 23% and 7.0% ± 19% and 4.4% ± 16% (Kruskal-Wallis test; $[chi]^2 = 1.7$; $P = 0.429$). With reference to the quadriceps muscles, the mean peak torque difference was -2.8% ± 9% in the NP group, 5.9% ± 15% in the PNP group, and -13.0% ± 16% in the AP group at a speed of 60 degrees/second (Kruskal-Wallis test; $[chi]^2 = 7.9$; $P = 0.019$). At 180 degrees/second, the corresponding differences were -9.4% ± 13% and 4.9% ± 16% and -1.9% ± 9%, respectively (Kruskal-Wallis test; $[chi]^2 = 4.8$; $P = 0.092$).

Based on this prospective long-term follow-up study, it appears that the anterior knee pain symptoms that are present after intramedullary nailing of a tibial shaft fracture disappear in a number of patients 3 to 8 years after surgery. Quadriceps, but not hamstring weakness, and lower functional knee scores are associated with anterior knee pain at 8 years.

Patients who never had anterior knee pain (NP) had almost balanced muscle strength during the follow-up period, the operated limbs being 2% to 9% weaker than nonoperated ones

Patients whose anterior knee pain had disappeared during follow-up (PNP) had more srength in knee extension and flexion in the operated than in the nonoperated limbs, perhaps because of painless rehabilitation

The pain group (AP) had better flexion strength in the operated than the nonoperated limb, but extension strength was clearly better in the nonoperated limbs

Anaterior knee pain is common but rarely severe, and many patients can return to their previous work and preinjury level of activity. These findings are corroborated in the present study. Fear of postoperative chronic anterior knee pain generally should not hinder the use of intramedullary nails in the treatment of tibial shaft fractures. Our results indicate that anterior knee pain after intramedullary nailing of a tibial shaft fracture is related to strength deficiency in the knee extensor muscles and lower functional knee scores. In the long term, however, the anterior knee pain disappears from many patients.

Factors

1. [Keating] : no association between nail protrusion and anterior knee pain
2.[Merchant] No difference in outcome between groups of patients with fractures with 5 degrees, 5 to 10 degrees, or greater than 10 degrees angulation.
3.Court-Brown et al 40 reported the incidence of anterior knee pain to be more common among younger than older patients, which may be due to a more sedentary lifestyle among elderly patients.
4.In a retrospective study: A parapatellar tendon incision for nail insertion. [77% tendon splitting Vs 50% in paratendinous]
5.Samulson: Their studies showed that lateral insertion of the nail usually results in a varus deformity in the fracture, as well as a lateral displacement of the distal fragment. Medial insertion has the opposite effect, valgus deformity with medial displacement of the distal fragment.

11.Tantalum. The J of Arthroplasty2007, 22;509

Abstract

Porous tantalum is an alternative metal for TJR

High volumetric porosity (70% to 80%),

Low modulus of elasticity(3 MPa) physiologic load transfer [3 Vs 7 cancellous Vs 14 cortical], less stress shield

High frictional characteristics make it conducive to biologic fixation.

Tantalum has excellent biocompatibility and is safe to use in vivo.

Table 1

Mechanical Properties of Trabecular Metal Compared With Those of Other Materials

Mechanical Property	TM (Tantalum)	Cancellous Bone	Cortical Bone	Titanium	Cobalt Chromium	Stainless Steel
Modulus of elasticity (GPa)	2.5-3.9	6.8	13-17	106-115	210	230
Ultimate strength (MPa)	50-110	10.4	48	780-1050	430-1028	480-860
Yield strength (MPa)	35-51	5.1	N/A	860	827	170-690

Tantalum is used in primary as well as revision total hip arthroplasty: good to excellent early results

Autopsy retrieval studies of well-functioning cementless implants have shown bony ingrowth ranging from zero to >80%, with an average ingrowth of 15% to 30%. This is much higher in Tantalum cups.

The product features an open-cell porous tantalum structure of repeating dodecahedrons with an appearance similar to cancellous bone5

Overall, TM is corrosionresistant,with the theoretic advantage of less periprosthetic stress shielding, a more nearly normal pattern of bone remodeling around and within the implant, and the potential for immediate weight bearing.

Basic Science and Development

Porous tantalum is fabricated using a low-density carbon skeleton with a r regular pores developed from the pyrolysis of a polymer foam.

Commercially pure tantalum (99% of weight) is then deposited onto this interconnected network of pores using chemical vapor deposition and infiltration.

The distinct microtexture and overall geometry of this porous metal construct. Typically, the tantalum coating thickness ranges from 40 to 60 μm;

For orthopaedic implants, the average pore size ranges from 400 to 600 μm.

Mechanical Properties

The modulus of elasticity for TM is similar to that of subchondral bone, yet the yield and ultimate strength are significantly greater.

Porous tantalum structures used for orthopaedic implants maintain a porosity of 75% to 85%, compared to 30% to 35% for sintered CoCr beads and 40% to 50% for titanium fiber metal mesh.

Tantalum is relatively inert. For tantalum to mechanically bond to bone, a bone-like apatite layer must first form on the metal surface.

Bone Ingrowth

Two preclinical studies have shown excellent bone ingrowth within porous tantalum structures, including foam cells, porous cylinders and disks, and acetabular components.

Bobyn et al1 implanted porous tantalum cylinders with subsequent histologic and mechanical testing at interval follow-up. In samples that had an average pore size of 430 μm, new bone was found occupying 42% of the pores at 4 weeks, 63% at 16 weeks, and 80% at 1 year.

Fibrous Tissue Ingrowth

Fibrous tissue ingrowth into porous metallic implants is of particular interest in the design and clinical use of megaprostheses in which ligaments and tendons may be attached directly to the implant surface. Vascularized soft-tissue ingrowth into a prosthesis may provide mechanical and biologic benefits via enhanced attachment strength.

Histologic examination revealed complete tissue ingrowth with the presence of blood vessels at the interface and within the rectangular tantalum implants. Tissue attachment strength was found to be 60.7, 70.9, and 89.4 g/mm at 4, 8, and 16 weeks, respectively.

Clinical Applications Monoblock Acetabular Component

A TM monoblock acetabular component with a direct compression molded ultrahigh molecular weight polyethylene (UHMWPE) linear is available for use in primary THA

The polyethylene liner is directly moulded into the component, penetrating the porous tantalum structure to a depth of 1.5 to 2.0 mm. The potential advantages of this elliptical, monoblock design include the elimination of backside wear and the ability to implant the component without screws, which limits conduits for polyethylene debris as well as fretting at the screw-cup junction.

No evidence of micromotion at the polyethylene-TM interface under sinusoidal loading.13 A monoblock component also has potential disadvantages however. One is the inability to visualize the dome when implanting the component. Also, there is no option for supplemental fixation

Monoblock Acetabular Component With Peripheral Screw Fixation

Another version of the monoblock TM acetabular component allows for adjunctive fixation with screws at the periphery of the component.

This version of the component has been used in both primary and revision surgery.

Modular TM-Coated Shell

A modular T M shell also has been developed that includes a titanium inner surface (similar to the Trilogy shell; Zimmer, Warsaw, IN), a locking mechanism to allow for a modular polyethylene liner, and the application of porous tantalum coating on the outer surface.

Advantages of this design include the use of dome screws for adjunctive fixation and a modular polyethylene liner.

Revision Shell With Augments

Acetabular deficiencies can complicate revision THA surgery, potentially compromising biologic fixation and often limiting implant options.35 For treating these challenging cases, options include the use of large cementless hemispherical cups, reconstruction cages or rings, structural allograft, bi-lobed or“double bubble” cups, impaction grafting with cemented components, and custom triflanged components.

A revision TM acetabular shell has been designed to allow for screw augmentation with a polyethylene insert that is cemented into place after the shell has been fixed to the pelvis. The low elastic modulus, high coefficient of friction, high porosity, and elliptical shape of this component render it a suitable option for cementless revision acetabular surgery. This system also offers standard and custom augments that can be used to fill acetabular defects at the time of revision THA Figure 6, B). These augments are designed to support the cup, acting in a fashion similar to a structural allograft;

Trabecular Metal and Pelvic Discontinuity

At the time of revision THA, acetabular bone loss may be quite extensive, secondary to particulate induced osteolysis and stress shielding. When such bone loss manifests as a pelvic discontinuity (dissociation of the superior and inferior halves of the pelvis), reconstruction

Future Applications

Modular components,primary femoral stems, tantalumcoated prostheses, and salvage prostheses are among the ideas being explored.

The fibrous ingrowth potential of this material makes it an excellent option for coating specific regions of a prosthesis, particularly in areas of ligamentous or tendinous attachments.

Recently, the use of a tantalum-cartilage composite has been developed; it offers potential for resurfacing diseased joints.4.

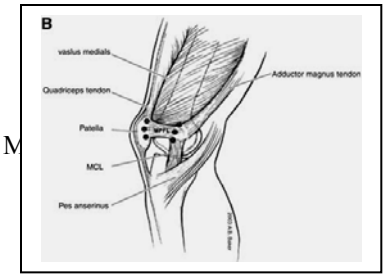
Summary

Both basic science studies and early clinical reports suggest that the theoretic advantages of porous tantalum (high porosity, high frictional characteristics,and a low modulus of elasticity) may lead to excellent outcomes, particularly in complex reconstructions in which the results with implants made from traditional materials have been suboptimal.

12.**MPFL. .** Am. J. Sports Med. 2007; 35; 484

The medial retinaculum consists of the medial meniscopatellar ligament and the MPFL .
MPFL, in testing to failure, withstands a load of about 208 N. Compared with other ligaments about the knee,57 this is a relatively low load to failure strength. The ligament is tight with the knee in full extension, losing tension on flexion of the knee and on patellar stabilization within the normal trochlea at 15□to 20□of knee flexion.

The mean length of the MPFL is 55 mm, and its width ranges from 3 to 30 mm. This variability can make identification of the MPFL difficult. The patella subluxates most easily at 20□of knee flexion, and the MPFL seems to resist lateral patellar subluxation greatest in full knee extension
Of interest, also, is that the anterior extent of the MPFL interdigitates with the deep fibers of the vastus medialis obliquus (VMO), suggesting that it may work in concert with the VMO. The VMO is a dynamic medial stabilizer of the patella working primarily in conjunction with the quadriceps. Thus, the MPFL appears to draw the patella from its slightly lateralized position with the knee in extension and apply a pull to the patella, drawing it toward the trochlea such that the patella enters the trochlea during early knee flexion. The MPFL loses some tension and becomes less functional on further knee flexion, as the trochlea and vastus medialis functions take over stabilization of the patella within the trochlear groove.
With an isolated release of the MPFL, there was a 50% increase in lateral subluxation of the patella.



