



IAS NEWSLETTER

Indian Arthroscopy Society

Editorial

The 7th Annual Indian Arthroscopy Conference was successfully held at the luxury beach resort Cidade de Goa between 25th September 2008 to 27th September 2008. Almost the entire hotel was booked for IAS delegates who came in unprecedented numbers. Perhaps Goa was a magnet that attracted them or perhaps the conference programme was enticing enough for everyone to let go. Many came with their families to share their joys.

The foreign flavor was adequately represented by nine much esteemed foreign faculty members. Dr Freddie Fu who is the master arthroscopist from USA came in to give a demonstration of his Arthroscopic double bundle reconstruction of ACL ligament. Prof. Hiroyuki Sugaya from Chiba, Japan reputed for his Arthroscopic Bony Bankart repair, was also another star attraction.

Delegates came out in large numbers that were unprecedented. As organizers we were geared up for 300 plus delegate record but the final tally of over 400 set a separate bench mark by itself. This also increased our responsibility considerably. It seems that the GOA fever peaked a few weeks before the conference started. We realized that because there was a cascade of phone calls to influence their selection for the workshops. The three arthroscopy workshops were closed one month before the conference. It was getting difficult to negotiate friendly phone calls & we did our best to accommodate everyone.

In terms of academic pursuits, the 7th IAS conference set several milestones. For the first time there were 9 live surgeries during the workshop on the same day. Highlights during the workshop include a live double bundle ACL reconstruction by Dr Freddie Fu & Dr Anil Ranawat. Similarly Dr H Sugaya performed an Arthroscopic rotator cuff repair for a 3 month old Greater tuberosity avulsion with not less than seven Suture anchors. Apart from the didactic lectures covering arthroscopy of various joints, there were two memorable debates. The debate on Single Vs double bundle was chaired by Dr Freddie Fu and Dr Anant Joshi & the debate on Single row Vs double row was between Dr Pol Huysmans & Dr H Sugaya. Both debates were heard in rapt attention and received a tremendous response. It was commendable to say that the convention hall was packed with delegates. We have included the proceedings of the conference including the lectures and discussions in an organized tailor made CD which is being issued to all members. This is also a first for any IAS conference.

It is impossible to thank everyone in one breath. We would sincerely like to thank all people involved with the conference and faculty members & delegates who made this conference a resounding success. Hope & wish there are many more such grand conferences to come.

In this newsletter we have hand picked five articles for your information along with snippets of information from the Goa conference. Your contributions in terms of letters, experience & suggestions are most welcome. You may mail me at docshoulder@gmail.com

- Dr. Ashish Babhulkar

Organised By Team Pune 2008

7th IAS Conference

Cidade de Goa

ISAKOS

REPORT OF THE SEVENTH ANNUAL INDIAN ARTHROSCOPY SOCIETY (IAS) CONFERENCE

September 25th to 28th, 2008
Goa, India

The seventh annual Indian Arthroscopic Society Conference (IAS) was held in Goa, India, from the 25th to 28th September, 2008 in collaboration with ISAKOS. This conference was attended by more than four hundred delegates not only from all over India but also from neighboring countries like Sri Lanka, Bangladesh, Nepal and Myanmar. Dr. Parag Sancheti was the organizing secretary for the meeting and Dr. Ashish Babhulkar and Dr. Sachin Tapasvi were the joint organizing secretaries. The workshops were held at Goa Medical College under the leadership of Dr. Bandekar, HOD, Orthopaedics.

The conference based on the theme "Controversies in Arthroscopy" was held with the purpose of discussing various controversies and updating delegates on current concepts and recent advances in arthroscopy. This conference also commemorated the completion of 25 years of the Indian Arthroscopic society.

The main conference which was held at a beach side resort in Goa on the 26th and 27th September, 2008 composed of guest lectures, debates, symposiums, free papers and interactive sessions. Renowned international faculty included Professor Freddie Fu from Pittsburg USA, Professor Hiroyuki Sugaya from Japan, Dr. Anil Ranawat from New York USA, Dr. Isik from Netherlands, Dr. Simon Frostick from United Kingdom and Dr. Cugat from Spain.

They delivered lectures and interacted with the delegates and other faculty. The conference also involved acclaimed national faculties like Dr. Anant Joshi, Dr. Sripati Rao, Dr. Dinshaw Pardiwala, Dr. David Rajan and others.



Organizers of the 7th IAS meeting in Goa, India
Left to right: Dr. Ashish Babhulkar, Dr. Sachin Tapasvi and Dr. Parag Sancheti.

The pre-conference workshops were held on the 25th September, 2008 at Goa Medical College. Dr. Freddie Fu did a live demonstration on double bundle ACL reconstruction surgical technique. Dr. Sugaya demonstrated double row repair for rotator cuff tear of the shoulder.

Dr. Freddie Fu, Vice President of ISAKOS, expressed his appreciation of the proceedings of the conference and envisioned a great future for Indian Arthroscopy. During this conference an ISAKOS booth was set up which gave information regarding the various activities of ISAKOS. The Indian Arthroscopy society president Dr. Sripati Rao expressed immense satisfaction on the execution of the conference and its academic content. Dr. Parag Sancheti secretary of IAS expressed his desire to develop stronger ties with ISAKOS which would aid in the further development of Arthroscopic surgery in India.



ISAKOS booth set up at the IAS meeting in Goa, India
Left to right: Dr. Parag Sancheti, Dr. David Rajan, Dr. Freddie Fu and Dr. Anant Joshi

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“Frozen Shoulder”

Dr. Ashish Babhulkar

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The terminology for “Frozen Shoulder” is rather confusing and over the years frequently assumed various names without making us any wiser regarding its aetiology or treatment. Duplay in 1896 called it “Scapulo-humeral” peri-arthritis. Codman elaborated that it is difficult to define, difficult to treat and difficult to explain pathologically. Unfortunately not much has changed in our understanding of why the shoulder becomes frozen. Peri-arthritis is a vague non specific term suggesting arthritis around the shoulder joint. Hence it is now practically discarded. At the same time our understanding of different shoulder conditions has improved remarkably over the last decade. A number of conditions that present as frozen shoulder are now apparent to us as either AC joint arthritis, rotator cuff tears, nerve compression syndromes or even labral tears. In my practice only about 10% of the shoulder patients are diagnosed with Adhesive Capsulitis and a majority of patients are treated specifically for the condition that they suffer with. Worldwide shoulder clinics have noted that in fact Adhesive Capsulitis is not such a common entity after all. It is a sad travesty of justice that even in this day and age patients of adhesive Capsulitis are counseled to bear the “discomfort” for two years as the condition is self limiting.

Aetiology

Certainly, Adhesive Capsulitis does not affect the young. For again unknown reasons, it has a predilection for diabetic patients in whom the affection is far more vicious and refractory to treatment. An immunological basis has been put forth due to an increase in HLA B27 with reduction of IgA and an increased CRP. It was proposed that a type IV autoimmune reaction against an infarcted supraspinatus triggered the immunological cascade. Alternatively peri-arthritis was explained as a collagen vascular disorder with increased GAGs and reduced glycoproteins. Kopell suggested that it was a result of suprascapular nerve compression leading to shoulder impingement secondary to weakness of the supraspinatus muscle. To some extent this has been my observation where some of the stiff shoulders have been a result of compression of the suprascapular nerve at the suprascapular notch. When it is compressed in the spinoglenoid notch (as was my finding in thirteen of the nineteen cases) the shoulder was not stiff at all. However, the pattern of stiffness in such patients is different and the abduction and flexion is affected more than the rotation. The modern definition put forth by Zuckerman is slightly more specific – it is an uncertain aetiology with restriction of both active and passive

ROM in absence of known shoulder pathology. In essence one must rule out all the known shoulder conditions as elaborated above and then on exclusion arrive at the diagnosis of Adhesive Capsulitis. Tim Bunker has done some histological work on shoulder peri-arthritis and tissue from the released anterior capsule and Coraco-humeral ligament has been studied. Fibroplasia similar to Dupuytren’s contracture has been observed.

