

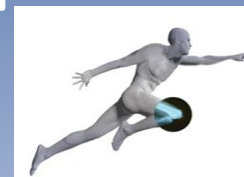
Mini Incision & The Use Of The Activmotion Plate

Mr Adrian Wilson

*Consultant Orthopaedic
And Specialist Knee Surgeon*



*Cutting Edge Technologies
Opening Wedge HTO – Newclip workshop
ISAKOS 2015*



Acknowledgements

Consultant for
Arthrex



Sam Yasen
Ed Britton
David Elson
Bhushan Sabnis
Breck Lord

Felicity Wandless

Roger Stannard
David Howard

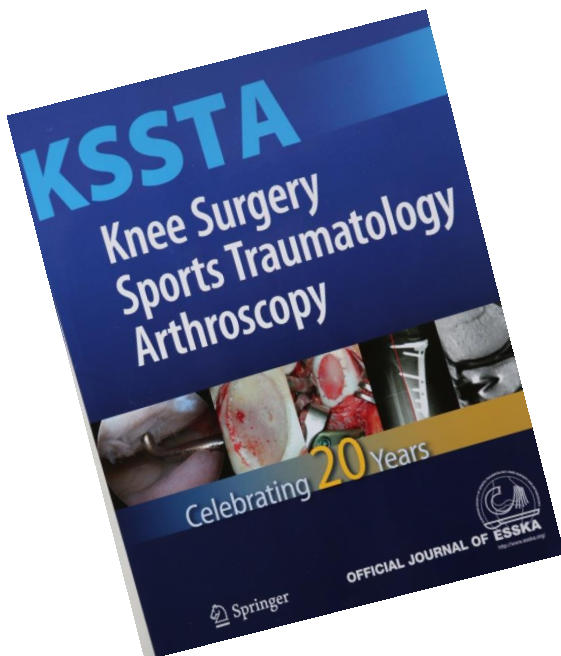
Knee Surg Sports Traumatol Arthrosc
DOI 10.1007/s00167-012-2206-0

KNEE

Osteotomy around the knee: evolution, principles and results

J. O. Smith · A. J. Wilson · N. P. Thomas

January 2013



Historical:

Pre 1940

Modern early years:

1940 - 2000

Modern latter years :

Beyond 2000





Modern Latter Years > 2000

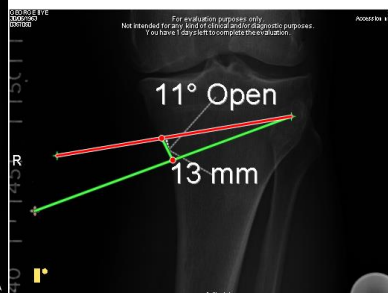
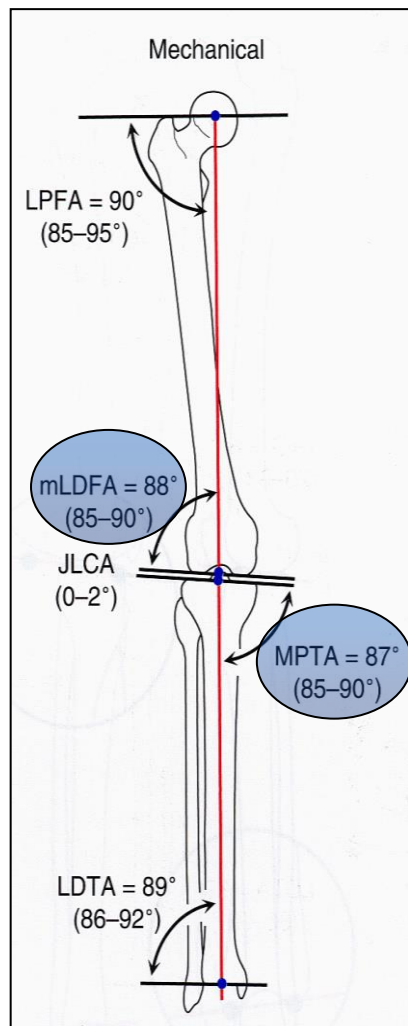


- Patient selection
- Pre-op planning
- Surgical accuracy
- Fixation Stability
- Earlier Rehabilitation



Planning – Which Bone?

Tibial / Femoral Correction?



Planning

Comments:

Right side Mikulicz point 89%
Left side Mikulicz point 80%

AP View:

Measurement Tools Information

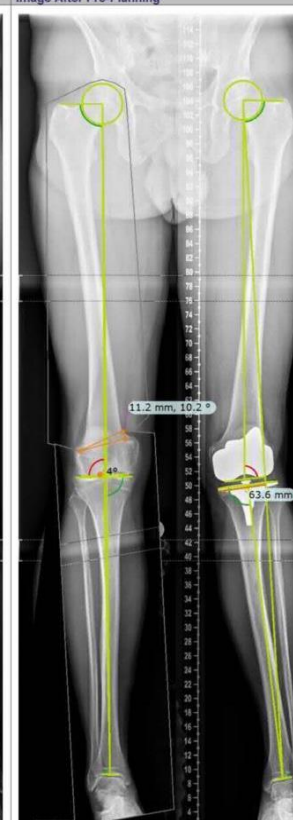
Limb Alignment Analysis (Bilateral)

	Pre			Post		
	Rt	Lt	Normal	Rt	Lt	
Angle(°)						
mLPFA	90	89	85-90	90	89	
mLDFA	83	83	85-90	93	83	
mMPTA	90	90	85-90	90	90	
mLDTA	86	86	86-92	86	86	
JLCA	2	0	0-2	2	0	
Length (mm)	Pre			Post		
	Rt	Lt	Discrepancy	Rt	Lt	
MAD	33	24		3	24	
Femur	528	531	3	9	522	531
Tibia	397	395	2	2	397	395
Total Length	925	933	8	11	922	933