The MPFL originates from the "saddle" region between the medial femoral epicondyle and the proximal adductor tubercle, with its insertion at the upper half of the medial patella.
The Merchant "Big 6"47 (6 important factors emphasized by Dr Alan M
(1) deficient VMO,
(2) lax MPFL,
(3) tight lateral retinaculum,
(4) increased Q angle,
(5) patella alta, and
(6) trochlear depth (dysplasia).
Because the MPFL is the primary passive restraint to lateral subluxation/dislocation of the patella,supplying between 50% and 60% of the support medially, rupture of the MPFL is a well-known consequence
of lateral patellar dislocations.6Our indications for a primary repair of the MPFL include the professional athlete, needing early return to sports, when a direct avulsion is seen on the MRI. Otherwise, we advocate nonsurgical treatment to allow for attempted MPFL healing. Measuring the distance between the tibial tubercle and trochlear groove (TT-TG) as a sign of lateralized patellar
tracking forces has been proposed as an objective measure for a distal realignment procedure.26 The mean TT-TG is 13 mm, and a distance of □20 mm with knee pain is a sign for tibial tubercle (ie, distal) realignment surgery. The procedure must be done for patellar instability and should not try to correct malalignment, pain, or patellofemoral arthritis. These require additional, specific surgery in most cases.

Concurrent procedures, such as a tibial tubercle transfer when indicated, should usually be done at the same time as the MPFL reconstruction. In general, the concept then is normalization of the patellofemoral relationship by tibial tubercle transfer, particularly when the TT-TG index or Q angle is greater than 20. The MPFL actually becomes lax in flexion when the trochlea is providing stability. This makes sense because the MPFL only acts as a checkrein before engagement of the patella by the trochlea. A shallow trochlea is one of the key factors behind patellar instability, allowing the patella more lateral tilt and lateral subluxation. Therefore, in performing patellofemoral instability surgery, one has to account for how abnormal knee anatomy will act on the chosen alignment procedure throughout range of motion.

13. SURACONDYLAR FRATURE: LOSS OF FIXATION. JBJS 2007.89A 713-6

occasionally there is postoperative displacement. The purposes of the present study were to identify the causes leading to loss of fixation after pin fixation and to present methods for prevention.

Methods:

322 displaced supracondylar humeral fractures .Adequate radiographs were available for 279

Eight (2.9%) of the 279 fractures were associated with postoperative loss of fixation; all eight were Gartland type-III fractures.

Seven of these eight fractures initially had been treated with two lateral-entry pins, and one had been treated with two crossed pins. In patients with Gartland type-III fractures, loss of fixation was successfully avoided more often when three pins were used

In all cases, loss of fixation was due to technical errors that were identifiable on the intraoperative fluoroscopic images and that could have been prevented with proper technique.

We identified three types of pin-fixation errors:

(1) Failure to engage both fragments with two pins or more,

(2) Failure to achieve bicortical fixation with two pins or more,

(3) Failure to achieve adequate pin separation (>2 mm) at the fracture site.

Conclusions: Postoperative displacement following pin fixation of supracondylar humeral fractures in children is uncommon.

With two lateral-entry pins. There were no failures when three pins were used. In all cases of failure, There were identifiable technical errors in pin placement.

[Total 130=2 cross, 96 = 2 lateral; 12 = 3 lateral; 41 = 2 lateral and 1 medial]

Surgeons who choose to use crossed pins must be aware that the ulnar nerve is at risk10. Surgeons who choose to use lateral-entry pins alone must be aware that adequate stabilization, while equally effective, requires attention to detail11.

Skaggs et al., in a recent study of supracondylar humeral fractures that were treated with lateral-entry pins alone, reported that 38% of Gartland type-II fractures and 65% of type-III fractures were fixed with three lateral-entry pins4.

We stress the importance of assessing intraoperative stability after percutaneous pin fixation by first extending the elbow and examining the distal fragment for displacement Check stability is checked under fluoroscopy.

However, if there appears to be a change in fracture alignment, repositioning of one or two of the lateral pins and/or the addition of a third lateral pin is warranted.

We have adopted a protocol of using three lateral-entry pins for type-III fractures and two lateral-entry pins for type-II fractures. Regardless of pin-fixation technique, we believe that testing fracture stability intraoperatively under fluoroscopy is an invaluable way to determine the quality of fixation.

14. ISOLATED BICEPS TENDON RELEASE OR TENODESIS IN CUFF TEAR J. BONE JOINT SURG. AM. 89:747-757, 2007.

Lesions of the long head of the biceps tendon are often associated with massive rotator cuff tears and may be responsible for shoulder pain and dysfunction. The purpose of this study was to evaluate the clinical and radiographic outcomes of isolated arthroscopic biceps tenotomy or tenodesis as treatment for persistent shoulder pain and dysfunction due to an irreparable rotator cuff tear associated with a biceps lesion.

Mean age: 68 ± 6 years) with biceps tenotomy or tenodesis. A simple tenotomy was performed in thirty-nine cases, and a tenodesis was performed in thirty-three. No associated acromioplasty was performed

78% were satisfied with the result. The mean Constant score improved from 46.3 preoperatively to 66.5 ± 16.3 points postoperatively

The acromiohumeral distance decreased 1.1 ± 1.9 mm on the average, and glenohumeral osteoarthritis developed in only one patient.

The results did not differ between the tenotomy and tenodesis groups (

The "Popeye" sign was clinically apparent in twenty-four (62%) of the shoulders that had been treated with a tenotomy; of the sixteen patients who noticed it, none were bothered by it.

Conclusions: Both arthroscopic biceps tenotomy and arthroscopic biceps tenodesis can effectively treat severe pain or dysfunction caused by an irreparable rotator cuff tear associated with a biceps lesion.

Shoulder function is significantly inferior if the teres minor is atrophic or absent.

Pseudoparalysis of the shoulder and severe rotator cuff arthropathy are contraindications to this procedure.

Discussion

All patients who have symptoms related to a massive, irreparable rotator cuff tear do not present with the same clinical features: some patients only have pain, whereas others have pain and loss of active anterior elevation of the shoulder.

In the present study, we found that it is crucial to differentiate between patients with true weakness and those with painful loss of elevation. The primary difference is that a shoulder with true pseudoparalysis is nonfunctional, exhibiting an ineffective shrug with attempted elevation of the arm, whereas a shoulder with painful loss of elevation is functional but active elevation is limited because of pain.

In our series, the fifteen patients with painful loss of elevation had substantial improvement and regained nearly symmetrical active elevation after arthroscopic biceps tenotomy or tenodesis.

In contrast, the three patients with a misdiagnosed pseudoparalysis of the shoulder did not benefit from the procedure and did not regain active shoulder elevation above the horizontal level.

The diagnosis of pseudoparalysis of the shoulder was missed in three patients. This clinical experience has led us to perform the following test on our patients. The examiner slowly brings the patient's arm just above the horizontal level (between 90° and 120°) and asks the patient to actively maintain this position. A patient with true pseudoparalysis of the shoulder will not be able to do so; the arm will fall down despite his or her efforts (the landing test).

Additionally, infiltration of the shoulder with lidocaine may help to differentiate the two clinical presentations by relieving the shoulder pain and allowing active elevation. An isolated biceps tenotomy or tenodesis is contraindicated for patients with a massive, irreparable rotator cuff tear who

present with true pseudoparalysis of the shoulder despite rehabilitation, and we now perform a reverse shoulder arthroplasty for those patients2

Preoperative knowledge of the status of the remaining rotator cuff can help the surgeon and patient to arrive at the best treatment option. When a patient has a severe external rotation deficit (a Hornblower sign and dropping sign) and a teres minor that is torn or has fatty infiltration, and the goals are more than just palliation.

The only patient in our series with true (but misdiagnosed) glenohumeral cuff arthropathy (Hamada stage 4) did not benefit from a biceps tenotomy.

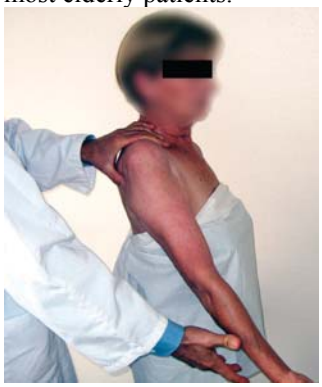
It has been reported in the literature that 20% of forearm supination strength and 8% to 20% of elbow flexion strength are lost following spontaneous proximal biceps rupture6

Although it does not improve shoulder strength, biceps tenotomy or tenodesis reduces pain and improves the functional range of motion. The preservation of some of the posterior part of the rotator cuff, particularly the teres minor, results in improved external rotation and therefore a better functional result.

Superior humeral migration, even with acetabularization of the acromion (Hamada stage 3), is not a contraindication to a biceps tenotomy or tenodesis.

Very thin patients may prefer a tenodesis for cosmetic reasons. However, given the increased

surgical difficulty, time, and cost of a tenodesis procedure, a simple tenotomy is probably sufficient for most elderly patients.


A patient with true pseudoparalysis of the shoulder is not able to actively maintain the arm at the horizontal level despite maximum effort (the landing test).

15. **Patellar Tendon Autograft Vs Hamstring:** J Am Sports Jan 2007-04-29

There are no controlled, prospective studies comparing the 10-year outcomes

90 HT autograft Vs 90 PT autograft

There were no differences in graft rupture rates (7/90 PT vs. 12/90 HT, *P* = .24).

In all patients, graft rupture was associated with instrumented laxity >2 mm at 2 years (*P* = .001).

Normal or near-normal function of the knee was reported in 97% of patients in both groups. In the PT group, harvest-site symptoms (*P* = .001) and kneeling pain (*P* = .01) were more common than in the HT group.

Radiographic osteoarthritis was more common in PT knees than the HT-reconstructed knees (*P* = .04). The difference, however, was composed of patients with mild osteoarthritis. Other predictors of radiographic osteoarthritis were <90% single-legged hop test at 1 year and the need for further knee surgery.

An "ideal" outcome, defined as an overall International Knee Documentation Committee grade of A or B and a radiographic grade of A at 10 years after ACL reconstruction, was associated with <3 mm of instrumented laxity at 2 years, the absence of additional surgery in the knee, and HT grafts.

It is possible to obtain excellent results with both HT and PT autografts.