Stiff Shoulder Subtypes

Stiff shoulders represent an assortment of conditions. It is imperative that we distinguish the various types such as post traumatic, post surgery, associated with diabetes and idiopathic stiff shoulder. The presentation, severity of affection, prognosis and response to physiotherapy are widely divergent in each group. Holloway in his publication has compared the response in each group and concludes that by far the worst presentation is by the post operative stiff shoulders followed by the post fracture stiff shoulder group.

The post fracture patients are usually middle age and are invariably immobilized or strapped to the body for a varying length of time from three weeks to three months. Fractures around the pectoral girdle such as clavicular fracture to a formal three part comminuted proximal humerus fracture can present with a stiff shoulder. Usually this is a result of a capsular contracture but occasionally there is malunion of the bone fragments (often in varus) leading to altered biomechanics or in elderly patients a rotator cuff tear in addition to the fracture.

Shoulder stiffness following surgery – either open or arthroscopic surgery. These are complex patients to manage as the intensity of the inflammatory reaction from within the joint is huge and the accompanying pain and impingement reduce the patient compliance for physiotherapy too. Any form of surgical intervention is likely to incite a similar response and hence the options for treatment remain considerably limited. On the whole their prognosis is rather poor and depends on the integrity of rotator cuff and the patient’s ability to continue with a structured rehab programme. If the patient develops sympathetic dystrophy (CRPS I) in addition to the surgical trauma the prognosis dramatically deteriorates the picture.

A diabetic patient with shoulder stiffness is commonly seen amongst the peri-arthritis patients. Even then diabetes is not the only condition to be associated with a stiff shoulder. Myocardial infarction, Post CABG patients, pacemaker insertion and Colles’ fracture can incite a very similar

form of peri-arthritis secondary to a sympathetic stimulus. It is thus sensible to club all these conditions together as Shoulder stiffness secondary to sympathetic stimulus (S5).

The idiopathic stiff shoulder is a much rarer entity than the above conditions and invariably a causal lesion can be detected such as a SLAP lesion if a history of trauma is present, sometimes AC joint arthritis on special imaging of X-rays or MRI scan can be a surprise finding too. In the absence of any of these lesions a diagnosis of idiopathic Adhesive Capsulitis is inevitable. In my experience these respond exceedingly well to a proper shoulder rehab programme in a predictable manner over three to four weeks. Patients are often surprised to find a pain free shoulder with a full range of movement after therapy when they had soldiered on for a few years.

Clinical Presentation

Invariably the onset of stiffness is over a period of time. The disconcerting symptom is the pain associated with the synovitis, typically seen in Diabetic Stiff shoulders. Usually Figure 1 Pre op 5 years Stiff Shoulder



Figure 1 Pre op 5 years Stiff Shoulder

pain appears on lying down especially at night times and keeps the patient awake. Occasionally they have to sleep upright in an armchair to use the assistance of gravity, to distract the greater tuberosity from the acromion, so as to decompress the aching supraspinatus tendon. NSAIDs are of little use and Figure 2 - 3 mths post Op after Arthroscopic Adhesiolysis.



Figure 2 - 3 mths post Op after Arthroscopic Adhesiolysis.

fomentation with a topical gel bring temporary relief. The patients ADLs are severely affected as mundane activities such as combing the hair, wearing a shirt reaching for an object behind require external rotation. Similarly, cleaning the opposite armpit, reaching the back and accessing the back pocket require internal rotation which can be variably affected. Sudden movements are excruciatingly painful. Reeves have described the course of progress of peri-arthritis in three stages including a “frozen” stage and final “thawing” phase. Most

patients have individual characteristics and very few follow a pattern that can be segregated. The period of recovery is also unpredictable with some patients improving in few months whereas there are others who have failed to improve even after the given one year of suffering.

Examination findings reveal a stiff painful shoulder with a markedly positive Hawkins sign for impingement. At times a vigorous Hawkins test can be agonizingly painful to the extent that the patient is forced to sit down and will not cooperate further examination of the shoulder. This is suggestive of intense synovitis within the gleno-humeral and subacromial joint space. The rotator cuff examination, especially the supraspinatus is weak but in true frozen shoulder the cuff is intact. The presence of synovitis prevents recruitment of the supraspinatus rendering a static examination for power as weak. The AC joint is normal and there is no evidence to suggest shoulder instability. Certainly the shoulder is very stiff but the rotation is disproportionately affected.

Investigations in the form of a Shoulder X-ray – True AP & Supraspinatus outlet view are essentially normal, perhaps with some sclerosis near the tuberosity. USG & MRI of the shoulder usually does not add to our knowledge though some amount of long head of biceps effusion is invariably present. Biceps tendonitis or effusion within the sheath is a common finding in most painful shoulders that impinge. This is a secondary phenomenon and generally does not warrant any special attention towards the biceps tendon as was done in the past. Treatment of the main condition will help resolve the biceps tendonitis.

Investigations

Standard Radiological series must be ordered. My preference is for True AP & Supraspinatus outlet views typically in patients above 45 years age. Very often due to the disabling contracture affecting internal rotation the outlet X-ray is difficult to perform or does not develop as expected. A typical stiff shoulder patient should



reveal normal X-ray pictures. However if one is dealing with rotator cuff tear then proximal migration will be apparent. Seldom in my practice I have



picked up tumours such as osteosarcoma, chondrosarcoma or even fibromatosis presenting as stiff shoulders. Sclerosis of the greater tuberosity with kissing lesion at the eyebrow of the acromion are suggestive of chronic impingement. Rarely one sees a reflection of CRPS (Previously known as Reflex Sympathetic dystrophy RSD) in form of stippling on the X-ray & some enthusiastic surgeon actually orders a CT scan only to confirm the typical consequence of a chronic stiff shoulder – CRPS. MRI in presence of adhesive Capsulitis reveal diffuse tendinosis of the Supraspinatus & infraspinatus, typical inflammation & increased signal in the rotator interval classically seen in the sagittal oblique T2 weighted views. Astute radiologist will also report narrowing of the axillary pouch.

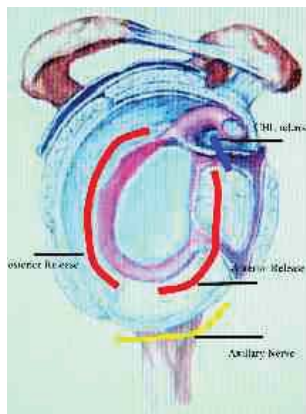
Treatment

Unless the shoulder is excruciatingly painful and exceptionally stiff, a trial of conservative treatment is advisable. A good in house shoulder rehab programme is certainly helpful. It is pointless to relegate a patient of periartthritis to interminable physiotherapy forever. If a patient is bound to respond to conservative measures then this will be apparent within two to three weeks. If they have only marginally responded then it may be appropriate to advise surgery. Manipulation under anaesthesia has been the procedure of choice in the past when the shoulder joint was less understood. It has worked occasionally but it does not burn any bridges. The main cause of the problem & restoration of normalcy are not achieved. At times MUA has caused problems too. There are examples of patients after MUA developing an even worse stiffness & pain. Avulsion of the lesser tuberosity and spiral fracture of the humerus has also been documented. I have treated patients with humerus fractures, Shoulder Dislocation after MUA. Matsen has described a tedious open adhesiolysis of the shoulder whereby all tight structures are released under vision and after a subscapularis tenotomy and sometimes a Z-plasty of the subscapularis. It appears to be a rather major procedure and post operative stiffness is a likely possibility.