Original image



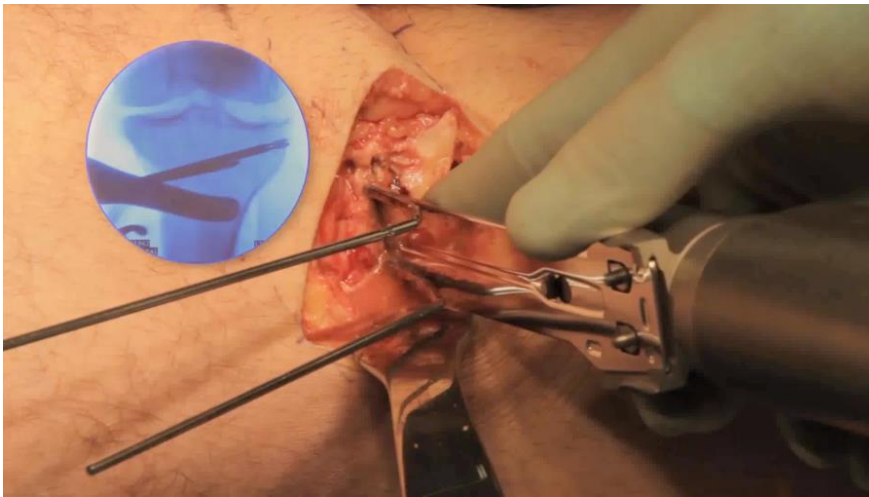
Image After Pre-Planning



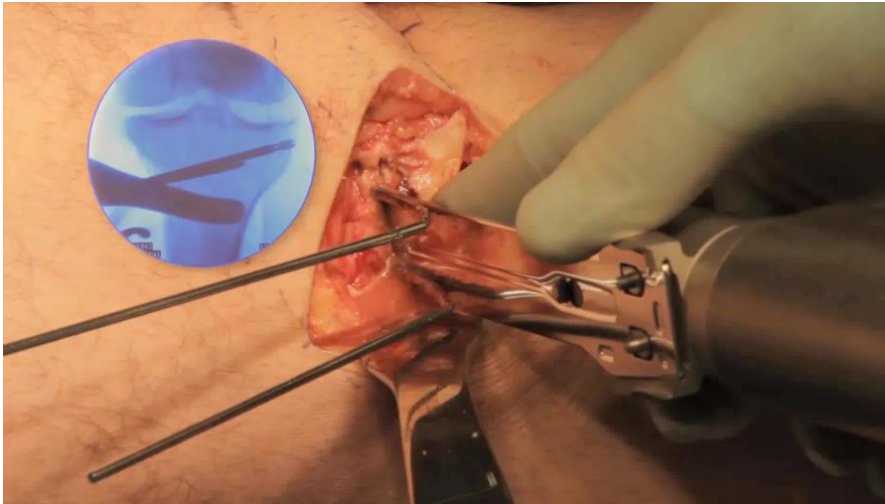
23/04/2015

Signature: _____

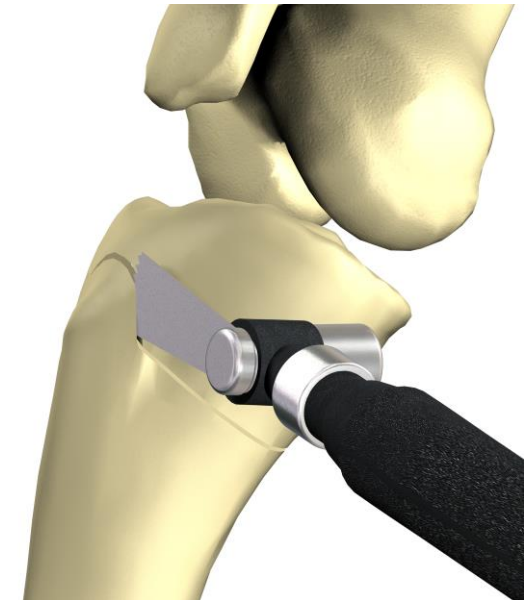
Operative technique OWHTO



Operative technique Bi-Planar OWHTO



Coronal cut



Biplanar - vertical
cut tuberosity +
oblique tibia
osteotomy:

Rigid Fixation

Do we need such Big Plates?



Or can we go smaller?



Surgical Technique - Incision

Longitudinal



Medial Oblique



Surgical Technique – True MIPO



Surgical Technique



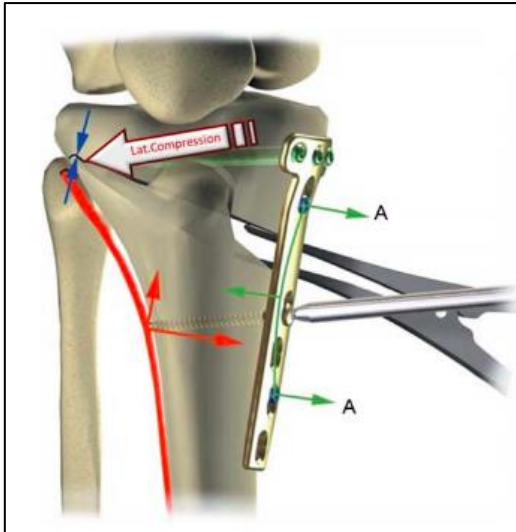
Should We Fill The Gap

International Orthopaedics (SICOT) (2010) 34:167–172
DOI 10.1007/s00264-009-0902-2

ORIGINAL PAPER

Evolution of open-wedge high-tibial osteotomy: experience with a special angular stable device for internal fixation without interposition material

Alex E. Staubli · Hilaire A. C. Jacob



Alex Staubli

Personal series

- 1000 cases
- No Failures
- Nothing in the gap



Fig. 5 A typical follow-up showing bone growth without interpositioned graft (53-year-old woman; wedge opening 10 mm, 6 weeks, 3 months, 6 months, 23 months postoperatively)

The Role Of Bone Wedges In Osteotomy Surgery

Slope changing osteotomy



Slope changing osteotomy 6 months review

- Pain Free
- Normal Gait
- Working as a roofer again
- Climbing and lifting



Slope changing osteotomy 6 months review

- Pain Free
- Normal Gait
- Working as a roofer again
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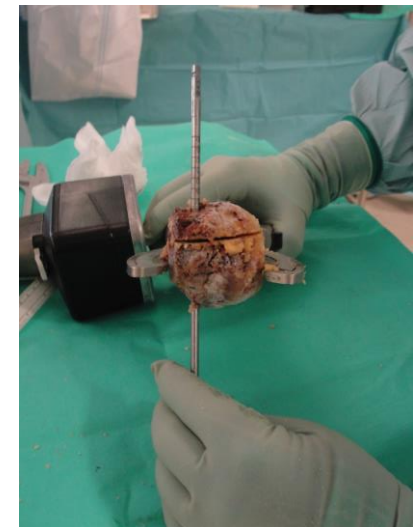
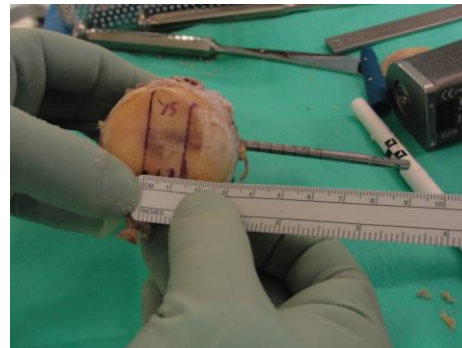
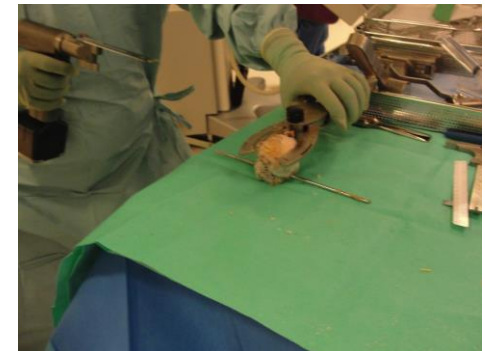
Precision Bone Wedge & Mini Invasive Approach In HTO surgery