DISCUSSION

The current study shows that at 10-year follow-up, both HT and PT graft reconstructions produce excellent subjective results, stability, and range of motion. There was a significantly higher incidence of radiographic osteoarthritic change in knees reconstructed with PT autografts compared with HT grafts, although the difference was composed largely of knees with mild radiographic changes.

Kneeling pain was statistically increased in PT graft reconstructed knees, and there was a trend toward a lower overall IKDC score in knees reconstructed with PT grafts compared with HT grafts.

At 2 years, there was a significantly higher number of HT knees with KT-1000 arthrometer scores □2 mm, compared with PT knees. By 5 years, KT-1000 arthrometer scores between the 2 cohorts were equal

There was a significant increase in the donor-site symptoms and kneeling pain in knees reconstructed with PT grafts compared with HT grafts. At 10 years, 27% of HT patients and 41% of PT patients (*P* □.01) reported pain with kneeling in the operative knee

However, as graft failures were correlated with 2-year KT-1000 arthrometer scores □3 mm, it is possible that some graft slippage occurred before failure. We have since addressed this by oversizing the tibial screw in female patients and those male patients who are judged at the time of surgery to have soft tibial metaphyseal bone.

Summary.

Both HT and PT autograft ACL reconstructions have excellent 10-year results in knees without significant chondral or meniscal injury. The incidence of mild radiographic osteoarthritis in PT-reconstructed knees is greater at 10 years and appears to be gradually increasing in knees with both graft types. Kneeling pain is greater in PT-reconstructed knees. Ten-year survivorship and subjective function is no different between graft types. Factors associated with the best outcomes in this study were the use of HT grafts, 2-year KT-1000 arthrometer scores □3 mm, and no need for subsequent surgery on the operative knee.

16.Humeral Hemiarthroplasty with Biologic Resurface. JBJS 2007: 89A:727-734

Biologic glenoid resurfacing was developed in 1988 as an alternative to total shoulder arthroplasty in selected (usually younger) patients with primary, posttraumatic, or postreconstructive glenohumeral arthritis.

A variety of biologic surfaces, including anterior capsule, autogenous fascia lata, and Achilles tendon allograft, meniscus combined with a humeral hemiarthroplasty.

1988 - 2003, 34 with cement (ten shoulders) or without cement (twenty-six shoulders) were followed prospectively.

The diagnoses included primary glenohumeral osteoarthritis (eighteen shoulders), Postreconstructive arthritis (twelve), posttraumatic arthritis (five), and osteonecrosis (one).

Anterior capsule was used for seven shoulders, autogenous fascia lata for eleven, and Achilles tendon allograft for eighteen. All shoulders were assessed clinically and with serial radiographs.

Results: The mean American Shoulder and Elbow Surgeons score was 39 points ➔ 91

The result was excellent for eighteen shoulders, satisfactory for thirteen, and unsatisfactory for five. Glenoid erosion averaged 7.2 mm and appeared to stabilize at five years. There were no revisions for humeral component loosening. Complications included infection (two patients), instability (three patients), brachial plexitis (one patient), and deep-vein thrombosis (one patient).

Factors that appeared to be associated with unsatisfactory results were the use of capsular tissue as the resurfacing material and infection.

Conclusions: Biologic resurfacing of the glenoid can provide pain relief similar to total shoulder arthroplasty. It allows selected younger patients to maintain an active lifestyle, including weight-lifting and manual work, without the risk of polyethylene wear. On the basis of this and previous reviews, we currently recommend Achilles tendon allograft as the preferred resurfacing material when this option is chosen.

17. **Failure Mechanisms After UKA and TKA**. JBJS 2007, 89A:519

Concern exists regarding the durability of unicompartmental knee replacements. The purpose of the present study was to compare the early failure rates and failure mechanisms of primary cemented unicompartmental knee replacements with those of prim tal total knee replacements.

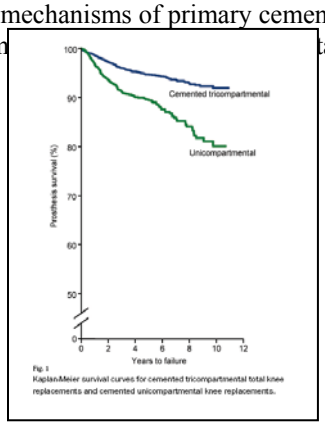


Fig. 1
Kaplan-Meier survival curves for cemented tricompartmental total knee replacements and cemented unicompartmental knee replacements.

Methods: The rates of failure of primary cemented unicompartmental knee replacements (n = 2288) and tricompartmental total knee replacements (n = 3032) as reported to the Norwegian Arthroplasty Register from January 1994-04

Results: The ten-year survival probability was 80.% with UKA and 92.0% TKA

This increased risk of revision following UKR was seen in all age-categories.

UKR with an increased risk of revision

Due to pain (relative risk, 11.3 [95% confidence interval, 4.8 to 26.8]; $p < 0.001$),

Aseptic loosening of the tibial component (relative risk, 1.9 [95% confidence interval, 1.2 to 3.0]; $p = 0.01$)

Femoral component (relative risk, 4.8 [95% confidence interval, 2.3 to 10.3]; $p < 0.001$),

Periprosthetic fracture (relative risk, 3.2 [95% confidence interval, 1.2 to 8.9]; $p = 0.02$) as compared with total knee replacement.

Unicompartmental knee replacement was associated with a lower risk of infection compared with total knee replacement (relative risk, 0.28 [95% confidence interval, 0.10 to 0.74]; $p = 0.01$) .

Conclusions: The survival of cemented unicompartmental knee replacements is inferior to that of cemented tricompartmental total knee replacements in all age-categories

After ten years of follow-up, there was no significant difference in survival among the MOD III, Genesis Uni, and Oxford II knee replacements, with the numbers available..

18. I**nterspinous Process Spacers** JAAOS 2007: 15,200

The patient with neurogenic claudication resulting from lumbar spinal stenosis who fails to experience satisfactory relief from nonsurgical measures has limited treatment options. Lumbar epidural steroid injections and surgical laminectomy are generally accepted alternatives for the patient with moderate to severe symptoms.

Interspinus process spacers, a relatively new class of technology, are proposed for use in the patient who prefers less invasive surgery or in whom medical comorbidities preclude a major surgical procedure. Early data from biomechanical and clinical studies support the short-term efficacy of interspinous process spacers in treating claudication related to spinal stenosis.

Sufficient medium- and long-term data are lacking, however, particularly with respect to durability of symptomatic relief and the risk of device migration or dislocation. Although interspinous process spacers are a promising new technology, the results of longer-term clinical follow-up studies are needed to more clearly define their role in the management of lumbar spinal stenosis.

The interspinous process spacer is a motion-preserving spinal implant designed to provide symptomatic relief to selected patients without the need for spinal fusion.

Theoretic indications : spinal stenosis with and without degenerative spondylolisthesis,
Chronic discogenic low back pain.

These implants have been proposed as a "dynamic stabilization" alternative to rigid instrumented fusion, with the advantages of a more limited and less morbid surgical procedure that may confer less risk of adjacent segment degeneration

Mechanism:

1. Less superior facet encroachment in VF
2. With extension a relative increase in the area of the canal as buckling of the lig flavum is relieved.

Interspinous process spacer technology is designed to take advantage of the marked postural dependence of symptoms that exists in many patients with spinal stenosis. The device is interposed between adjacent spinous processes following limited surgical exposure of the posterior lumbar spine.

The implant maintains the treated level in modest flexion and limits extension without limiting either axial rotation or lateral bending. In general, normal cross-sectional area of the dural sac in the lumbar region is 150 to 200 mm2; stenotic symptoms may be associated with a decrease in area to <100 mm2.8

Computed tomography studies suggest that lumbar flexion increases the area of the spinal canal by 11%.9 By comparison, in vivo MRI an interspinous process spacer has suggested a mean 22.3% increase in cross-sectional area of the dural sac.

Facet joint: Biomechanically, depending on position and the presence of associated arthrosis, the lumbar facet joints are thought to transmit 25% to 47% of axial load5 In cadaveric studies, interspinous process spacer implants reduced facet joint contact area by 46%, and mean pressure by 39%.

The X STOP (Kyphon, Sunnyvale, CA) consists of an oval titanium spacer with two parallel wings to prevent dislodgment from between adjacent spinous processes. The device can be implanted under local anesthesia via a midline posterior approach, with dissection of paraspinal muscle from adjacent spinous processes. The device must be placed anteriorly in the interspinous .

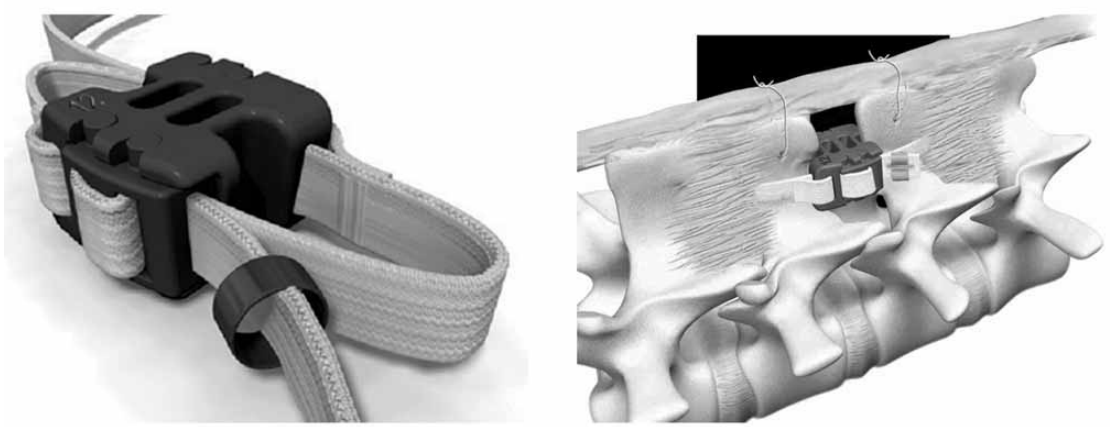
Compared with control specimens in 15° extension, X STOP placement resulted in an
increase in canal area by 18%,
in canal diameter by 10%,
in foraminal area by 25%,
and in foraminal width by 41%.