The arthroscopic findings in periartthritis reveal a dense synovitis and inflamed capsule and synovium which appear red and angry. There are clumps of inflamed fibrous tissue adherent to the undersurface of the rotator cuff. On debriding this layer with a shaver it provokes additional bleeding. Often inserting the scope is embarrassingly difficult as the joint is terribly stiff. Arthroscopic release of the Coraco-Humeral ligament (CHL) is a proven procedure with release of only the involved tissue under supervision is achieved. CHL lies between the Long



head of biceps and subscapularis and occupies the rotator interval. The premise in releasing the CHL is restoration of external rotation by itself will achieve abduction. The Coraco-Humeral ligament is an extra-articular ligament and can also be released in an open fashion without having to do an arthroscopy. However arthroscopy has the advantage of achieving adhesiolysis, synovectomy and



subacromial decompression simultaneously and more effectively. Also arthroscopy is a less invasive procedure and spares the subscapularis allowing early resumption of physiotherapy.

In addition to the CHL release, I always prefer to do a anterior capsule release from 3 O'clock to 6 O'clock. This is best performed with the ehp for an RF device as the heat transmission is precise with limited collateral damage. The axillary nerve is just 8-9 mm from the inferior capsule. Only in the presence of a internal rotation restriction should the posterior capsule be addressed. When the posterior capsule is also tight, thereby limiting internal rotation, a similar arthroscopic release of the posterior capsule is also effective. In a few cases I have described a tight impeding antero-posterior band binding the articular surfaces together. Release of this band helps open out the shoulder and allows easy navigation of the scope within the shoulder. A subacromial decompression is standard to rid the subacromial space of adhesions and allowing free movement of the rotator cuff. Whether to do an acromioplasty (restore the acromial morphology) depends on the type of acromion seen on the supraspinatus outlet view (see figure). Post-operatively patients are given a sling for comfort but this is promptly discarded by the fifth day. Rehab is started on day five for the next two to three weeks depending on the severity of affection. Patient is sent on a home programme by the third week to continue the exercises for an additional

four weeks. The pain relief is achieved soon, however movement restoration continues for four to five months post-op. Patients who have been chronically affected with a degenerated rotator cuff may not achieve a full ROM but manage their ADLs easily.

Results



Figure 3 Graphic depiction of AP Band.

The series of conservatively managed stiff shoulders is a huge series with patients undergoing a structured rehab programme and over 1800 patients participating. The results are overwhelming and beyond computation. The rehab programme is beyond the ambit of this article. However over the last six years I have performed 62 Arthroscopic adhesiolysis for various conditions presenting with stiff shoulders. These include only patients with remarkable restriction of internal & external rotation without any associated tear of rotator cuff or labrum. Patients were started on the rehab programme approximately 2 weeks after the surgery. There onwards they were followed every month for six months. This series does not include patients of rotator cuff tears with stiffness. 39 patients did exceedingly well returning UCLA scores of average of 32/35 at the end of three months post operatively. Fifteen patients achieved an average UCLA score of 28/35 after three months. Five patients took almost seven months to improve from an average UCLA score of 12/35 to 30/35. Three patients were from out of town and although lost to follow up were contacted and are pain free with a full range of movement and little disability. However since they were from Agra and Nagpur & Rajkot, there exact UCLA scores were not available to compare. However a telephonic assessment of UCAL was in excess of 32 for each of them. Interestingly none of the patients had a recurrence, or disability or pain seven months after surgery. It seems that Arthroscopic adhesiolysis is a useful procedure for an elected few patients who have been given an adequate trail of rehab.

ID	Age / Sex	Duration (Months)	UCLA Pre (N=39)	UCLA Post (N=39)	VAS pre-Op	VAS post-Op
AR	52yr/M	09	13	30	8	0
SP	55yr/M	14	8	28	9	1
VM	51yr/M	8	9	31	8	0
PA	46yr/F	6	8	19	9	4
SV	54yr/M	72	12	31	3	0
YS	39yr/M	7	11	33	7	1
ND	40yr/M	8	15	30	9	2
AVE	48yrs	17.70	10.85	28.85	7.6	1.14

Table 1 Results of Complex stiff shoulders with AP Band - presented at APOA & MOACON - best paper award.

Conclusion

Adhesive Capsulitis is not a common entity and a thorough search must be done to rule out other more common affections. A history of fall, inflammatory symptoms affecting other joints and primary osteoarthritis of the shoulder must be ruled out to arrive at a diagnosis of periartthritis. It is customary to offer patients a rehab programme initially. Manipulation under anaesthesia is widely practised but there is little evidence in literature on its cost benefit ratio. Either ways a structured rehab programme is essential. If rehab does not yield suitable results an open or arthroscopic CHL release in combination with capsulotomy is a satisfactory procedure with a predictable outcome. The results of Arthroscopic adhesiolysis are certainly variable amongst patients. One needs to factor in the duration of symptoms, extent of rotator cuff degeneration, extent of contracture & the motivation and ability of the patient to undergo a post op rehab programme.

References

SM Griggs et al - Idiopathic Adhesive Capsulitis. A Prospective Functional Outcome Study of Non-operative Treatment. JBJS- Am Oct 2000, 82A ?G. Brian Holloway, JBJS - Arthroscopic Capsular Release for the Treatment of Refractory Postoperative of Post-Fracture Shoulder Stiffness JBJS 83A 2001
 DM Kieras, FA Matsen III - Open release in the management of refractory frozen shoulder. Orthop Trans 1991
 JP Warner MD et al - Arthroscopic release of postoperative capsular contracture of the shoulder. JBJS 79-A, Aug 1997.
 Ogilvie-Harris DJ, Myerthall S: The diabetic frozen shoulder: arthroscopic release. Arthroscopy 1997 Feb; 13(1): 1-8
 Ozaki J, Nakagawa Y, Sakurai G, et al: Recalcitrant chronic adhesive capsulitis of the shoulder. Role of contracture of the coracohumeral ligament and rotator interval in pathogenesis and treatment. J Bone Joint Surg Am 1989 Dec; 71(10): 1511-5
 Zanotti RM, Kuhn JE: Arthroscopic capsular release for the stiff shoulder. Description of technique and anatomic considerations. Am J Sports Med 1997 May-Jun; 25(3): 294-8

Foreign Faculty for 7th IAS Goa

Star foreign faculty members included Freddie Fu- USA, Prof Sugaya- Japan, Prof S Frostick UK, Pol Huysmans Netherlands, Isik Akgun Turkey , Collins France, Amit Chandratraya - UK

7th IAS WORKSHOP Goa

Unique workshop day on 25th Sep 2008 Basic & Advanced Knee & Shoulder workshop with simultaneous EIGHT live Surgeries.

7th IAS Conference highlights

Highest number of delegates over 400 delegates registered. Unprecedented registrations for 3 simultaneous workshops.



ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

Dr. Parag Sancheti

Chairman, Sancheti Institute for Orthopaedics and Rehabilitation
Secretary, Indian Arthroscopy Society

This guide was written with an intention to provide the reader with a step by step methodology for performing an arthroscopic ACL reconstruction surgery. There are figures illustrating the surgical technique. The accompanying CD will show the arthroscopic view that supplement the text.