Advantages

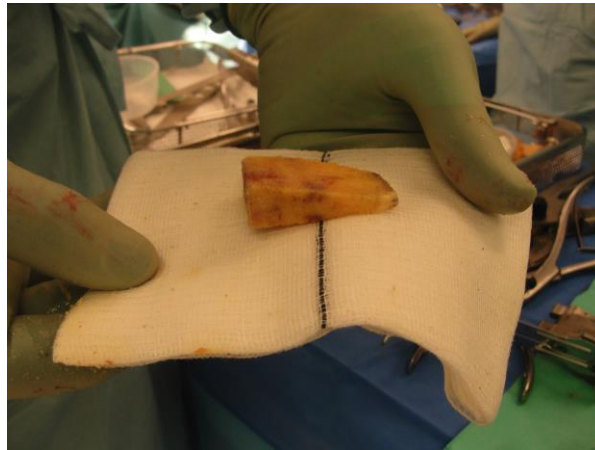
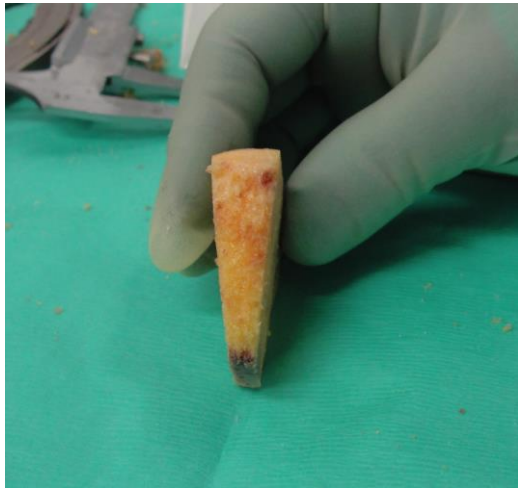
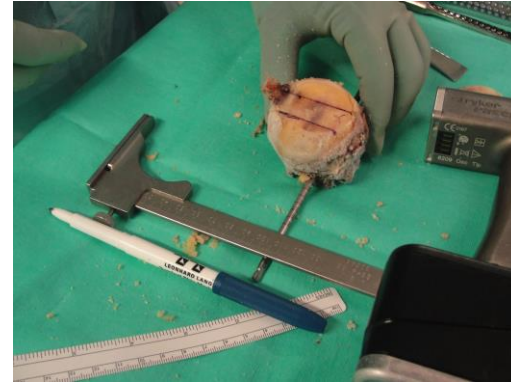
- MIPO
- Control slope – maintain / change with the trapezoidal wedge
- No need for laminar spreader once inserted – smaller wound
- Rapid rehabilitation – less bleeding / swelling / Stability from wedge
- Smaller Plates
- Early return to normal activity
- Rapid healing – union at 3 months



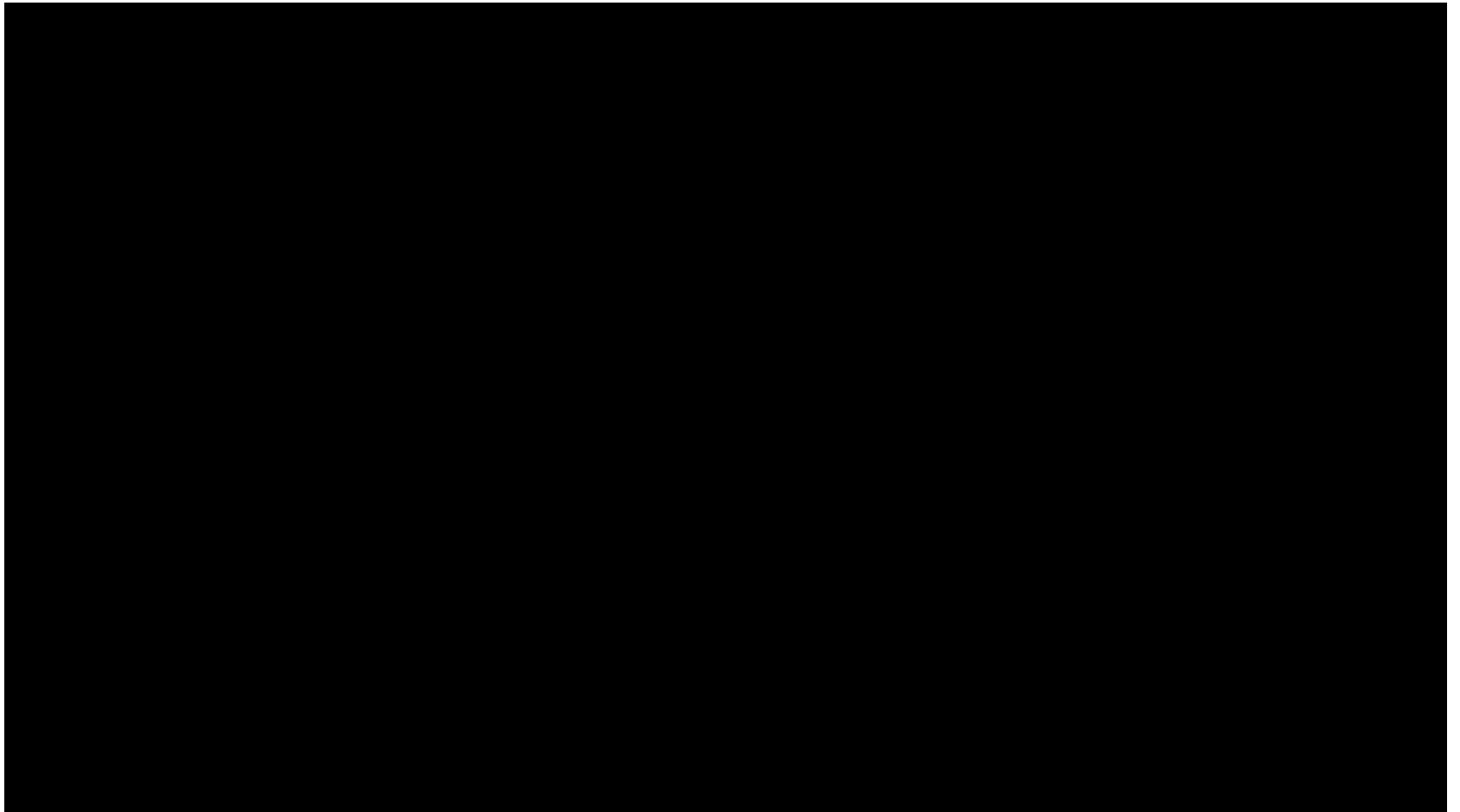
Precision Bone Wedge & Mini Invasive Approach