X STOP and control patients, respectively. Improvement in physical function scores

Radiographic follow-up Maintenance of interspinous distraction in 96% of implanted levels between 6 weeks and 2 years after X STOP placement. 25

At 2 years, 73% of patients who received the X STOP device were at least somewhat satisfied with their results, compared with 36% of control patients.25

The overall 2-year laminectomy rate was 6% for X STOP patients and 31% for control patients.25



A B

A prospective randomized multicenter FDA-IDE clinical study of the Wallis device is currently underway in the United States. Indications for the device include chronic low back pain attributed to degenerative disk disease, recurrent disk herniation, stenosis, large disk herniation.

Concerns

1. The true clinical efficacy and durability of benefit from these devices.
2. Produce increased segmental kyphosis (spinal process flexion) at the treated level.
3. In the patient with advanced spondylosis: adjacent spinous processes can abut one another, with formation of a bursa and the potential for local pain generation.
4. Compression loading of the spinous processes may lead to local tissue changes and pain generation.
5.May disrupt and potentially weaken the interspinous ligament and further destabilization
6.Lumbar segmental stability is maximized by locking of the facet joints. By maintaining these joints in relative distraction, there is concern that interspinous process spacers may decrease overall stability.
7. Interspinous process spacer implants, however, appear to be associated with a low risk of spinous process fracture during routine daily activity.
8. Progressive subsidence over time also remains a concern.

Indications and Contraindications

Aged > 50 years
With neurogenic claudication
Inclusion criteria include the presence of leg, buttock, or groin pain that is relieved by spine flexion; Failure of 6 months of nonsurgical treatment; and moderate functional impairment. symptoms that are relieved by forward flexion

Severe osteoporosis with a history of associated fracture, significant scoliosis, and >25% spondylolisthesis, spinal instability are contraindications

Summary

Less invasive than standard laminectomy; Early clinical reports suggest promising ; Overall, clinical efficacy appears to be moderate

II Free articles

DISLOCATION AFTER TOTAL HIP REPLACEMENT NEEDING OPEN TREATMENT. Pai VS D'Orth, M.S(Orth), National Board (Orth), M.Ch (Orth)

Abstract:

The author reviewed 10 patients with irreducible or unstable THR dislocation. After clinical and radiological assessment, they were grouped in 6 categories. On the basis of this study and reviewing the literature, a classification of "Total hip dislocation needing open reduction" is proposed.

Key words: Irreducible reduction, Unstable reduction

Introduction

Despite many recent advances in total hip arthroplasty, dislocation remains a frequent complication and many series still report a dislocation rate of 1-5% [1]. In most, reduction is easy and can be achieved under sedation or general anesthesia. Irreducible dislocation is very rare and is usually due to dissociation of a modular femoral or acetabular component preventing relocation [2]. Rarer causes of irreducible dislocation include stem displacement [3], dislocation secondary to false aneurysm [4] and entrapment of the iliopsoas tendon [5]. Interposition of gentamycin beads [6], capsule[7,8] and cement [9] have also been reported. To the author's knowledge, most of the articles on irreducible dislocation are case reports or address certain types of irreducible dislocation. The author has attempted to classify irreducible dislocation of the prosthesis depending on the radiological findings and the anatomical derangement on the basis of ten cases and reviewing the literature. The purpose of this study is to correlate the cause of dislocation and the treatment.

Methods and Materials

The material consisted of ten cases of irreducible or unstable dislocation of a total hip replacement seen in the Healthcare Hawke's Bay Hospital, Hastings, NZ between 1995 and 2000. The mechanism of dislocation was either bending the hip to put on socks or shoes, twisting injury pivoting on the leg, or slipping in the shower. These patients had been treated by different surgeons from different hospitals and had various types of total hips. All ten were female and presented with more than one of: pain, limp, shortening or deformity. Patients were categorized into different groups ***(Table 1)*** and patients' details are given in ***table 2***. Six types of dislocation were encountered.

1. **Dislodgement of the stem (1a)**: (Cases 1 & 2) Case 1 had a Exeter Hip and the other a CPT total hip, both being polished stem. Both cases presented with a posterior dislocation within 3 months of hip replacement. In both, reduction was attempted by a junior doctor in the emergency department under sedation. Reduction was unsuccessful and check X rays showed debonding of the stem from the cement mantle ***(Fig 1)***. In both reduction was eventually achieved by open reduction. In case 1, the same stem was pushed back in the cement mantle while in case 2, a smaller sized stem was fixed with bone cement into the existing cement mantle.
2. **Dislodgement of the cup at the cement-bone interface (1b)**: Cases 3,4,5. All three patients presented with dislocation following a fall between three to six months post THR, and radiological examination revealed a dislodgement of the cup with its cement mantle ***(Fig 2).*** Two patients were successfully treated by recementing the cup. The other patient (Case 4) had a gram negative infection and ended up with an excision arthroplasty.
3. **Dissociation of the liner (1c)**: Case 6 This sixty year-old had a hybrid hip replacement in July 1994. A noncemented, Harris Galante II acetabular component with a polyethylene modular liner and a cemented Exeter femoral component with a medium neck, 28 mm diameter modular head component were used. The patient was readmitted in March 1995 with dislocation of the prosthesis, which was reduced under image intensifier. The patient did well for the next six months, but then began to experience pain in the left hip, radiating to her ankle. A radiograph showed an apparently concentric positioning of the femoral head in relation to the cup with a significant reduction in the "visualized femoral head" measurement due to loss of space between the cup and the shell ***(Fig 3)***. On exploration, the polyethylene liner was found to be completely dissociated from, and displaced inferior to, the metal shell. The acetabular shell was removed and was replaced with a cemented acetabular cup. The femoral stem was found to be well fixed and only the head was replaced [15]
4. **Soft tissue interposition (1d)**: Case 7. An 83 year-old frail woman was admitted in June 2000 with a dislocated cemented Exeter hip replacement (Howmedica International, Inc, Clare, Ireland), five years after her hip replacement. This happened with a trivial twist as she was trying to take a frock from the cupboard, pivoting on her left hip. Clinical and radiological examination confirmed an anterior dislocation ***(Fig 4)***.

Under general anesthesia with muscle relaxation and fluoroscopy, reduction was attempted using manual longitudinal traction with the hip in flexion as well as in extension. At this stage a soft tissue interposition was suspected and on exploration through a lateral approach, the straight head of rectus femoris appeared to run anterior to the neck of the prosthesis impeding the reduction as the neck was pincer cocked between iliopsoas posteriorly and rectus anteriorly. A flat band of rectus in front of the neck was divided. Once divided, reduction was achieved quite easily.

5. **Extensive myositis ossificans with cup migration (1e):** Case 8. An 81 year-old woman had had a total hip replacement for osteoarthritis of the right hip in 1978. In 1994 the prosthesis had been revised at another hospital for loosening. A revision cementless cup had been fixed with two screws to the deficient medial wall of the acetabulum and one screw protruded well into the pelvis. The patient was mobilised partially weight-bearing on a frame. Two months following surgery she was asymptomatic and weight-bearing. Examination of the right hip revealed a very stiff but stable hip. There was no pain on movement. Radiographs at that time showed a dislocated hip with heterotopic ossification ***(Fig5)***. The patient denied any acute injury and dislocation appeared to be secondary to an acute vertical tilt of the acetabular component. As the patient was pain-free and refused further surgical intervention, the hip was left dislocated.

6. **Excessive subsidence of a cementless hip with gross instability (2a)**: Cases 9 and 10. Both were revision hips with cementless hip replacement with distal fixation using PFM prosthesis. Case 9 presented with dislocation and relocation was easy. However it was difficult to maintain the reduction even with the hip splint and she suffered five dislocations in two days. Cup alignment appeared to be adequate and dislocation appeared to be due to supratrochanteric shortening secondary to 5cm of stem subsidence, leading to loss of soft tissue tension. She was treated successfully with a revision hip with a bigger size prosthesis.

Case 10 was a 90 year-old woman who had had a PFM prosthesis. It has to noted that the medullary cavity of the femur was very wide and probably was poorly suitable for a PFM. The prosthesis subsided considerably causing multiple dislocation due to loss of soft tissue tension ***(Fig 6)***. The problem was further compounded as patient was totally demented. She was treated in a hip spika for two months and the final outcome was a painlessly dislocated hip.

Discussion

The incidence of dislocation, not an uncommon complication, has been reported to be 1.5% for total hip arthroplasty. One-third may develop recurrent dislocation. Most of the reports in the literature are on the incidence and causes of dislocation [10,11]. Specific causes include cup malposition, trochanteric migration, decreased femoral offset, inappropriate head size, leg length discrepancy, surgical approach and postoperative mobilization [12].

Closed reduction can usually be easily achieved under sedation or general anesthesia. Very rarely, the hip joint can not be reduced. The author discusses his experience with irreducible dislocation and tries to classify its different causes. To the best of his knowledge, there is no classification of irreducible dislocation according to the anatomic-radiological findings in the literature. The treatment depends on the type of irreducible dislocation and is discussed under the specific types of irreducible dislocation.

Stem Dislodgement (1a)

Dislodgement of the stem is a rare occurrence and is seen only with polished stems [2,3]. In both cases, no cement was placed over the shoulder of the prosthesis. This could probably be prevented by cementing over top of femoral stem and careful reduction and when difficult reduce under complete muscle relaxant under general anesthesia.

Dislodgment of the cemented cup (1b)

Of the three observed, one had frank deep infection and in other infection suspected but culture was negative. Strong suspicion of infection should be present in cases of early dislodgement of the cup and should be treated as any infected hip. When infection ruled out, these can be successfully treated by reinsertion of cemented cup with antibiotic impregnated cement. Probably 2 or 3 anchoring holes with 10 mm drill is needed to fix the cup with cement.

Dissociation of the modular system (1c)

The modular acetabular component is widely used system that increases the surgeon's options during a total hip replacement, but also introduces the risks of failure at the interfaces [13]. Star el al reported dissociation occurring at 3 levels: 1) the polyethylene liner coming out of the acetabular shell, 2) the bipolar head coming off the femoral head and 3) the head detaching from the femoral component. He

advised judicious use of force in obtaining reduction and recommended general anesthesia and fluroscopic control.

The incidence of complications relating to modularity is low and reported to be 0.1 to 0.2%. A total of 28 failures of fixation of the polyethylene liner to its metal shell have been described since the introduction of the modular uncemented total hip arthroplasty [14]. A delay in recognition of the problem has previously been reported [15,16].

This can be avoided by careful radiological assessment as the head of the prosthesis apparently sitting deep within the cup and the "visualized femoral head measurement of Ferenz"[16] was very much reduced. Early recognition of liner dissociation can be treated by changing the liner.