INTRODUCTION

Anterior cruciate ligament (ACL) is an intra-articular ligament, covered with synovial sheath, running obliquely from distal femur to proximal tibia. Proximally, it is attached to the posteromedial aspect of lateral condyle of femur, and distally, it is attached to the intercondylar eminence of tibia between the anterior horn of medial and lateral meniscus. The ligament provides restraint to:

- Anterior translation
- Internal rotation
- Varus and valgus angulation
- Hyperextension of the knee

An ACL injury is usually an indirect one. ACL can be injured by forces to the knee involved in deceleration, twisting, cutting and jumping. The spectrum of ACL injuries can range from partial sprains to complete tears.

GRAFT CHOICES

Autografts, Allograft, and Synthetic grafts.

Out of these the most commonly used are the autografts. Various types of autografts are

- Semitendinosus and gracilis quadruple graft
- Semitendinosus quadruple graft
- Bone-patella tendon bone graft
- Quadriceps tendon
- Tendo Achilles
- Tibialis anterior tendon graft

Out of the above the most widely used are hamstring and bone patella bone graft.

PROCEDURE

Anaesthesia: This can be performed under general anaesthesia or regional anaesthesia (Spinal/Epidural).

Antibiotics: To be given 2 hours prior to anaesthesia. Most commonly used is a third generation cephalosporin.

Tourniquet: Well padded tourniquet applied to the proximal thigh. Pressure elevated to twice the systolic pressure after painting and draping and exsanguination with an esmark bandage.

Patient Positioning: This can be done in two different ways depending upon the surgeon:

- Supine with knee extended and a post on the lateral aspect of the proximal thigh
- Supine with knee flexed and a leg holder around the proximal thigh.

Painting and Draping: Painting is done with 10% povidone iodine extending from tourniquet (proximal thigh) to the foot area. Draping can be done using disposable commercially available disposable arthroscopy drapes

Irrigation: This can be either normal saline or glycine. The latter allows the use of cautery for coagulation purposes. Either of these can be suspended over an i.v stand sufficiently high for good flow rate. This is further aided by using wide double lumen plastic tubing.

Portal Placement: In majority of ACL reconstruction only two standard portals are required. **Anterolateral** portal made at the standard location and **Anteromedial** portal which is made near the patellar tendon, helping in jig placement. To place the portal accurately a needle can be first inserted and visualized under the scope and then the portal made. In addition to these standard portals sometimes additional portals could be required like accessory medial (posteromedial), posterolateral portals. These are especially required to treat associated pathologies like meniscal injuries.



Assessment of ACL rupture: ACL rupture is confirmed after visualization. Usually it is a mid substance tear. Avulsion from the tibial and less commonly from the femoral side is also known. Nowadays emphasis is given to individual bundle ruptures namely

anteromedial and posterolateral. Then the next step is to proceed for preparation of the tibial footprint area. It is essential to leave adequate stump of ACL on the tibial side, this helps in maintaining proprioception. At the femoral side the remnants of the ACL are removed. Residual ridge is shaved off and "over the top position" (described later) identified with a probe. Any associated meniscal injury is taken care of at this stage. After this graft harvesting is started.

Notchplasty: The intercondylar notch is normally in the form of an inverted U. In cases of long standing rupture osteophytes may encroach the site converting it into a V. In this case notchplasty is performed with a burr so as to avoid a potential graft impingement and rupture.

Harvesting Hamstring Graft

An anteromedial incision is made three fingers breadth below the joint line for a length of 3-4 cms. This incision can be straight or it can be oblique with the proximal limb of the incision extending in the posteromedial direction. Skin and subcutaneous tissues are incised. Superficial fascia on the posteromedial corner is dissected with blunt dissection techniques.



Sartorius fascia incised in an L shaped fashion. After this tendons of semitendinosus and gracilis are identified.



The semitendinosus tendon is thicker and is distally placed, while gracilis is thin and proximal. Each individual tendon is elevated with the help of Mixer forceps, and freed of accessory bands. The tendons are then dissected out with the help of either a closed or an open stripper.



While dissecting the tendons from the tibial end particular emphasis is to be given in dissecting some portion of periosteum along with the graft. This not only aids in maintain the length but also in graft healing.



Graft Preparation

Graft is then taken to the back trolley over a graft board. It is freed from all the soft tissues with the help of periosteum elevator. Length is measured. Graft is then secured with a No. 2 Ethibond suture. There are two ways of doing this:



Whip Stitch



Double Loop Cinch

Graft Tensioning

It has been shown in various studies that preinsertion tensioning of graft helps in avoiding laxity. This is done with the help of tensionometers up to 15-20 pounds. Care is taken to avoid drying of graft during the entire procedure.



Harvesting Bone tendon bone graft:

A midline incision is made over the patellar tendon. Skin, subcutaneous tissue incised.



A mobile window is created in the subcutaneous plane so that through a small incision, the patella and the tibial tuberosity can be exposed.



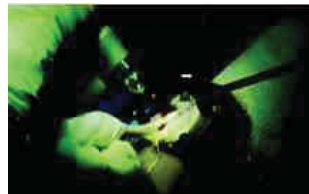
Depending upon the required length, required markings are done on the lower end of patella and tibial tuberosity. Pre-drilling of the bone plugs to pass sutures is done.



Bone plug harvesting from the tibial tuberosity is done first by drilling multiple holes and then connecting them with an oscillating saw.



Then the required tendon width is marked on the patellar tendon and harvested in continuity with the tibial bone plug. Now the tibial bone plug along with the patellar tendon is lifted up and marking of the patellar bone plug done and osteotomy completed with an oscillating saw.



The bone patellar tendon bone is then harvested and trimmed to the proper size so as to pass freely through the proper selected sizer.



Tibial Tunnel

Tibial tunnel is made with a jig (aiming device) having various angles, angle selection depending upon the length of the graft. It is utmost important to place the jig at an isometric point. The isometric site is

- 4-7 mm anterior to the posterior cruciate ligament
- In line with the free edge of anterior horn of lateral meniscus



After the jig placement jig sleeve is inserted. The jig is parallel to the floor with the knee flexed at right angles. In the frontal plane it is about 25-30 degrees to the sagittal plane. Then a guide wire is drilled through the sleeve. This should come about 7 mm anterior to the PCL. The cannulated drill bit having diameter equal to the graft diameter is passed. At this stage it is helpful to check for graft impingement by extending the leg after the drill bit comes in the joint.



Femoral Tunnel

This is done with the help of an endoscopic femoral drill guide with various offsets, mostly varying between 4-8mm.



Care should be taken to place the extended arm of guide at over the top position and not at the resident's ridge. This is usually between 10-11'o clock position for the right side and 1-2'o clock position for the left side. Then a femoral guide wire is passed allowing it to exit the skin on the lateral aspect of the thigh.



If the choice of femoral fixation is suspensory (Endobutton; Smith and

Nephew) then a 4.5 mm drill bit is used and drilled through and through.



Tunnel length measured with the help of a depth gauge.



Depending on the graft length and diameter appropriate size and length femoral drill bit is used.



Graft Placement

Graft is quadrupled over the endobutton. Endobutton secured with a No.2 Ethibond and No. 1 vicryl. Graft is pulled over a guide wire.



Endobutton flipped, the same confirmed by pulling the distal end.



Again confirmation of graft impingement is done by complete knee extension. Another useful thing is to observe whether the flipped endobutton is not entangled in the muscle tissue by moving the scope in the suprapatellar pouch. If so, it is released either with a probe or making a small incision directly over the area and releasing it.



Tibial Fixation

The knee is cycled for about 10-15 times to tension it.