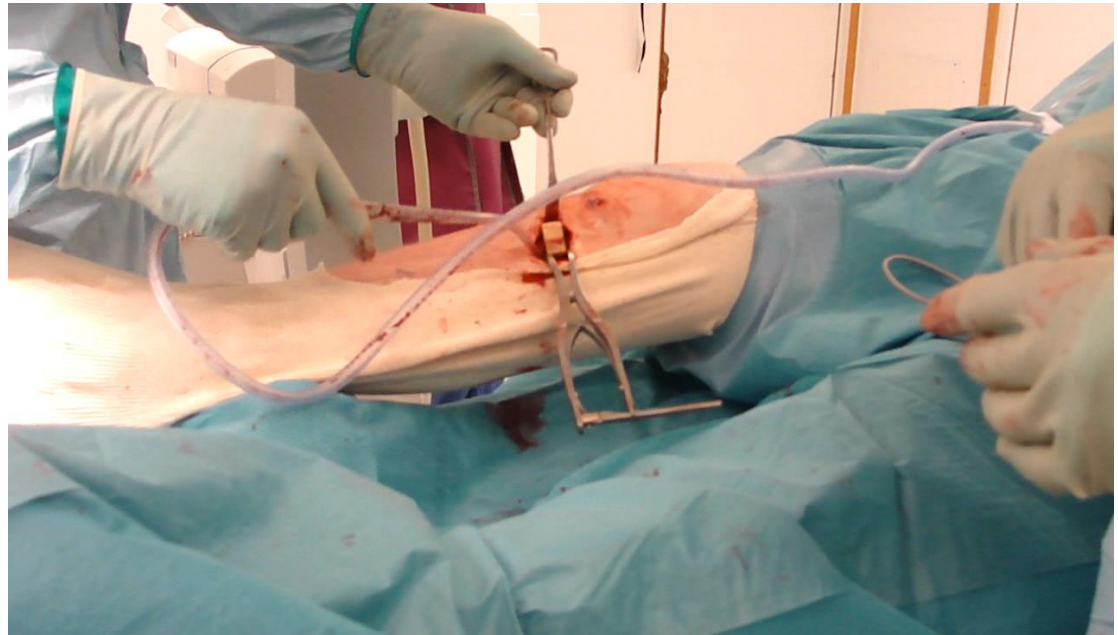
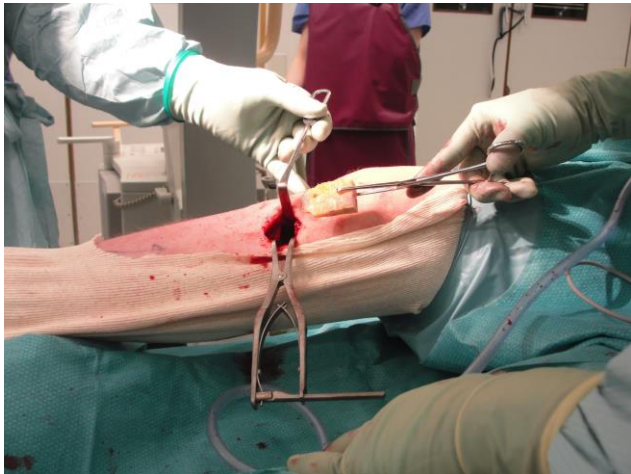
Precision Bone Wedge & Mini Invasive Approach



Precision Bone Wedge & Mini Invasive Approach



Precision Bone Wedge & Mini Invasive Approach



Precision Bone Wedge & Mini Invasive Approach



Precision Bone Wedge & Mini Invasive Approach



Precision Bone Wedge & Mini Invasive Approach



Precision Bone Wedge & Mini Invasive Approach



Minimally Invasive



Clinically at 2 weeks weeks



Clinically at 12 weeks



Bilateral Case – staged by 4 months

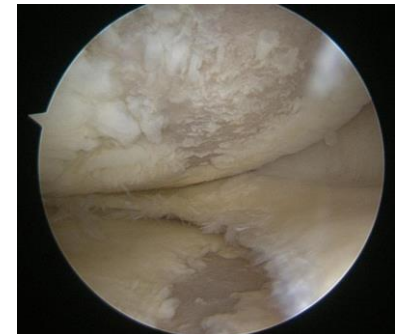
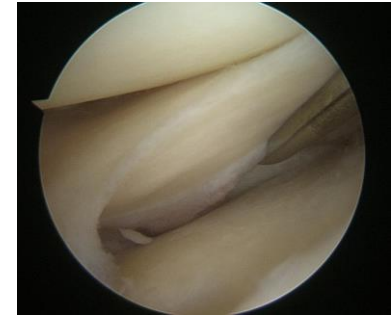
52 Year Old
Bilateral Grade 4 OA medially
Did extremely well after ist HTO

VAS score

Day 1 - 0/10

Day 11 - 1/10

No requirement for any analgesia post op



Bilateral Case – staged by 4 months

6 mm opening

Fixed with PPP

Precision Bone wedge made with Allograft Bone Wedge RTI



11 days Post Op

- No requirement for any analgesia
- Walking unaided immediately
- Driving at 2 days!
- Shopping at 5 days



Mini Incision Precision Bone Wedge



- 42 Year Old
- Ex professional football player
- Grade 4 medially
- Rest pain



Clinically at 6 weeks



Clinically at 6 weeks



58 year old Vets Tennis Player at 12 weeks



- VAS 0-1/10 on day 1
- No post op analgesia
- Back to High Level Tennis at 4 months
- Oxford score 48 at 3 months



58 year old Vets Tennis Player at 12 weeks



Mini Incision / Bone Wedge & Smaller Plates

- Activmotion Plate -Newclip
- Anatomical
- Allows immediate weight bearing
- No Plate failures
- 4000 implanted since 2011