Soft tissue interposition (1d)

Soft tissue interposition is indeed a rare cause of irreducible THR prosthesis. In the case of capsular interposition [7,8] reduction is usually nonconcentric whereas in muscle or tendon interposition as in our case, no reduction is possible. Posterior displacement of iliopsoas following anterior dislocation has been reported earlier [5]. When anterior dislocation is lateral to the rectus femoris, it can be easily reduced by a closed method, but when the head buttonholes between rectus femoris as in the present case, closed reduction is very often impossible because the neck gets caught between rectus femoris anteriorly and the iliopsoas tendon posteriorly resulting in a pincer effect, and one of these structures should be divided to reduce the dislocation.

Cup migration with extensive myositis ossificans (1e)

Sharkey [17] reported thirteen patients with an acetabular fracture during insertion of a cementless acetabular component occurred. The acetabulum was underreamed by 1 to 3 mm in all cases. The importance of recognizing acetabular fractures intraoperatively and the need to institute appropriate treatment to ensure a stable acetabular component has been emphasized.

In the reported case in this series, the fracture of the acetabular was not recognized and the patient was allowed to weight bearing. She presented later with the migration of the acetabular cup with an extensive myositis ossificans. The cup migration was responsible for dislocation and the extensive myositis prevented reduction of the dislocation. She was offered surgical treatment of excision of myositis and revision of the cup. However our patient refused this treatment

Subsidence of the stem (2a)

Femoral revision has been more technically demanding because the largest stem possible should be placed within the femur to prevent subsidence and provide good stabilization in the proximal metaphyseal area. Patient selection is important and long stems should not be used unless necessary. Techniques for cementless revision are demanding, but with meticulous attention to detail and technical perfection, the method has a most encouraging prognosis [18].

Significant subsidence of the stem can be seen in cementless distal fixation stem when fixation is inadequate. When subsidence is more than 2.5 cm, reduction cannot be retained by closed method due to loss of soft tissue tension. Souminen [19] reported eleven revision total hip replacements (THR) performed with the use of transfemoral distally fixing stems. The subsidence of the stem varied from 0 to 40 mm and two stems were revised during the first year because stability was lost due to subsidence.

One patient in our series (case 10) 6 dislocation in 3 days after a cementless distal fixation prosthesis (PFM). The stability was achieved only when the hip was immobilized in a pantaloon cast for 3 months. This works sometimes as it gives the best chance for a soft tissue scar to form around the hip, stabilizing the joint.

Relocation of a dislocated THR should be undertaken with careful planning in all cases. It is interesting to note that even in larger series [10,12] who described classification of dislocation, fail to include irreducible dislocation in their classification. The surgeon who is reducing the dislocated hip should be aware of these possible types of irreducible dislocation and need for open reduction or revision should be discussed while obtaining informed consent for reducing dislocation.

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Fig 1: Proximal dislodgment of the stem at the cement stem interface.

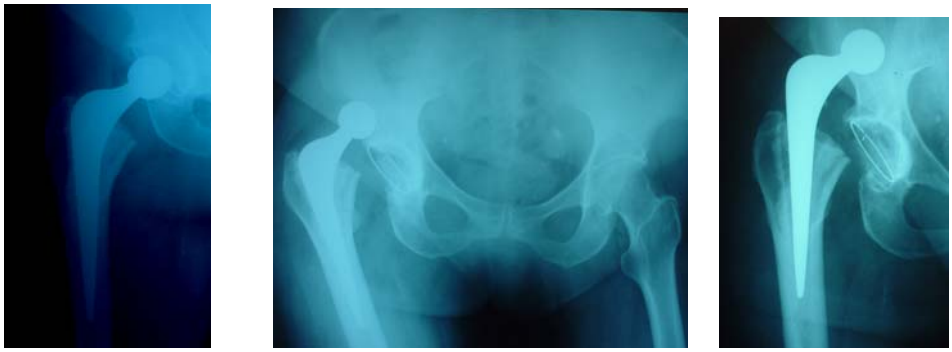


Fig 2: Dislodgment of cemented cup from the bone-cement interface

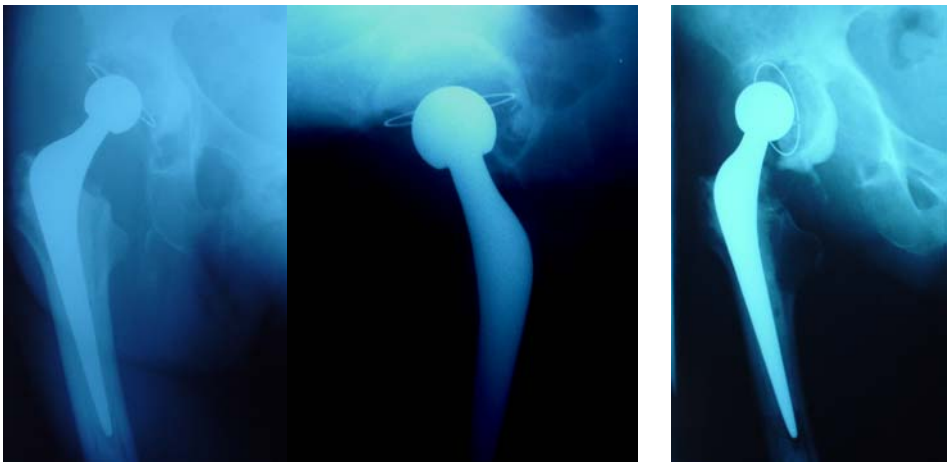


Fig3. Post reduction radiograph showing non-concentric reduction and a decrease in the "visualised femoral head" measurment of Ferenz.

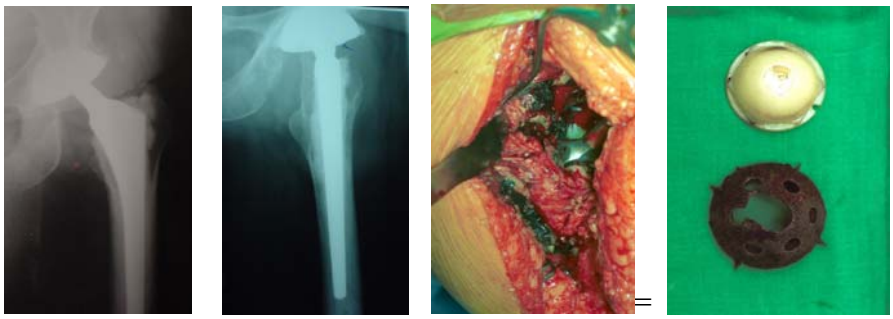


Fig 4: Anteroposterior hip radiograph showing the anterior prosthetic dislocation.

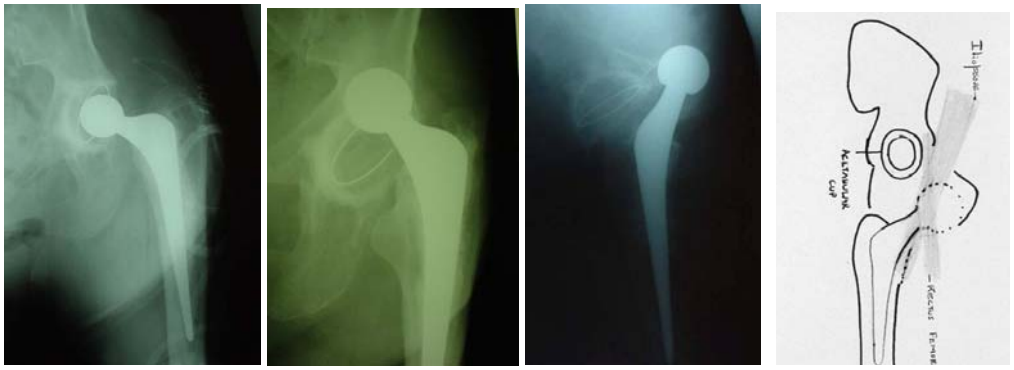


Fig 5: Dislocation with migration of the acetabular cup within two months after revision. Closed reduction was impossible because of lack of movement

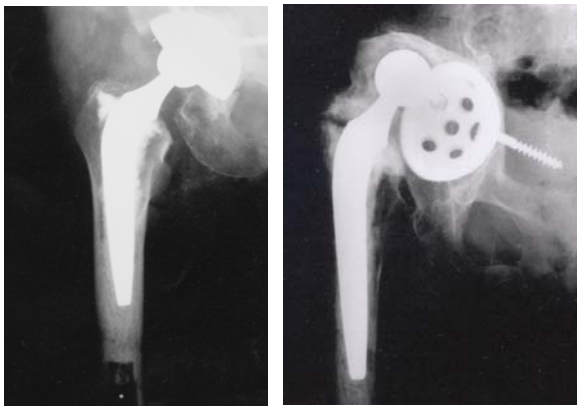


Fig 6: Anteroposterior hip radiograph showing the gross of subsidence of PFM prosthesis

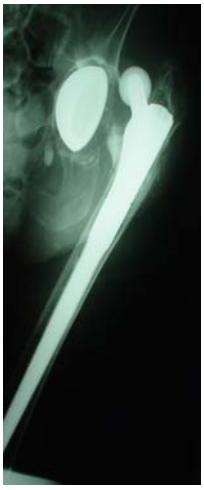


Table 1: Classification of Dislocation of THR needing open treatment

1. Irreducible dislocation:
   - 1a. Dislodgement of the stem
   - 1b. Dislodgement of the cup
   - 1c. Disassociation of the liner or head in a modular system
   - 1d. Soft tissue interposition: Capsule, tendon
   - 1e. Miscellaneous: Cement interposition; Pseudoaneurysm
     Myositis ossificans