Tibial fixation is secured with either fixation post, sutures tied over a washer, staple or with the help of an interference screw. Here we present the method of fixation using Intrafix device. This allows the graft to be tensioned on the tibial side as well. Also, the graft is pushed along the walls of the tunnel allowing for a 360 degree contact and better healing.

Sutures are purposefully kept long and are looped over the tensioning device.



The graft is cycled with this tensioning device at the desired tension.



The plastic sleeve is readied on its holder.



The tibial passage is dilated with a dilating device.

The plastic sleeve is then inserted.



This is backed up with an interference screw of appropriate diameter.



In the end wound is closed over a negative suction drain after achieving haemostasis. Compression dressing is given and a support with a long leg knee brace provided.

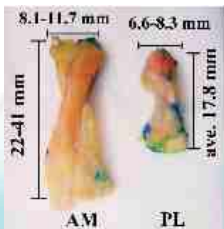
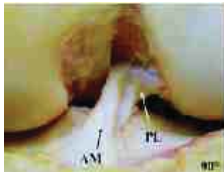


ANATOMIC DOUBLE BUNDLE ACL RECONSTRUCTION

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I. Rationale for Anatomic Double-Bundle ACL Reconstruction

- Anatomy is the basis of orthopedic surgery. We should try our best to restore the native anatomy in all orthopedic procedures, including ACL reconstruction.
- Traditional ACL reconstruction has been successful in returning patients to sports activities.
- However, radiographic evidence of degenerative changes has been observed in up to 90% of patients at mid-term follow-up study after traditional single-bundle ACL reconstruction. [3]
- Critical review of the literature from the last ten years reveals that between 10% and 30% of patients complain of pain and residual instability following traditional single-bundle ACL reconstruction. [1] Meta-analysis showed that no more than 60% of the patients will make a full recovery after their ACL reconstruction. [2]
- The PL bundle, which is not traditionally reconstructed, plays a significant role in rotatory stability in the knee. Numerous clinical and basic science studies have demonstrated that: 1) traditional single-bundle ACL reconstruction does not adequately restore normal knee kinematics, particularly tibial rotation [4], and 2) anatomic double-bundle reconstruction more closely restores normal knee kinematics when compared to single-bundle reconstruction. [5] 22-41 mm ave. 17.8 mm 8.1-11.7 mm 6.6-8.3 mm AM PL



II. The principle of anatomic ACL double bundle reconstruction

Reproducing the two bundle anatomy of ACL

- The ACL is composed of two functional bundles, the anteromedial (AM) bundle and the posterolateral (PL) bundle. [6]
- The two bundles of the ACL are initially seen during fetal development, and remain as two distinct bundles throughout life, although there is a high level of inter-individual variability in the size of each bundle. [6]
- Cadaveric studies have demonstrated that the AM bundle is approximately twice as long as the PL bundle, and that the two bundles have a similar cross-sectional diameter.

Reproducing the insertion sites of ACL

- The insertion sites of the AM and PL bundle should be identified and marked for anatomic tunnel placement
- The femoral insertion sites of the AM and PL bundle are oriented vertically with the knee in extension and become horizontal in 90° of knee flexion (surgical position for ACL reconstruction surgery). In extension the two bundles are parallel and in flexion they become crossed. [6]

Reproducing the tension pattern of ACL

- The AM bundle has its highest tension at 45 degrees of knee flexion, and was taut throughout the range of motion.
- The PL bundle has its highest tension at full extension, and becomes lax as the knee flexes. [7]
- The AM and PL graft should be fixed at these angles of knee flexion to closely reproduce the native tension pattern.

Individualized surgery

- The insertion sites of each bundle should be identified and marked, and the size of the insertion sites should be measured to tailor the surgery for each individual.
- The concept of anatomic ACL reconstruction can be applied to all ACL surgeries (single bundle, double bundle, revision, one bundle augmentation). The decision of whether to perform a single or double bundle ACL reconstruction should be dictated by the unique anatomy of the patient.



III. Pitfalls in ACL reconstruction

- Femoral insertion sites orientation changes with knee flexion: The femoral AM and PL insertion sites are horizontally oriented when the knee is closely to 90 degrees of flexion, while they are vertically oriented in knee extension. The important concept is often neglected in ACL reconstruction.



- The use of clock face reference: The knee is a 3D structure. The clock concept is easy to use. However, it is inaccurate in describing the location of femoral tunnel placement and lead to non-anatomic tunnel position.



- Inability to observe the femoral insertion site well by using the anteromedial portal: The anteromedial portal provides a superior view of the lateral wall of the notch and the femoral insertion site of ACL than the anterolateral portal, which is sufficient in observing the tibial insertion site.
- Graft impingement: It is a concept created by us because of non-anatomic tunnel placement. Native ACL do NOT impinge with notch and PCL. As long as the tunnels were placed in an anatomic fashion, there will be no impingement. However, if the tunnel is placed non-anatomically (as indicated by arrow on the picture below), impingement may occur.



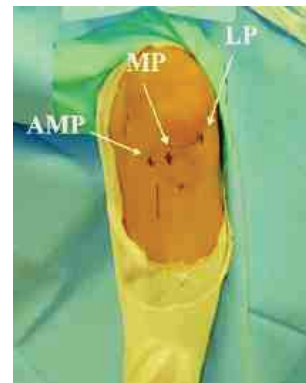
- Mismatch tunnels: With fear of impingement, we traditionally mismatch our tunnel placement by placing the tibial tunnel more

posteriorly (close to the PL insertion site), and placing the femoral tunnel at the native AM or high AM position. However, by doing this we performed non-anatomic ACL reconstruction, which leads to inferior biomechanical properties and biological healing due to non-physiological biomechanical stress to the graft.

- Double bundle reconstruction does not necessarily mean anatomic reconstruction, if the native anatomy was not followed as a guideline for double tunnel placement.

III. Surgical Technique

- Anatomic double-bundle ACL reconstruction is an "Insertion Site Surgery". We utilize three portals: Lateral Portal (LP), Medial Portal (MP), and Accessory Medial Portal (AMP).

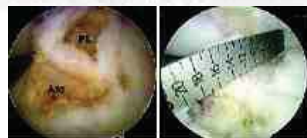


- We routinely place the arthroscope in the MP and work through the AMP. In doing so, visualization of the femoral insertion of the ACL is greatly enhanced and the need for notchplasty is virtually eliminated. [8]



- First, the anatomic insertion sites of each native ACL bundle are marked on the femur and tibia with a thermal device, with care taken to preserve the border of the bundles for later reference. This is a critical step in identifying the correct placement of the grafts, and is performed prior to resection of any residual ACL tissue. In addition, the length and width of the AM and PL bundle insertion site are measured as references to decide tunnel

diameters. The surgery is individualized for each patient.

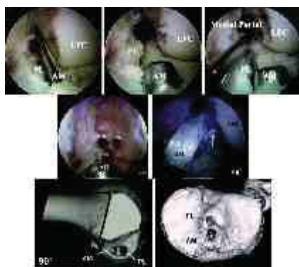


- There is a large area on the lateral wall of intercondylar notch for potential non-anatomic tunnel placement. Our preliminary data suggested that it may occupy more than 65% of the area on the wall. (See figure below).