Precision Bone Wedge & Mini Invasive Approach



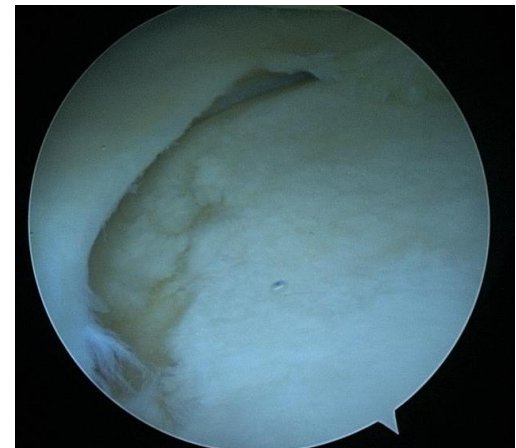
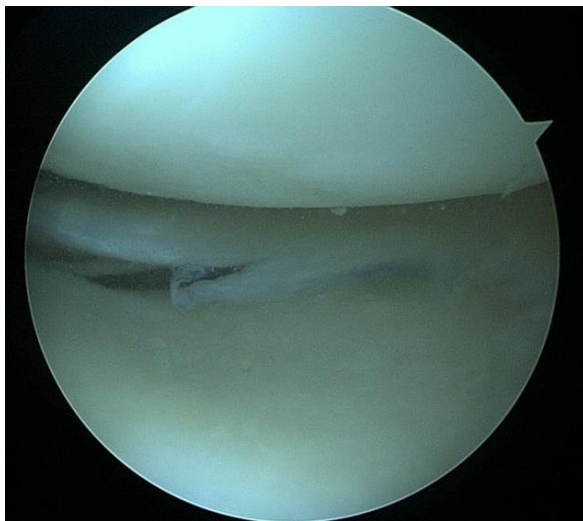
History

- 54 Year Old Active male
- Rest Pain / Night Pain
- Reduced Walking Distance
- Medial Disease – Partial Thickness On Xray
- Unfavourable Alignment