2. Unstable Dislocation:
   - 2a. Subsidence of the stem
   - 2b. Cup migratio

Table 2: Summary of ten patients

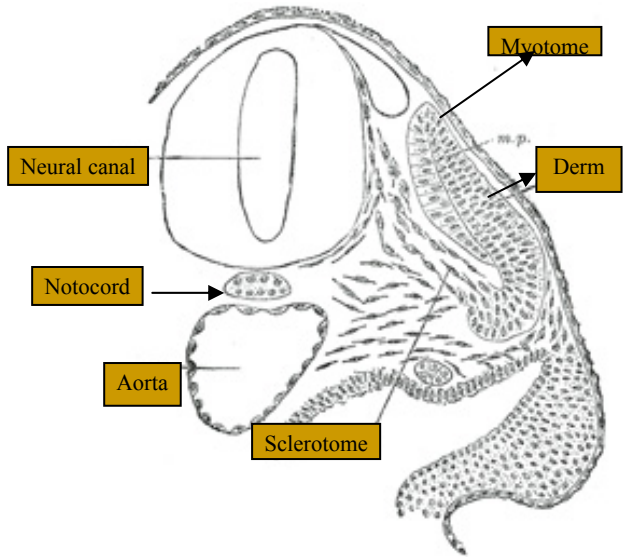
	Name	Age/ Sex	Type of THR	Type of Dislocation	Timeline for dislocation from THR	Treatment	Results
1	KR	73/F	Exeter	1a Proximal migration of the stem	3wks	Open reduction and stem is pushed in the cement mantle	Good
2	LW	64/F	CPT	1a Proximal migration of the stem	4 wks	Open reduction with insertion of stem one size smaller with cement	Good
3	GW	85/F	Exeter	1b Cup migration due to debonding from the bone	6 wks	Open reduction and recementing the cup	Good
4	DL	82/F	Exeter	1b Cup migration due to debonding from the bone with infection	3 months	Recemented ; underwent further surgeries and ended up with an excision arthroplasty	Poor
5	DA	78/F	CPT	1b Cup migration	6months	Recemented the cup	Good
6	BE	60?F	Biomet BiMetric	1c Dissociation of the liner	12 months	Revision of the acetabular component	Fair
7	AW	82/F	Exeter	1d Psoas tendon interposition	4 years	Release of soft tissue	Good
8	FP	81/F	AML	1e Myositis ossificans with cup migration	3 months	Refused further treatment: Left dislocated	Poor
9	KJ	76/F	PFM	2a	6 months	Revision hip replacement	Good
10	DL	91	PFM	2a	2 months	Hip brace for 3months	Fair

Type of THR: Exeter (Howmedica International, Inc, Clare, Ireland); **CPT**(Zimmer, Warsaw, Indian **; Mallory head with Biomet Bi Metri femur (**Warsaw IN); **AML** (DePuy)**;PFM (Sulzermedica, Switzerland**)

III Basic Science

EMBRYOLOGY

Around Day 12 after conception, the primitive streak appears and the newly begun ectodermal cells form the mesoderm by blending endoderm and ectoderm.
The creation of connective tissue, blood vessels, blood cells, muscles and the G.U. system is then begun as mesenchyme which which comes from mesoderm.
Within 21 days ectoderm forms the notochord at the cranial end of the primitive streak.
At this time the neural crest cells differentiate to begin the formation of the peripheral narrow system, the automatic nervous system and Schwann cells.
At this time too, somites are formed from mesoderm and they begin to line both sides of the notochord. Eventually they will form 42-44 pairs.
The somites continue their developmental process and soon become a lateral dermatome, a medial myotome and a ventral scleratome.
At four weeks, the limb buds also develop. The upper extremity, with pronated forearms, appears first - and begins to rotate externally. Within days the lower extremity appears and begins to rotate internally.
By week 7 the ten finger rays appear and continue to differentiate till week 12.
The beginning process involves mesenchymal aggregation into a cartilage prototype. Gradually but systematically each cartilage model becomes solid bone. This process applies to all bones except those formed through intra-membranous ossification such as the skull.
By week 12 the primary centres of ossification in the diaphyses of most bones have appeared. Most secondary centres are not present however, until after birth.



Fetus	First 8 wks Morula, Blastocyst, Embryonic plate
Embryonic plate	Ectoderm on the amniotic side Endoderm on yolk sac Mesoderm in between
Mesoderm	Is from primitive streak present in to ectoderm
Notocord:	Axial rod of cells grows from ectoderm
Around Notocord	Para axial (somites 42-44 pairs)
3 parts in mesoderm:	
1. Medial	Medial Myotome

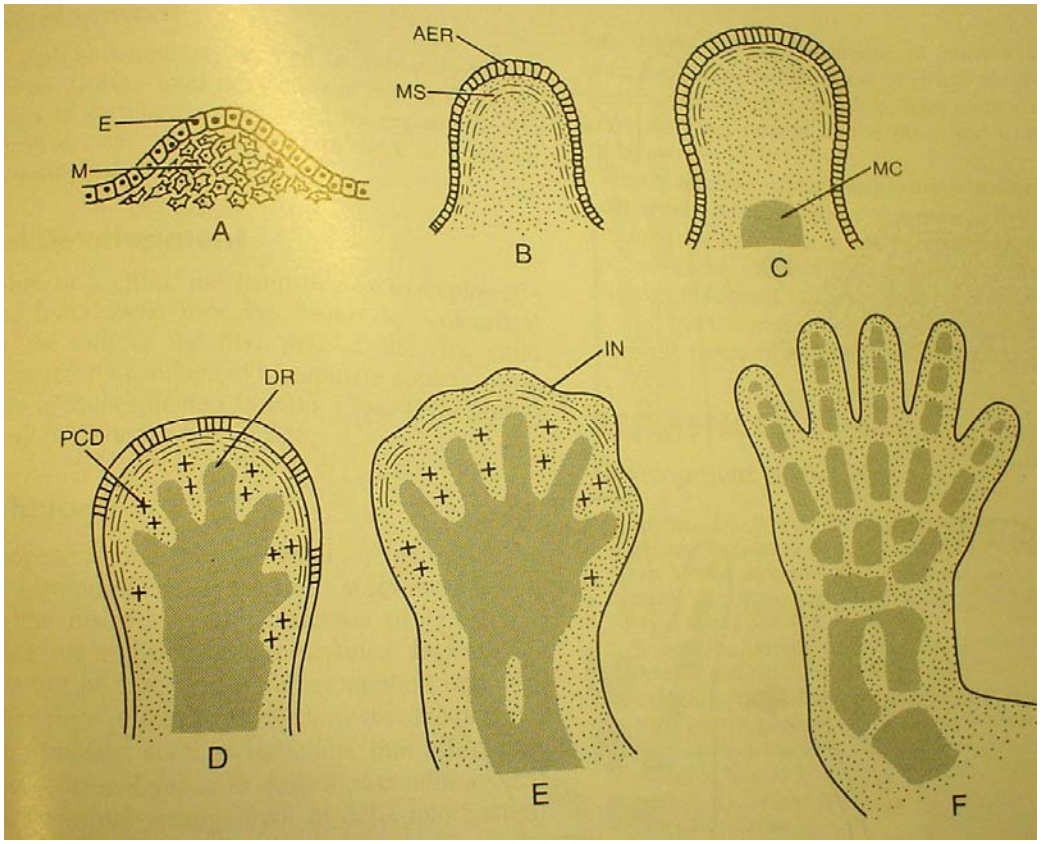
Lateral Dermatome
Ventral Sclerotome

2. Intermediate mesoderm
3. Lateral mesoderm Limb buds are from lateral plate

LIMB BUDS

4th wk Mesenchyme + ectoderm ➔ Limb bud
6th wk Chondrification of the mesenchyme
8th wk Completes the shape of the limb.
Primary ossification (Humeri is the first one)

Upper limb buds appear slightly earlier than Lower
Upper limb: rotates externally and lower limb rotates internally.
Completion of differentiation of hand and foot by 12 weeks



DEVELOPMENT OF A JOINT

Formation of the limb bud 28 days
The chondrification skeleton is complete 33 days
The rotation of the limb bud occurs 35 days
[external rotation of the upper limb
and an internal rotation of the lower limb]
Most joints are formed as a three layered 42 days
mesenchymal structure
The outer two layers are chondrogenic Forms articular cartilage formation.
The inner loose layer Laterally gives rise to menisci, tendon and ligaments, synovium.
Interzone undergoes areas of autolysis and cavitations.
The cruciates
and collaterals form by longitudinally oriented cellular proliferations.
All joints are well formed 49 days,

OSSIFICATION

UPPER LIMB: Hand

Capitate	II Intra-uterine month
Hammate	III Intra-uterine month
Trriquetrum	III year
Lunate	IV year
Scaphoid, Trapezium	
Trapezoid	V year
Pisiform	12 year
Metacarpal	2 years
Phalanges	2 years

Humerus

Head	1year
Greater Tuberosity	2year
Lesser Tuberosity	4year
Capitullum	2 year
Medial epicondyle	5 year
Trochlea	10 year
Lateral epicondyle	12 year

Forearm

Radius:	Upper end	5 year
	Lower end	1 year
Ulna	Upper	10 year
	Lower	5 year

Scapula

Corocoid base	1 year
Coracoid tip	10 year
Lower half glenoid	Puberty
Acromion (2)	Puberty
Lateral border (1)	Puberty
Tip (1)	Puberty

LOWER LIMB Foot

Calcaneum	III Intra-uterine months
Talus	VI Intra-uterine months
Cuboid	At Birth
Lateral Cuneiform	1 year
Medial Cuneiform	2 year
Intermediate Cuneiform	3 year
Navicular	3 year
Metacarpal/Phalanges	2-3 years

Femur

Head	6 Months
Greater Tuberosity	4 year
Lesser Tuberosity	12 year
Lower end	36 weeks Intra-uterine weeks

Tibia

Upper end	At birth [10 year tongue]
Lower end	1 year

Fibula

Upper	3 year
Lower	1 year

Patella	3-6 several centres at 5 years
Pelvis	
Ilium	8 week of Intra-uterine life
Ischium	3 Month of intra-uterine life
Pubis	4 Month of intra-uterine life
Triradiate cartilage	8 yrs fuses
Iliac crest	Puberty and fuses 15-18 year

IV. **A current concepts: Prevention of Perioperative Infection. July 2007 JBJS A Nicholas Fletcher**

- ➤Administration of preoperative antibiotics
  ➤Antibiotics should be continued for no longer than 24 hours
- ➤Chlorhexidine gluconate is superior to povidone for preoperative antisepsis
- ➤Closed suction drainage is not warranted in elective total joint replacement. [Risk of infection.>24 hrs increased risk for bacterial contamination.]
- ➤The rate of postoperative infections associated with occlusive dressings is lower than that associated with nonocclusive dressings.
- ➤Appropriate management of blood glucose levels, oxygenation, and the temperature of the patient reduces the risk of postoperative infection.

Proven Benefits of Antimicrobial Prophylaxis
In a prospective randomized trial, Patzakis and Wilkins found that the preoperative administration of appropriate antibiotics was the most important factor in determining the rate of wound infection in association with open fractures

Choice of Antibiotic
The most common organisms that cause deep wound infection are *Staphylococcus aureus* and coagulase-negative staphylococci such as *Staphylococcus epidermidis*[20,22-24]. Therefore either cefazolin or cefuroxime should be used in conjunction with hip or knee arthroplasty, fixation of closed fractures, and most elective orthopaedic procedures.