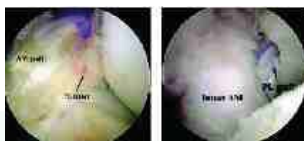


- A "lateral bifurcate ridge" is often seen on the femoral insertion between the AM and PL bundles, where as a "lateral intercondylar ridge" is often seen on the upper limit of both the AM and PL bundles. These are useful surgical landmarks in addition to the native insertion fibers.
- Notchplasty destroys the femoral anatomy of the ACL and is not necessary.
- The PL femoral tunnel is created first, through the AMP, to a diameter of 6-7 mm. The center of the tunnel is placed at the center of native PL insertion site that was marked before. In chronic cases that the insertion site can hardly be identified, this tunnel typically lies 3 mm superior and 5-7 mm posterior to the articular cartilage border of the lateral femoral condyle.
- The tibial AM and PL tunnels are created based on their native insertion site location. The PL tibial tunnel is created with a 45° tip drill guide.
- The AM tibial tunnel (7-8 mm) is placed anteromedial to the PL tunnel, with a minimum 1 cm osseous bridge between the two guide pins on the tibial cortex. The tibial AM tunnel is created with a 45° or 55° tip drill guide. The tunnels are drilled and dilated by hand to reach the desired final tunnel diameter.

- The femoral AM tunnel (7-8 mm) is created last. In our experience, in order to place this tunnel in the anatomic position, a trans-tibial approach through the AM tunnel is only successful approximately 10% of the time.
- Erroneous AM femoral tunnel placement can lead to vertical graft orientation, PCL impingement, loss of knee flexion and graft stretch-out.
- When drilling the AM femoral tunnel through the PL tibial tunnel, accuracy improves to approximately 60%, and through the AMP the AM femoral tunnel can be correctly placed in nearly 100% of the cases.
- The primary advantage of drilling trans-tibially for the AM femoral tunnel is the creation of a longer tunnel which diverges from the PL femoral tunnel, and we routinely attempt this approach first before using the accessory medial portal.



- Finally, the PL graft is passed, followed by the AM graft. Femoral fixation is typically performed with an EndoButton (Smith and Nephew, Andover, Massachusetts).
 - We routinely use different combinations of allograft (Hamstring, Tibialis Anterior, Tibialis Posterior, Achilles) and autograft (Hamstring, quadriceps tendon). Many graft choices are possible.
 - The grafts are preconditioned 25 cycles with maximum manual tension and fixed in full extension (PL bundle), and at 45° of knee flexion (AM bundle) using a bio-absorbable soft tissue interference screw.
 - Staples are occasionally used to augment the tibial fixation, particularly in cases of suboptimal bone quality or in revision surgery.
- IV. One Bundle Augmentation and Anatomic Single Bundle ACL Reconstruction**
- In cases only the AM or the PL bundle was torn, we save the intact bundle and "augment" the ACL with a single bundle reconstruction either the AM or PL, whichever one is torn.



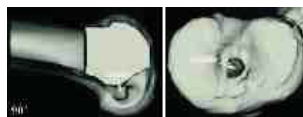
- Except for the one bundle augmentation, there are a few other scenarios where we prefer

to perform single bundle surgery. We also perform single bundle ACL reconstruction in approximately 30 % of our patients:

- Small native ACL insertion site, which will be identified during the surgery
- Open growth plate
- Severe arthritic changes
- Multiple knee ligament injuries
- Severe bone bruises
- Narrow intercondylar notch



- Our single bundle surgery is performed with careful attention to soft tissue and bony landmarks. We carefully investigate the rupture pattern of the ACL and we identify the native ACL insertion sites- just as we do in double bundle ACL surgery. Then, the tibial and femoral bone tunnels are drilled at the center-points of the native insertions.



V. Clinical Outcome of ACL double bundle reconstruction

- Clinical improvements have been demonstrated in recent prospective and randomized level and level II studies. These studies have shown superior outcomes for double bundle reconstruction than single bundle reconstruction. [9, 10, 11, 12, 13, 14]
- While the preliminary results are encouraging, additional work is needed to critically evaluate the outcomes of double bundle ACL reconstruction in terms of joint kinematics, degenerative joint changes, and patient-reported outcomes. Intermediate and long-term outcomes are needed in the future. More importantly, both single bundle and double bundle ACL reconstruction should be performed in an anatomic fashion in prospective study.
- It should be noted that complications such as graft failure, hardware failure, and infections are also seen with double bundle ACL reconstruction. The double tunnels in femur and tibia may increase the difficulty in revising failed grafts.

References

1. Fithian DC, Paxton EW, Stone ML, et al. Prospective trial of a treatment algorithm for the management of the anterior cruciate ligament-injured knee. *Am J Sports Med* 2005;33(3):333-4.
2. Biau DJ, Tournoux C, Katsahian S, Schranz P, Nizard R. ACL reconstruction: a metaanalysis of functional scores. *CORR*, 2007 May;458:180-7
3. Yunes M, Richmond JC, Engels EA, et al. Patellar versus hamstring in anterior cruciate ligament reconstruction: A meta-analysis. *Arthroscopy* 2001;17:248-257. 90° 90°
4. Tashman S, Collon D, Anderson K, et al. Abnormal rotational knee motion during running after anterior cruciate ligament reconstruction. *Am J Sports Med* 2004;32:975-83.
5. Yagi M, Ryosuke K, Nagamune K, et al. Double-bundle ACL reconstruction can improve rotational stability. *Clin Ortho Rel Res* 2007;454:100-7.
6. Chabbra A, Starman JS, Ferretti M, Vidal AF, Zantop T, Fu FH. Anatomic, Radiographic, Biomechanical, and Kinematic Evaluation of the Anterior Cruciate Ligament and Its Two Functional Bundles. *J Bone Joint Surg Am* 2006;88(Suppl 4):2-10.
7. Gabriel MT, Wong EK, Wool SL, et al. Distribution of in situ forces in the anterior cruciate ligament in response to rotatory loads. *J Orthop Res* 2004;22(1):85-9.
8. Cohen SB, Fu FH. Three-portal technique for anterior cruciate ligament reconstruction: use of a central medial portal. *Arthroscopy*. 2007 Mar;23(3):325.e1-5
9. Yasuda K, Kondo E, Ichiyama H, et al. Clinical evaluation of anatomic double-bundle anterior cruciate ligament reconstruction procedure using hamstring tendon grafts: comparisons among 3 different procedures. *Arthroscopy* 2006;22(3):240-51.
10. Yagi M, Ryosuke K, Nagamune K, et al. Double-bundle ACL reconstruction can improve rotational stability. *Clin Ortho Rel Res* 2007;454:100-7.
11. Muneta T, Koga H, Mochizuki T, Ju YJ, Hara K, Nimura A, Yagishita K, Sekiya I. A prospective randomized study of 4-strand semitendinosus tendon anterior cruciate ligament reconstruction comparing single-bundle and double-bundle techniques. *Arthroscopy* 2007;23(6):618-29
12. Jarvela T. Double-bundle versus single-bundle anterior cruciate ligament reconstruction: a prospective, randomized clinical study. *KSSTA* 2007; 15 (5): 500-7
13. Aglietti P, Giron F, Cuomo P, Losco M, Mondanelli N. Single- and double-incision double bundle ACL reconstruction. *CORR* 2007; 454: 108-13
14. Siebold R, Ellert T, Metz S, Metz J. Tibial insertions of the anteromedial and posterolateral bundles of the anterior cruciate ligament: morphometry, arthroscopic landmarks, and orientation model for bone tunnel placement. *Arthroscopy*. 2008 Feb;24(2):154-61. Epub 2007 Nov 8.