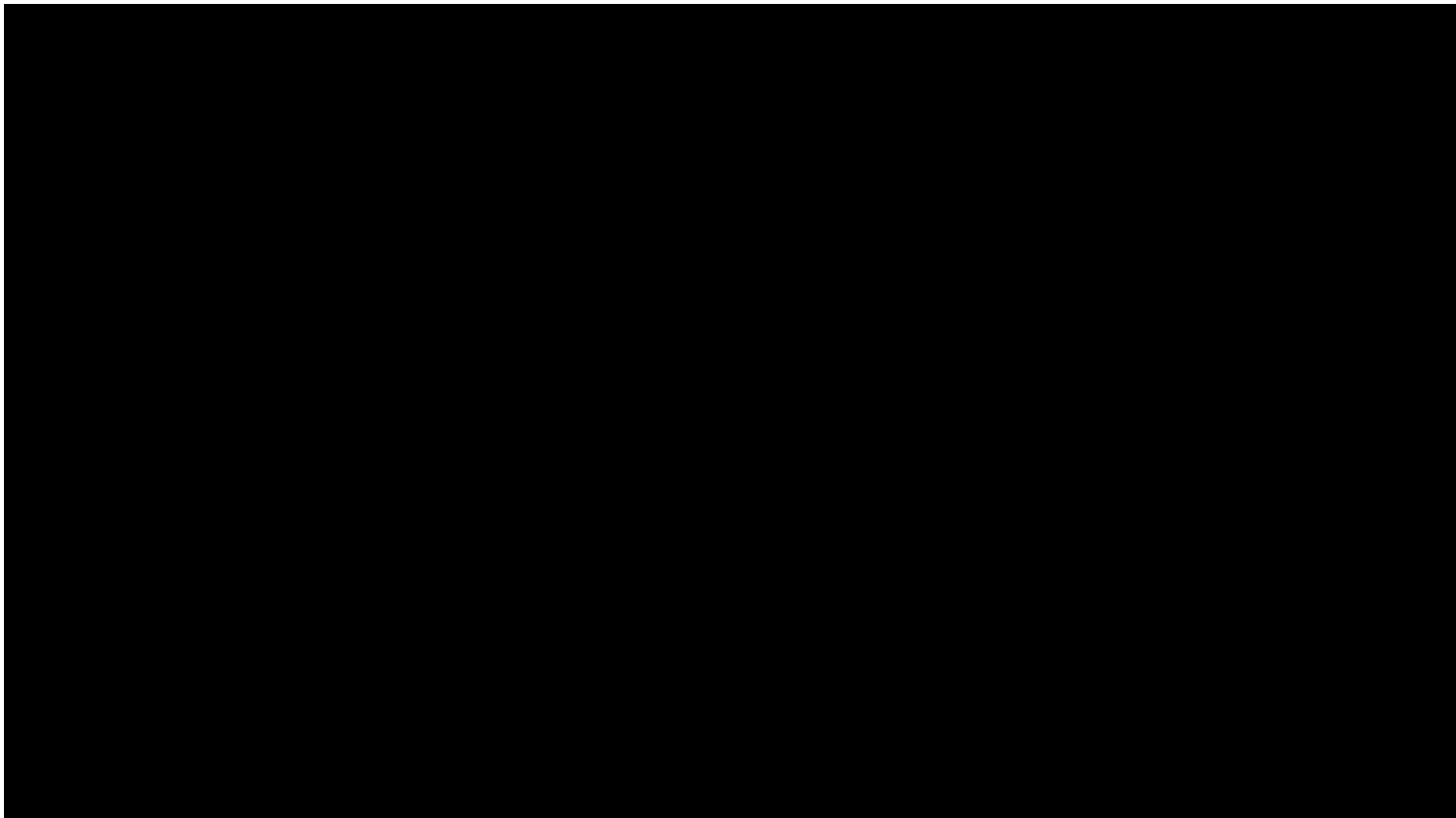


History

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- Rest Pain / Night Pain
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- Medial Disease – Partial Thickness On Xray
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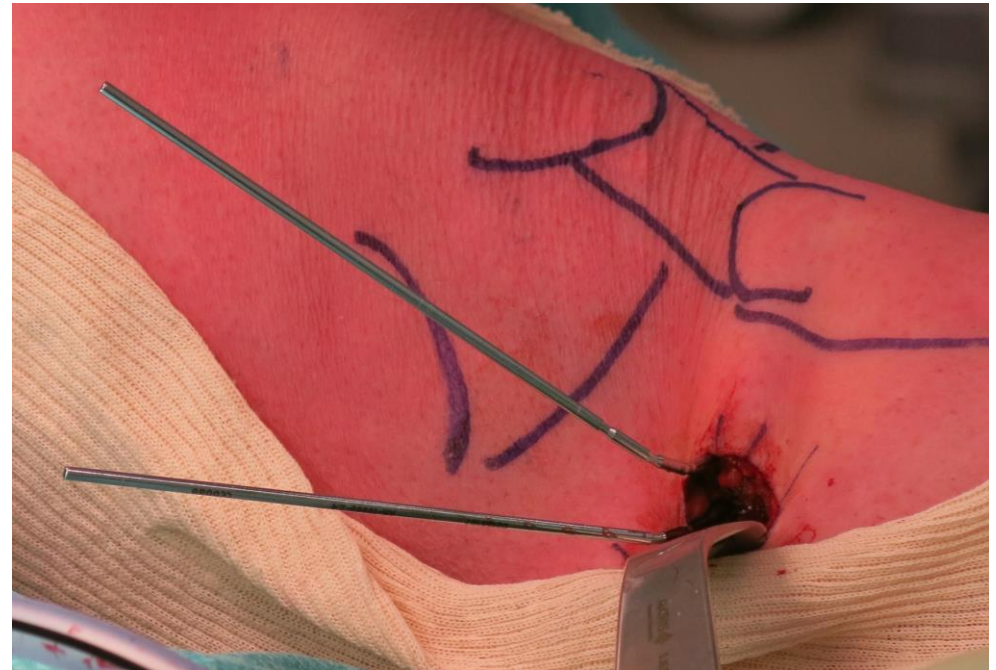
Precision Bone Wedge Allograft Bone Wedge Prep



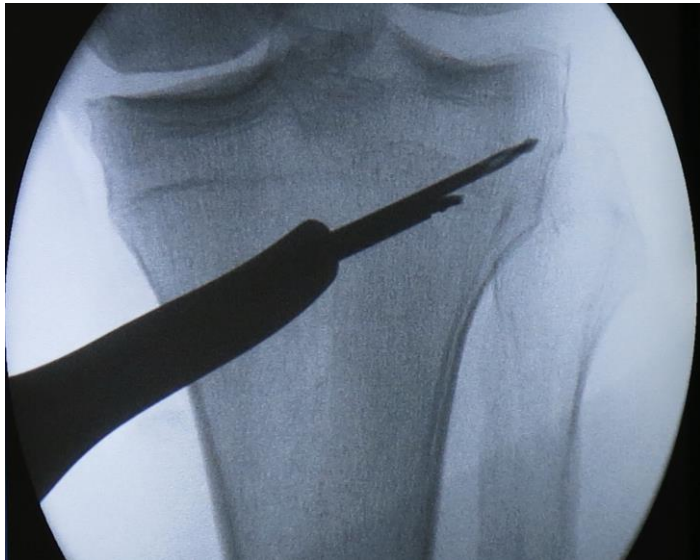
3 cm Longitudinal Incision



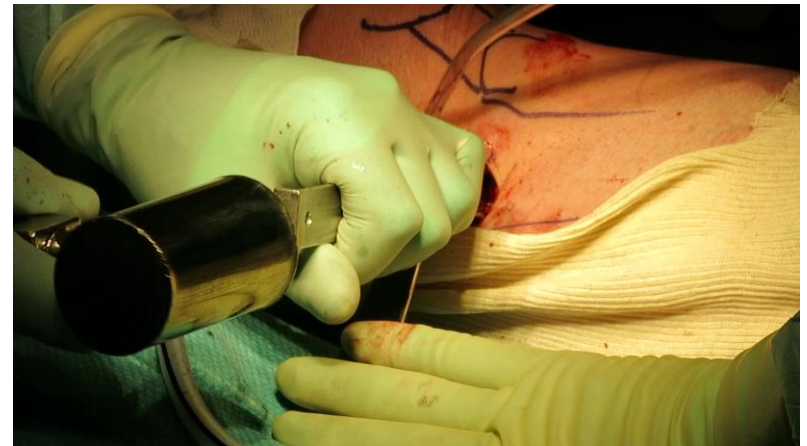
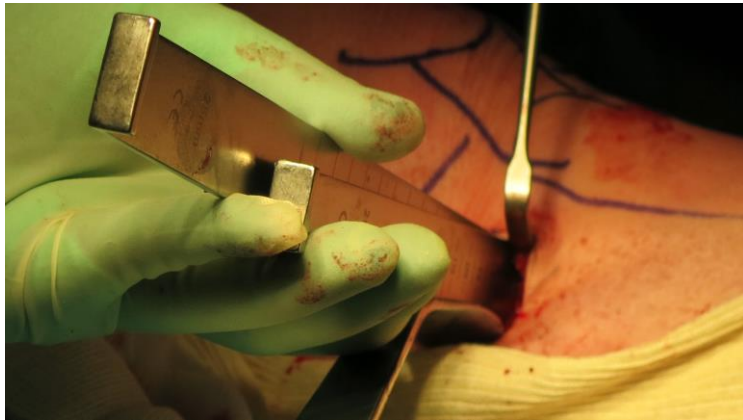
MCL release and wires inserted