Type-I open fractures	I generation cephalosporin.
Type-III and some type-II	A penicillin [Clostridial]
	Vancomycin or clindamycin used for an allergy

Cross reactivity between cephalosporins and penicillins: >10%. Current data suggest a much lower risk of cross reactivity[42]. Anaphylaxis to cephalosporin is exceedingly rare, with the rate ranging from 0.0001% to 0.1%

Timing of Antibiotic Administration
An hour prior to the incision and, ideally, as near to the time of the incision as possible. An additional intraoperative dose is advised if the duration of the procedure exceeds **one to two times the half-life of the antibiotic or if there is substantial blood loss during the procedure**[51].

Vancomycin Usage

Vancomycin	MRSA
	Hypersensitivity to penicillin.

Duration of Antibiotic Administration
Supports prophylactic antibiotic administration for twenty-four hours

A single dose of antibiotics may be adequate for prophylaxis against perioperative infection. A randomized controlled trial of 466 patients treated with total joint arthroplasty showed no significant difference in the rate of surgical site infection between the group that had received a single dose of antibiotics and groups that had received prophylaxis for two, three, or seven days[68].

Open #: On the basis of their extensive reviews, the use of prophylactic antibiotics for twenty-four hours postoperatively for patients with a type-I open fracture and for forty-eight to seventy-two hours for those with a type-III open fracture.

Local Antibiotics
Impregnated cement beads: The eluted antibiotic represents a small percentage of the total amount of antibiotic present, and **elution mainly occurs during the first twenty-four hours**[78,79].

Preoperative shaving
Avoid shaving on the night before the operation because of an increased risk of surgical site infection

A meta-analysis by the Cochrane group showed that the relative risk of a surgical site infection following hair removal with a razor was significantly higher than that following hair removal with clippers (relative risk, 2.02; 95% confidence interval, 1.21 to 3.36)[91].

Furthermore, the analysis showed no difference in the rate of postoperative infections between procedures preceded by hair removal and those performed without hair removal. Whenever hair is removed, clippers, rather than a razor, should be used at the time of surgery

Preoperative Skin Antisepsis
Chlorhexidine gluconate, alcohol-based solutions or povidone-iodine.
Chlorhexidine gluconate acts to disrupt the cellular membranes of bacteria and is favored for its long-lasting activity against gram-positive and gram-negative organisms found on human skin.

Furthermore, unlike chlorhexidine gluconate, the **iodophors can be inactivated by blood** or serum proteins and should be allowed to dry in order to maximize their antimicrobial action[93]. A recent meta-analysis showed **no difference in efficacy among** skin antiseptics used in clean surgery; however, the rarity of infection in such situations probably explains the low power of the included studies[94].

Surgeon
Scrub
Chlorhexidine gluconate achieved significantly ($p < 0.01$) greater adjusted mean log bacterial count reductions than did povidone-iodine at all sampling times.

Most data indicate that povidone-iodine and chlorhexidine gluconate have equal efficacy in decreasing the initial bacterial contamination of the skin of a patient or surgeon, but chlorhexidine gluconate has a longer effect, is less toxic in open wounds, and causes less skin irritation with prolonged use.

Occlusive Drapes
The use of impregnated plastic drapes does not appear to reduce the prevalence of infection

Irrigation
Wound irrigation removes debris, foreign material, and blood clots while decreasing bacterial contamination. Recent studies have suggested that **high-pressure pulsatile lavage may also damage the architecture of cancellous bone.**

Anglen conducted a prospective, randomized study of 458 lower-extremity open fractures in which he compared castile soap irrigation with bacitracin irrigation[129]. There was no significant difference between groups with respect to the rate of surgical site infection or bone-healing delay, but the fractures **irrigated with bacitracin were associated with a significantly higher rate of wound-healing problems** (9.5%, nineteen of 199 fractures) than were those irrigated with castile soap (4%, eight of 199 fractures; $p = 0.03$).

Irrigation of wounds and, in particular, open fractures plays an important role in the reduction of infection**. Use of a low-to-intermediate pressure setting minimizes bone and soft-tissue damage while allowing removal of bacteria and particulate matter.** Irrigation with castile soap improves organic removal and may be associated with fewer problems with wound-healing when compared with irrigation with antibiotic solution.

DRAINS
18% tips removed after 24 hours were found to be contaminated
Drain for >24 hours : higher likelihood that the wound infection

In a recent meta-analysis, Parker et al. evaluated the use of drains in 3689 joint-replacement surgical wounds. The data showed no difference in rates of infection, wound hematomas, reoperations for wound complications, limb swelling, or thromboembolic complications and no difference in the hospital stay. Wound drainage **was associated with a higher risk of transfusion (relative risk, 1.43).**

In traumatic injuries showed that drainage provided no benefit with respect to rates of infection, hematomas, transfusion, or revision surgery[138,139]. Two randomized studies also failed to show that the use of surgical drainage in elective lumbar spinal surgery reduced the rate of complications, including the formation of epidural hematomas or the development of a neurologic deficit[140,141].

WOUND CLOSURE

In a study in which laser Doppler flowmetry:
1P**erfusion in wounds closed with subcutaneous sutures was greater than** that in wounds closed with mattress sutures or surgical staples ($p = 0.048$)[142].

2. Contaminated wounds are associated with a higher risk of wound infection.

3. Bacterial adherence to **braided sutures** is three to ten times higher than adherence to monofilament sutures[143,144].

4. **There is evidence that subcuticular wound closure with monofilament suture minimizes tissue ischemia and is associated with decreased bacterial contamination.**

SURGICAL DRESSING
Use of occlusive dressings, both re-epithelialization and subsequent collagen synthesis are **two to six times faster** than they are in wounds exposed to air

The host's defenses are thought to be improved under an occlusive dressing, and the creation of this hypoxic, acidic environment is thought to slow the growth of normal skin pathogens. Dressings act as a physical barrier to reduce the migration of bacteria into the wound[150]. Hutchinson, in a systematic review of 111 studies, found that the rate of infection under occlusive dressings was lower than that under nonocclusive dressings **(2.6% compared with 7.1%)**

The proper timing of dressing removal is also controversial. Studies of clean and clean-contaminated wounds showed no difference in infection rates according to whether the dressing was removed on the first postoperative day or at the time of suture removal[157,158]. After the dressing is removed, the wound may be cleaned with tap water or saline solution, but antiseptics such as hydrogen peroxide should be avoided. Showering may commence after wound epithelialization without an increased risk of infection[150].

OPERATIVE ROOM
Use of a laminar-flow operating theatre or The use of ultraviolet light

Close control of perioperative glucose levels, especially in patients with diabetes[174-179]; by maximizing patient oxygenation in the first twenty-four hours perioperatively

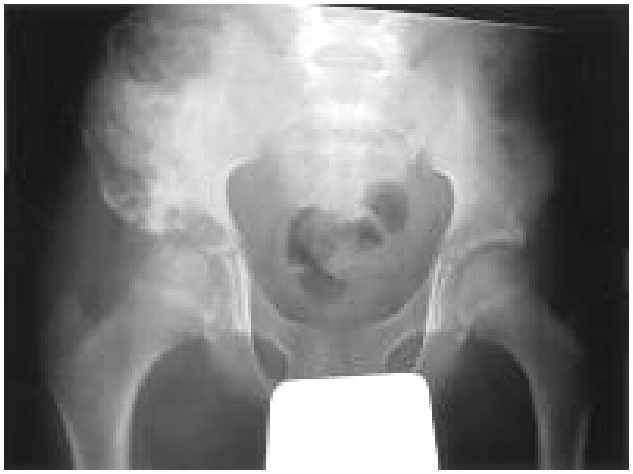
Maintaining patient normothermia in the perioperative period
Over the course of the study, the infection rate decreased 27%, from 2.3% to 1.7%. Thus, a surgical infection occurred in 200 fewer patients in these hospitals.

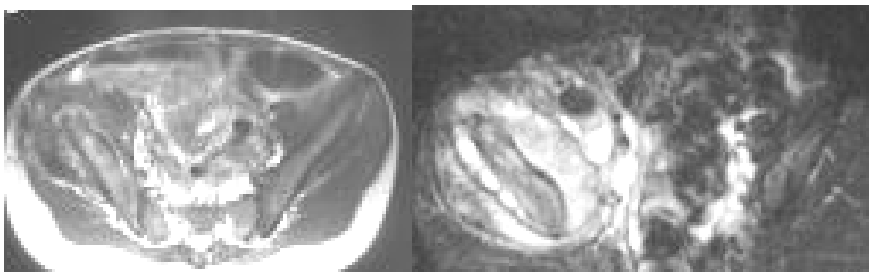
V Case Report: Hip Pain in 12 year Old

A 12-year-old boy was referred to the orthopaedic service with a 7-day history of increasing pain about the right thigh and hip associated with limping. He had a history of multiple abscesses in the past and was diagnosed as having chronic granulomatous disease. More recently the patient had an acute abscess develop in the right groin that was treated with incision and drainage and a long course of antibiotics. It failed to heal and the patient had a persistent sinus develop at the site of incision.

On examination the child was afebrile. There was a scar in the right upper lateral thigh with a sinus at the posterior end. There was painful restriction of hip motion in all ranges. Limb lengths were equal. There was associated nontender inguinal lymphadenopathy. There was no spinal tenderness or paraspinal muscle spasm. On abdominal examination, there was guarding in the right iliac fossa and no lump was palpable. The examination of the knee was normal. The neurovascular examination was normal.

Hematologic examination revealed a leukocyte count of 7800 with hemoglobin of 7.8 g/dL, (normal, 11.5– 13.5 g/dL), C-reactive protein (CRP) was 5.4 (normal, 0–10) and blood cultures were negative. The sedimentation rate was 36 mm per hour (normal, 0–20 mm/hour). Purified protein derivative skin test was negative. Swabs from the sinus discharge were negative. Radiographic investigations included plain radiographs and MRI scans, which are shown in Fig 1 &2





Based on the history, physical examination, laboratory findings, and imaging studies, what is the differential diagnosis?