GLIMPSES OF IAS2008, GOA



Dr. IPS Oberoi addressing the delegates



Dr. Anant Joshi



Double Bundle Dance



Dr. Parag Sancheti, Dr. Anil Ranawat



Dr. Sachin Tapasvi, Dr. Freddie Fu



Dr. David Rajan, Dr. Parag Sancheti, Dr. Freddie Fu, Dr. Anant Joshi



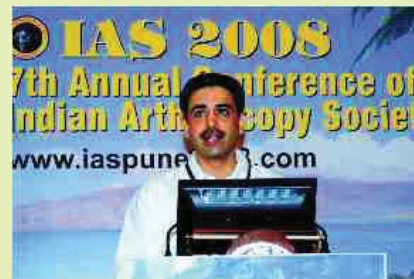
Dr. Ashish Babhulkar, Prof. H. Sugaya



Entranced Audience



Dr. Ashish Babhulkar



Dr. Sachin Tapasvi

GLIMPSES OF IAS 2008, GOA



Dr. Sripati Rao and Dr. Goyal



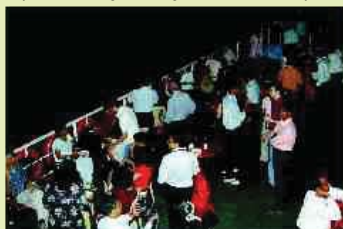
Dr. Sripati Rao Congratulating Winner of Best Paper Award



Organisers - Dr. P. Sancheti, Dr. A. Babhulkar, Dr. S. Tapasvi



Cruise Dinner



Cruise Dinner



Doctors Volleyball match



Cricket in Action



Gala Dinner



Face Painting

Foreign Faculty



Prof. H. Sugaya



Dr. Freddie Fu



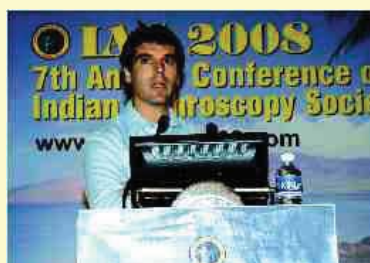
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Conference Schedule

• Early bird Date:	31st December '08
• 1st Call registration date :	31st March '2009
• 2nd Call registration date :	30th June '2009
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• Last date of informing acceptance of (paper and Scientific Material) :	31st July '2009
• Last date of submission of complete scientific material :	31st August '2009
• Spot registration till : - For Workshops :	1st October '2009
- For Conference :	2nd October '2009

1st Oct '09

2nd Oct '09

3rd Oct '09

**Day 1 - Thursday -
1st October, 2009**

Venue :

**Sheth V.S. General Hospital,
Ahmedabad**

**Basic Knee Workshop : - Didactic
Lecture - Video - On Dry Models**

Topics :

1. Knee Examination
2. Diagnostic Scopy
3. Menisectomy
4. Loose body removal
5. Synovectomy
6. Chondral piking & assessment of chondral lesion
7. Instrument care & sterilisation

**Advance Knee Workshop : - Live
surgeries - Cadaveric practical**

Topics :

1. ACL
2. ACL tibial avulsion fixation
3. Double bundle ACL reconstruction
4. PCL reconstruction

5. Posterolateral corner injury (PLC)
6. Arthrofibrosis
7. MCL Injuries

Shoulder Workshop :

Topics :

1. Examination of shoulder
2. Imaging for shoulder injury (X-ray, sonography M R I)
3. Bankart's Repair
4. SLAP repair
5. Subacromial impingement/Mumford procedure
6. Rotator cuff Tear
7. Adhesive Capsulitis
8. Bony bankart lesion

Proposed Live Surgeries:

1. Cuff Repair
2. SLAP/Bankart
3. S O S Bony Bankart

Cartilage Injuries :

Topics :

1. Evaluation & classification of chondral lesions
2. Microfractures & abrasive chondroplasty
3. Mosaicplasty
4. ACI
5. MACI
6. Scaffold & osteochondral plugs
7. Role of Osteotomy along with Cartilage Surgeries

Day 2 - Friday - 2nd October, 2009

Conference Schedule :

Coming Soon

**Venue : IIM Ravi Mithai Hall,
Ahmedabad**

Day 3 - Saturday -

3rd October, 2009

Conference Schedule :

Coming Soon

**Venue : IIM Ravi Mithai Hall,
Ahmedabad**

Proposed Faculties

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Mr. Matt Ravenscroft, UK
Dr. Selene Parekh, USA
Dr. Vic Goradia, USA
Laszlo Hangody, Hungary
Prof. Giovanni Puddu, Italy
Dr. Gregory Fennaly, USA
Dr. Mats Britberg, Sweden
Dr. Ravi Mahajan, UK
Dr. Shital Parikh, USA
Dr. Ramon Cugat, Spain
Many more to join us . . .

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ARTHROSCOPY OF THE KNEE UNDER LOCAL ANAESTHESIA: IS IT SAFE AND PRACTICAL?

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Senior House Officer in Orthopaedics

Mr Amit Chandratreya

Consultant Orthopaedic Surgeon, ABM University Hospitals
Princess of Wales Hospital Bridgend, UK

Introduction:

Outpatient knee arthroscopy is a common procedure today. It is performed with the patient under general, local, or spinal anaesthesia. Local anaesthesia offers several advantages and its use is well documented.^{1,5-7} Although good results with local anaesthesia have been reported,^{3,4} it is not used as a standard anaesthetic in most parts of United Kingdom. Concerns about local anaesthesia include the fear of prolonged surgery, which could lead to inadequate anaesthesia, thus causing the patient unnecessary discomfort.⁸ There are an increasing number of patients with co-morbid conditions, who get postponed or cancelled. With patients having to wait for long periods of time for this procedure, this study was undertaken to assess the use of local anaesthesia in our unit which to a great extent represent the common United Kingdom setup. At our institution, we have shown that 95% of our patients have been satisfied with local anaesthesia in the perioperative period.

Material and Method:

A prospective study of 66 patients underwent knee arthroscopy by a single surgeon. 41 patients had local, 19 general and 6 spinal anaesthesia. The inclusion criteria were as follows: patients were scheduled for primary knee arthroscopy, knee range of motion was at a minimum of 0° to 90°, and age was 18 years or older. Exclusion criteria were the presence of local infection at the selected portal and injection sites, allergy to local anaesthesia, and allergy to nonsteroidal anti-inflammatory drugs. The patient was offered the choice of local or other anaesthesia and informed consent was obtained. An Anaesthetist was always present for the list.

Anaesthesia Protocol

Local Anaesthesia.

40 mg Pericoxib, 20mg/kg Paracetamol and 30mg Codeine was given orally one hour prior to procedure. Local infiltration was performed with 30-40

mls of 1% lignocaine with adrenaline. Antero-medial, antero-lateral portals and the area around the medial collateral ligament was infiltrated with 15-20 mls. Remaining was given intra-articularly.



10ml of 0.25% bupivacaine was infiltrated intra-articularly at the end of procedure.

Spinal Anaesthesia.

Premedication consisted of 10 mg of oral diazepam and 1 g of rectal paracetamol administered 1 hour before the start of anaesthesia. The intrathecal block was performed according to hospital protocol. Hyperbaric lidocaine (60 to 90 mg) was used. Hypotension was treated with 5 to 10 mg of ephedrine. Just before the start of the surgical procedure, ketorolac (20 mg) was administered intravenously. At the end of the procedure 10ml of 0.25% bupivacaine was infiltrated into the joint.

General Anaesthesia

Premedication was the same as for the spinal anaesthesia patients. Propofol (induction and maintenance) and alfentanil were used according to hospital protocol. The patients were breathing spontaneously during surgery and were supplied with oxygen. Ketorolac (20 mg) was administered intravenously immediately before surgery. Intravenous alfentanil was given at the discretion of the anaesthesiologist. After surgery, 10ml of 0.25% bupivacaine was infiltrate intraarticularly.

Postoperative Analgesics

To standardize the postoperative analgesic consumption, each patient in the study was supplied with 30 tablets of paracetamol (500 mg each) and Volatarol 50 mg TDS if no contraindication.