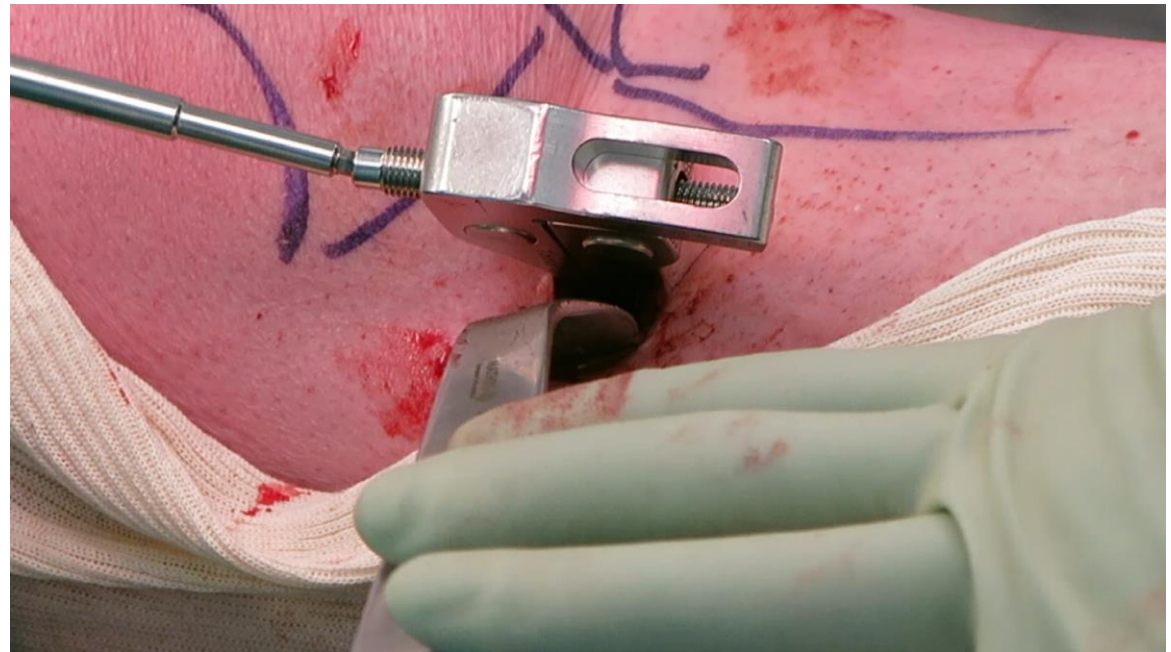
Precision Saw for Biplane Osteotomy



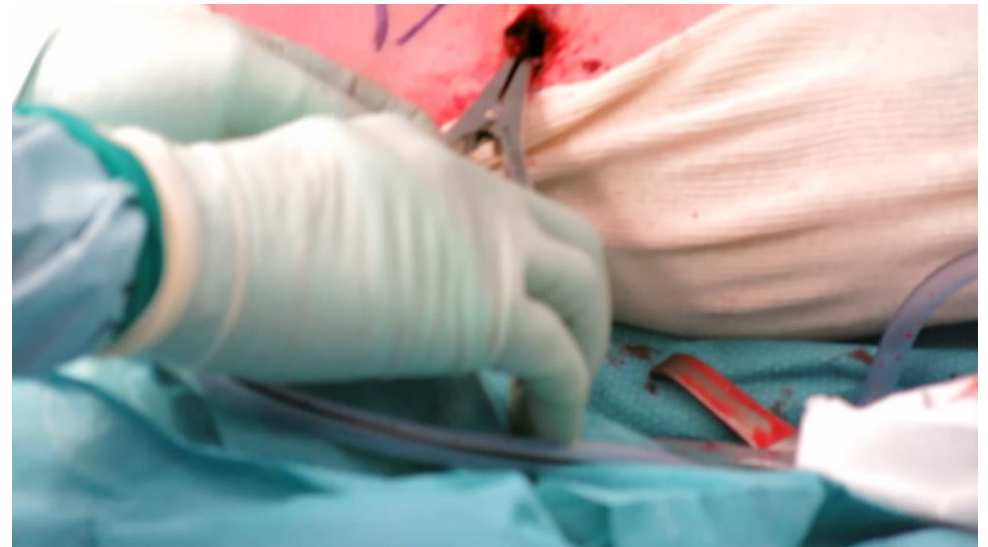
Chisels to Complete Osteotomy



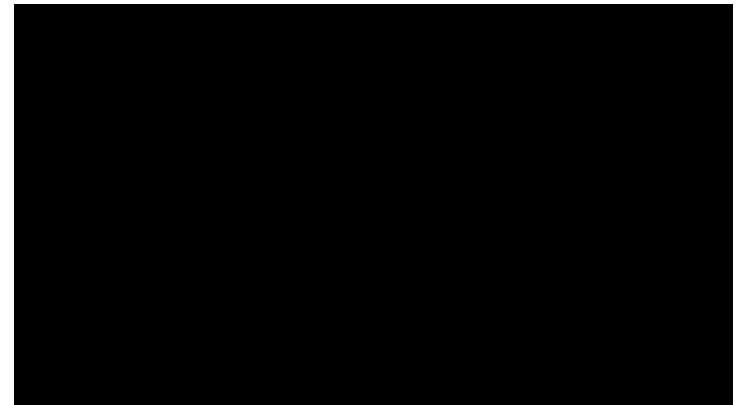
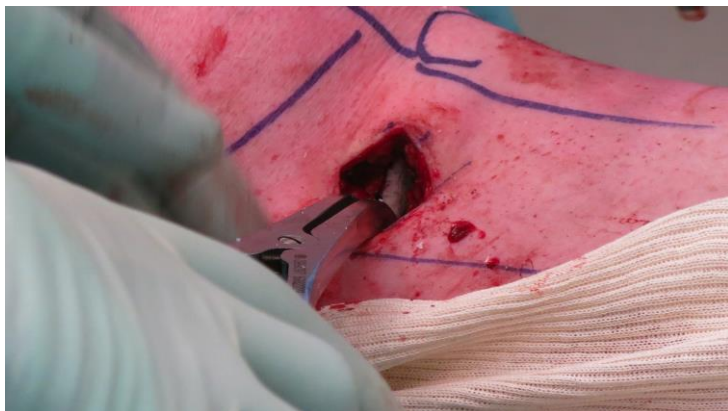
Spreader To Open Osteotomy