RADIOGRAPHIC INTERPRETATION

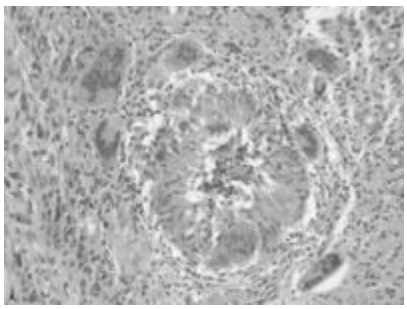
The plain radiograph (Fig 1) reveals a large multiloculated lesion involving the right iliac wing and extending to the acetabulum. The right hip is normally located. There is displacement of the right obturator internus fat plane. There also is evidence of a soft tissue mass displacing the fat plane.

The T1-weighted and post-gadolinium MRI scans show a large circumferential mass involving the right blade, which is expanded and contains multiple areas of high signal on STIR imaging in the subperiosteal region consistent with subperiosteal abscess or collection. The mass extends from the

superior aspect of the iliac blade, wrapping around and extending into the pelvis in an exophytic manner where it elevates the right iliac vessels, but does not appear to invade vessels, and is surrounded by lymph nodes at its most inferior extent.

DIFFERENTIAL DIAGNOSIS
Osteomyelitis: pyogenic or granulomatous (fungal or tuberculous)
Lymphoma
Ewing's sarcoma
Langerhans cell histiocytosis

An open biopsy was done



The biopsy specimen revealed a granuloma from the abscess cavity. The hemotoxylin and eosin stain on the left shows peripheral giant cells surrounding a central collection of acute inflammatory cells. There was no evidence of any tumor cells on histologic evaluation. The Grocott fungal stain shows scattered short hyphae.

Fungal (Aspergillous) osteomyelitis of the ilium.

Treatment

1. Exploration of the ilium was done via a Smith-Peterson approach
2. Draiinage of the subperiosteal abscess
3.Approximately 1/2 of the ilium had to be resected
4.Thorough curettage was done.
5.The hip was not opened.
6.Systemic antifungal agents (amphoterecin B) for a 6-week period.

Aspergillus species are ubiquitous saprophytic fungi frequently found in the environment and rarely are pathogenic for humans. It occurs in absence of immunosuppression.

Clinically, aspergillosis presents in one of three different ways: as an allergic disease, as superficial, locally invasive, and invasive aspergillosis. Hematogenous dissemination of Aspergillus leads to the invasive form of aspergillosis, which occurs almost exclusively in patients with depressed immune systems. Extracranial osteomyelitis is rare; however, the vertebrae, sternum, and ribs are the bones most commonly involved.
Routine gram staining and acid fast staining of tissue specimens usually are negative. Therefore, special procedures such as periodic acid schiff stains and Grocott Gomori methenamine silver nitrate staining are necessary for diagnosis. 7

Optimal therapy for patients with Aspergillus osteomyelitis has not been defined. Amphoterecin B given in doses of 0.5 to 0.7 mg/kg per day for 6 to 12 weeks is considered standard therapy and has been most widely used (as in the current case).

Lymphadenopathy is common. Large cell lymphomas commonly localize in bones. Both variants (Hodgkin's and nonHodgkin's lymphoma) have characteristic histologic features; Reed-Sternberg cell in the Hodgkin's variant, and T cells and the B cells in the NonHodgkin's variant.

Malignant bone tumor (especially Ewing's sarcoma) is known to present as a focus of infection, but because of the history and time course, did not seem likely in this case. Characteristic onion peel periosteal reaction of Ewing's sarcoma may not be seen in all cases. Biopsy features are characteristic and definitive for diagnosis. Magnetic resonance imaging is useful in distinguishing bone tumor from osteomyelitis. Bone marrow signal intensity is useful in distinguishing infections (that show areas of increased intensity) from tumors (that show cortical destruction and soft tissue mass). Langerhans cell histiocytoses have a variable presentation from a one asymptomatic lesion to a widely disseminated disease. Lesions are often solitary but patients may have multiple bone lesions and even visceral involvement. The distinctive pathologic feature is proliferation of normal histiocytic cells, with deeply indented nuclei (coffee bean shaped) on light microscopy, Birbeck granules on electron microscopy, expression of CD1 on the cell surface, and positive immunostaining for S-100 protein.

Chronic granulomatous disease is a disorder of recurrent purulent infections with catalase-positive bacteria and fungi. Although skin and mucous membranes are commonly involved, deep infections of lymph nodes, liver, and bones are seen. Neutrophilia is common and neutrophils shows deficient bactericidal activity in the presence of normal chemotaxis and ingestion. There is defect in oxidase resulting in absence or diminished production of toxic oxygen metabolites. It is X-linked in 60% to 65% of cases and autosomal recessive in less than 5% of cases. 10

I

VI MCQ

A. Squeaking

1 65% of squeaking hips: inclinication of the cup was more than 40° were in this range (P = .0003).
2.The hips started squeaking after an average of 14 months.
3.Patients with squeaking hips were younger, heavier, and taller than patients
4. More with ceramic Vs Ceramic
5.Too much Anteversion, leads to relative uncovering of the ceramic femoral head anteriorly and superiorly at the end of stance phase in normal walking, potentially causing anterior ceramic edge loading.
6. There appears to be a group whose hips only squeak after prolonged walking, such as walking around the golf course. We have not found it necessary to reoperate on any of this group of patients
7.For most patients, squeaking is not problematic and the noise can often be avoided by activity modification (particularly in cases of bending squeak).

B. **SLAP lesion**

1. The coracohumeral ligament and the superior glenohumeral ligament are the two most important structures within the rotator interval in addition to biceps tendon
2..Biceps tendon instability is almost always associated with pathological changes in the subscapularis
3.**A** partial biceps tendon tear, involving <50% of the tendon: Tenotomy should be avoided in younger active patients, whereas it is a reasonable option for more sedentary patients.
4. SLAP: Superior glenoid labrum injuries were apparently first defined as SLAP (superior) labrum anterior and posterior) tears by Snyder.
5. A type-2 SLAP lesion is the most common [the superior labral attachment of the biceps tendon pulls off the superior glenoid tubercle]
6. SLAP is common in swimmers, or in long-time overhead-throwing athletes
7.A SLAP lesion should be anticipated prior to surgery so that it is not an unexpected finding at arthroscopy. <40 years of sportsman
8.The modified O'Brien test, the crank test, the anterior slide test, the Jobe relocation test, the biceps load test

C. Anterior Knee pain following tibial nailing

1. The anterior knee pain symptoms that are present after intramedullary nailing of a tibial shaft fracture disappear in a number of patients 3 to 8 years after surgery.
2.Quadriceps, but not hamstring weakness, and lower functional knee scores are associated with anterior knee pain at 8 years.
3.Patients who never had anterior knee pain (NP) had almost balanced muscle strength during the follow-up period, the operated limbs being 2% to 9% weaker than nonoperated ones
4.No relation to a. Nail protrusion and anterior knee pain
b. Malalignment
c. Skin incision [77% tendon splitting Vs 50% in paratendinous]

D.Tarsal coalition in adults

1.localcaneal and calcaneonavicular coalitions are, by far, the most common
2.Tarsal coalition in the adult presents somewhat differently that in children.
3 **Neutral heel alignment without pes planus or peroneal spasm is the usual presentation**.
4. Many are asymptomatic but the diagnosis can be made based on the physical exam, demonstrating diminished or no subtalar motion, and routine radiographic studies.
5. Non-op Treatment is the same as in children
6. Arthrodesis fo symptomatic pain

E. About Thromboemobolism after joint replacement

1.Administering intraoperative unfractionated heparin intravenously is useful
2.Heparin should be administered few minutes before a femoral preparation and found it suppressed fibrin formation

3.10 U/kg of unfractionated heparin inhibited fibrin formation, whereas 20 U/kg completely suppressed fibrin formation. There is no increased risk of bleeding during surgery or in the postoperative period with HEA.
4.Active ankle dorsiplantar flexion increases femoral venous flow by 50% compared with baseline resting values. Thus, we strongly encourage such exercise throughout the entire recovery period. The postoperative pain relief provided by patient-controlled analgesia
5. Aspirin prophylaxis is safe, inexpensive, well tolerated, easy to administer, requires no monitoring
6.The risk of wound drainage and hemorrhagic complications with LMWH has exceeded that of warfarin and IPC
7.Severe thrombocytopenia develops in 1% of patients receiving heparin for longer than 4 days. Successful therapy requires immediate cessation of heparin, and if not promptly recognized, antibody-mediated thrombocytopenia carries a 40% mortality rate.
8.Regional anesthesia reduces the risk of thromboembolism by approximately ½ by enhancing blood flow.
9.Stasis also is reduced by minimizing the duration and extent of femoral vein occlusion caused by extreme flexion and internal rotation of the lower extremity.

F. **AboutTantalum.**

1. Porous: High volumetric porosity (70% to 80%), Low modulus of elasticity(3 MPa) physiologic load transfer [3 Vs 7 cancellous Vs 14 cortical], less stress shield
2. High frictional characteristics make it conducive to biologic fixation and is biocompatible.
3.Autopsy retrieval studies of well-functioning cementless implants have shown bony ingrowth ranging from zero to >80%, with an average ingrowth of 15% to 30%.
4.The distinct microtexture and overall geometry of this porous metal construct. Typically, the tantalum coating thickness ranges from 40 to 60 μm. For orthopaedic implants, the average pore size ranges from 400 to 600 μm.
5.The fibrous ingrowth potential of this material makes it an excellent option for coating specific regions of a prosthesis, particularly in areas of ligamentous or tendinous attachments.

G. **Patellar Tendon Autograft Vs Hamstring for ACL reconstruction**

1. At 10 years, there were no differences in graft rupture rates and is about 10%
2.Radiographic osteoarthritis was more common in PT knees than the HT-reconstructed knees
3.The current study shows that at 10-year follow-up, both HT and PT graft reconstructions produce excellent subjective results, stability, and range of motion.
4. Kneeling pain was statistically increased in PT graft reconstructed knees
5. At 2 years, there was a significantly higher number of HT knees with KT-1000 arthrometer scores □2 mm, compared with PT knees. By 5 years, KT-1000 arthrometer scores between the 2 cohorts were equal

H. **Failure Mechanisms After UKA and TKA**.

1The ten-year survival probability was 80.% with UKA and 92.0% TKA
2. This increased risk of revision following UKR was seen in all age-categories.
3. Aseptic loosening of the tibial component (relative risk, 1.9; Femoral component (relative risk, 4.8 [
4. Periprosthetic fracture (relative risk, 3.2 [95% confidence interval, 1.2 to 8.9]; p = 0.02) as compared with total knee replacement.
5. Unicompartmental knee replacement was associated with a lower risk of infection compared with total knee