Evaluation

All patients were assessed for pain during surgery (for LA), immediately after surgery, 1 hour after surgery and at discharge from hospital by Consultant Anaesthetist. The patients with GA and SA were assessed at 1 hr and at discharge. All enrolled patients

were asked to complete at follow-up 4-6 weeks after surgery in the out patient clinic. The follow-up interval of 4-6 weeks was chosen as we believe that patient had a chance to rehabilitate but still had some memory of the surgical event. The questionnaire responses were treated confidentially.

Statistics

The data were analyzed using a chi-square test or a Fisher exact test. P value of less than 0.05 was considered significant

Results:

Of the 66 patients enrolled, 41 patients had local, 19 general and 6 spinal anaesthesia. There were 14 women (mean age, 52 years) and 27 men (mean age, 46 years) in the local anaesthesia group, 2 women (mean age, 54 years) and 4 men (mean age, 51 years) in the spinal anaesthesia group, and 10 women (mean age, 54 years) and 9 men (mean age, 53 years) in the general anaesthesia group. The various procedures performed are shown in Table 1.

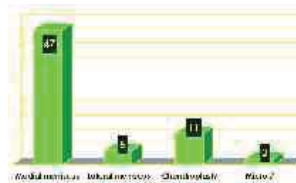
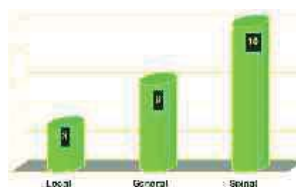


Table 1

37/41 (92%) patients of the LA group did not complain of any pain/discomfort. None of the patients needed conversion to GA. Surgical access was rated as good in all patients by the operating surgeon. Post operative pain score 0 in 39/41 (93%). Overall patient satisfaction was rated as good in 39/41 (95%). There was no significant difference in the duration of surgery between the groups. It was observed that the average time of discharge in local anaesthesia group was three hours as compared to six and ten hours in the general and spinal anesthetic groups respectively.



This significant difference in the time of discharge was due to the fact that patients with local anaesthesia went to reclining chairs straight after surgery and thus went home early.

The procedure time in the local group was comparable to general anesthetic group (Table 2).

Table 2

Time spent by patient from anaesthetic room/theatre to recovery.

Spinal	45-50 minutes
GA:	25-40 minutes
LA : from infiltration	25-35 minutes

Complications:

Local Anaesthesia.

Three (7.3%) patients complained of pain during the procedure which required re infiltration during surgery. One of these required stronger post op pain control as well (This patient had a partial MCL sprain 8/52 ago). One (2.4%) patient had a DVT, and was on warfarin for 3/12. Two (4.8%) patients watching the procedure, felt instruments moving in the knee, had a drop in blood pressure, no pain, no allergic reaction (? Vaso-vagal).

Spinal Anaesthesia.

Three patients (50%) had urinary retention and thus needed catheterization. One (16.6%) patient felt giddy on starting to mobilize after 4-5 hours after surgery and was admitted.

General Anaesthesia

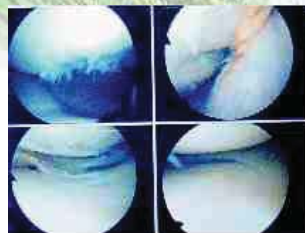
Two (10.52%) patient had sore throat after GA. One (5.26%) patient had aspiration on table, resulting in ongoing problems.

Discussion

In this study we found that the satisfaction rate for patients 6 weeks after knee arthroscopy does not depend on the type of anaesthesia used. Dye et al. (1998) reported on the neurosensory mapping of the internal structure of the knee without anaesthesia. They demonstrated that severe pain was reported during probing of the suprapatellar capsule, meniscal capsular margin, infrapatellar fat pad, and the insertion site of the cruciate ligament². We therefore recommend that sufficient time (10-12 minutes) should be allowed after infiltration.

Tourniquet was not required in any case, even with complex posterior horn tears. Use of shaver however becomes almost mandatory to quicken the procedure. No complications relating to the anaesthetic agent were noted.





There were no problems with visualisation of the intra-articular structures as is evidenced by the following pictures;

One of the other main advantages of performing arthroscopy under Local anaesthesia, is that the patient can visualize the damage in the knee and therefore have an understanding of the pathology and the subsequent

treatment. This is more important in the small subset of patients who have no major abnormality in the knee joint itself, so that they are then aware that no further surgery is required.

If the Surgeon is reluctant to undertake this procedure to begin with completely under LA, then we recommend that they perform knee arthroscopy under GA, but with no Tourniquet and LA infiltration. Once one can appreciate that there is no major bleeding in the joint and the visualisation is excellent, the next procedure can be performed purely under LA.

It is also very satisfying for the Surgeon, to confirm the diagnosis and demonstrate to the patient, on a "LIVE"

basis, the procedure performed. The surgeon uses the instruments with care to prevent secondary damage, leading to improvement of surgical skills of the surgeon; as the patient is watching the surgery!

The same quantity of LA can be used to perform an ACL reconstruction without the use of pumps or tourniquet.

Arthroscopy of the knee under local anaesthesia was found to be safe, reliable, practical, and to have a high patient acceptance rate. It significantly decreased the time of discharge and thus could help cut cost and waiting time for surgery even in patients with medical co-morbidities.

Bibliography

1. Buckley JR, Hood GM, Macrae W: Arthroscopy under local anesthesia. *J Bone Joint Surg* 71B:126-127, 1989.
2. Dye S F, Vaupel G L, Dye C C. Conscious neurosensory mapping of the internal structures of the human knee without intraarticular anesthesia. *Am J Sport Med* 26: 773-7, 1998.
3. Eriksson E, Häggmark T, Saartok T, et al: Knee arthroscopy with local anesthesia in ambulatory patients. *Methods, results and patient compliance. Orthopedics* 9:186-188, 1986.
4. Hultin J, Hamberg P, Stenström A: Knee arthroscopy using local anesthesia. *Arthroscopy* 8:239-241, 1992.
5. Lintner S, Shawen S, Lohnes J, et al: Local anesthesia in outpatient knee arthroscopy: A comparison of efficacy and cost. *Arthroscopy* 12:482-488, 1996.
6. Pellaci F, Beluzzi R, Martini A: Outpatient arthroscopy. *Chirurgia Degli Organi di Movimento* 81:165-172, 1996.
7. Shapiro MS, Safran MR, Crockett H, et al: Local anesthesia for knee arthroscopy: Efficacy and cost benefits. *Am J Sports Med* 23:50-53, 1995.

ISAKOS 2009, JAPAN

DR. DINSHAW PARDIWALA WAS AWARDED THE JOHN JOYCE AWARD FOR HIS PAPER ON Arthroscopic PCL Tibial Bony Avulsion Fixation

During the ISAKOS Congress held in Osaka, Japan from 5th -9th April 09.



Dr. Dinshaw Pardiwala receiving the John Joyce Award

John Joyce Award - In 1981, Dr. John J. Joyce III offered a monetary prize for the best arthroscopy paper read during the Scientific Program of the 4th Congress of the International Arthroscopy Association in Rio de Janeiro. With characteristic generosity, he endowed a prize to be awarded at every IAA Congress thereafter. A committee will select the first, second and third-place prize-winning papers from manuscripts presented at the 2009 Congress. The winner will be announced in Osaka, Japan at the awards ceremony and an honorarium will be awarded.



Dr. Parag Sancheti with Dr. Moises Cohen & Dr. Freddie Fu
Dr. Parag Sancheti has been nominated on the Arthroscopy Committee of ISAKOS during the recently held ISAKOS meeting in OSAKA, Japan



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