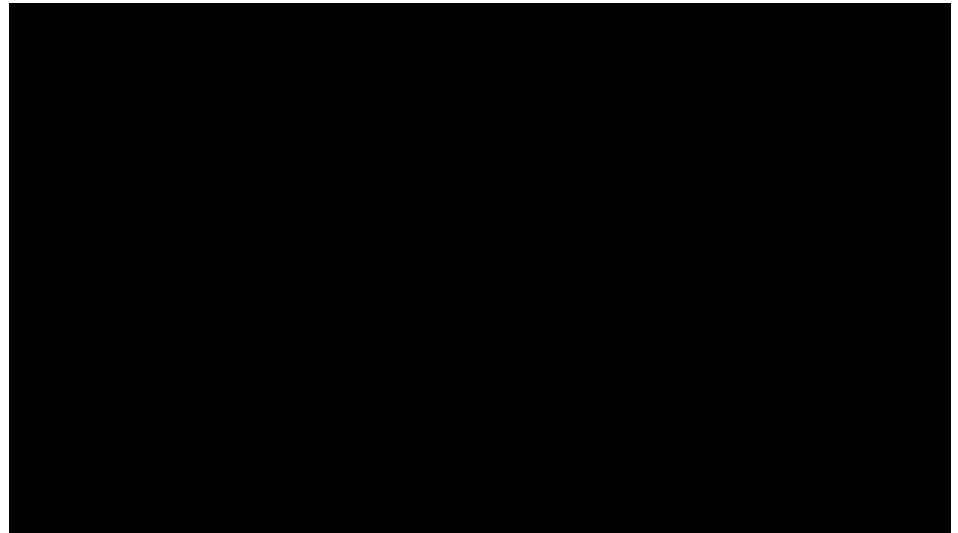
Laminar Spreader inserted



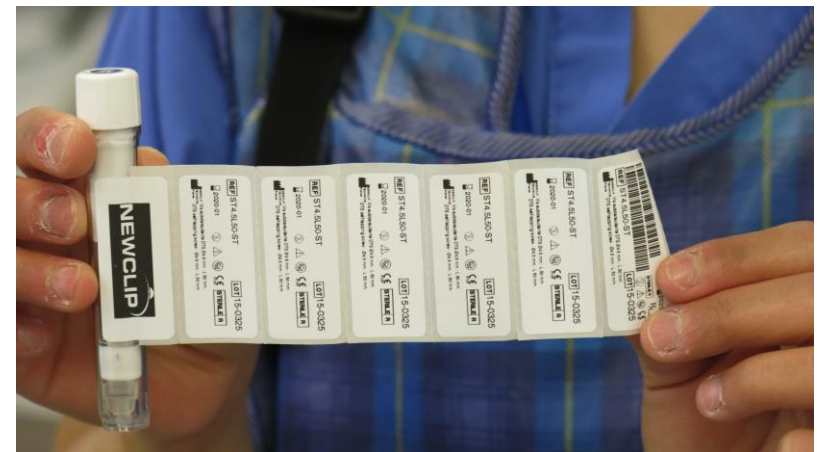
Inserting Bone Wedge



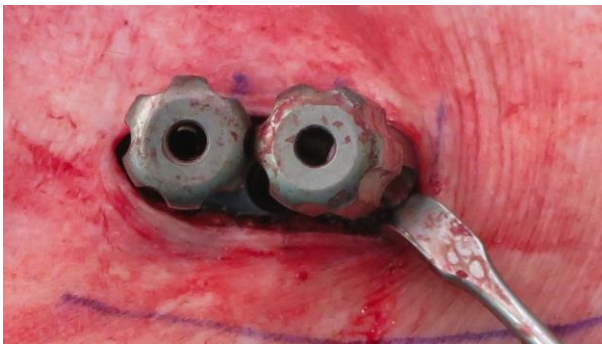
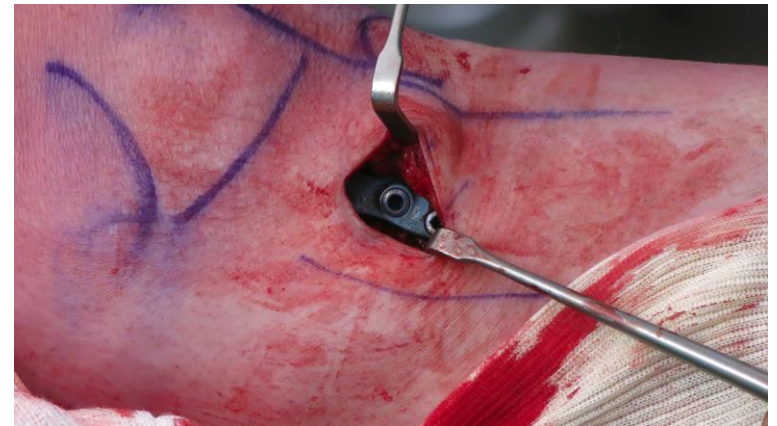
Inserting Activmotion Plate



Inserting Activmotion Plate

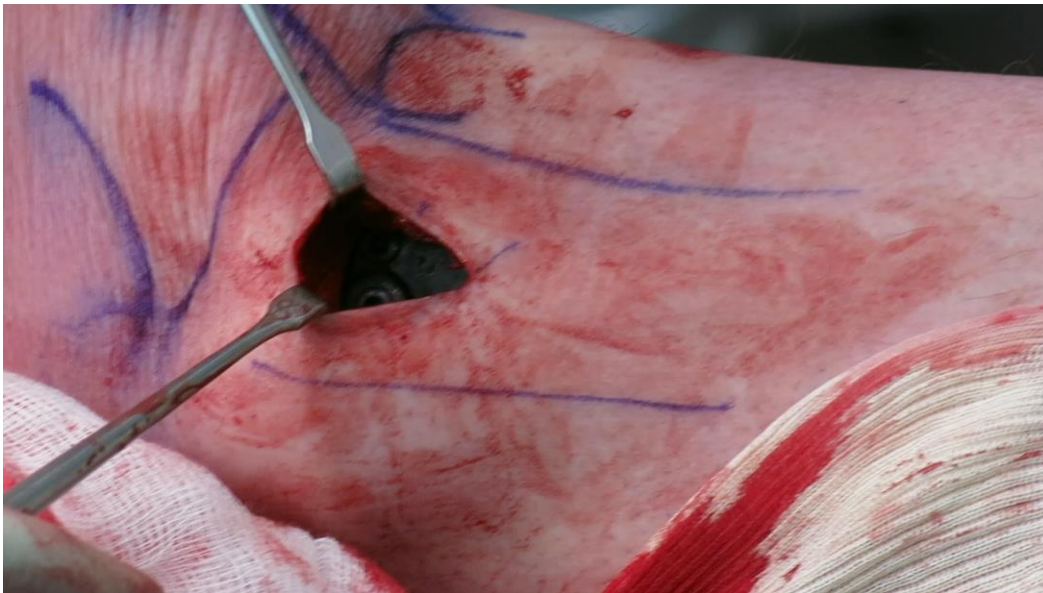


Inserting Activmotion Plate



Final View of Plate

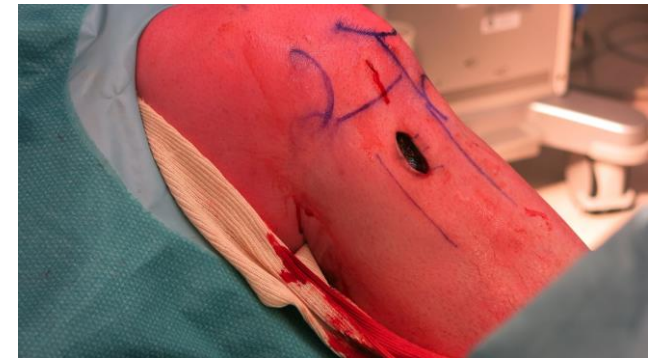
No additional Incision required



Reducing Swelling



Elevation & Deflate Tourniquet



Reducing Swelling & Pain

GA /No Spinal

Tolpendatol post op

No NSAIDS

Large Volume Dilute LA & Saline Infiltration

50 mls 0.5% Marcain with Adr
made up to 80mls with N/Saline

Reducing Swelling

Gameready Cryotherapy Device





Post Operative Recovery

- 2 Hrs Post Op VAS 0/10
- Day 1 Post Op VAS 1/10
 - No pain relief required
 - Discharge Home
 - WB as tolerate

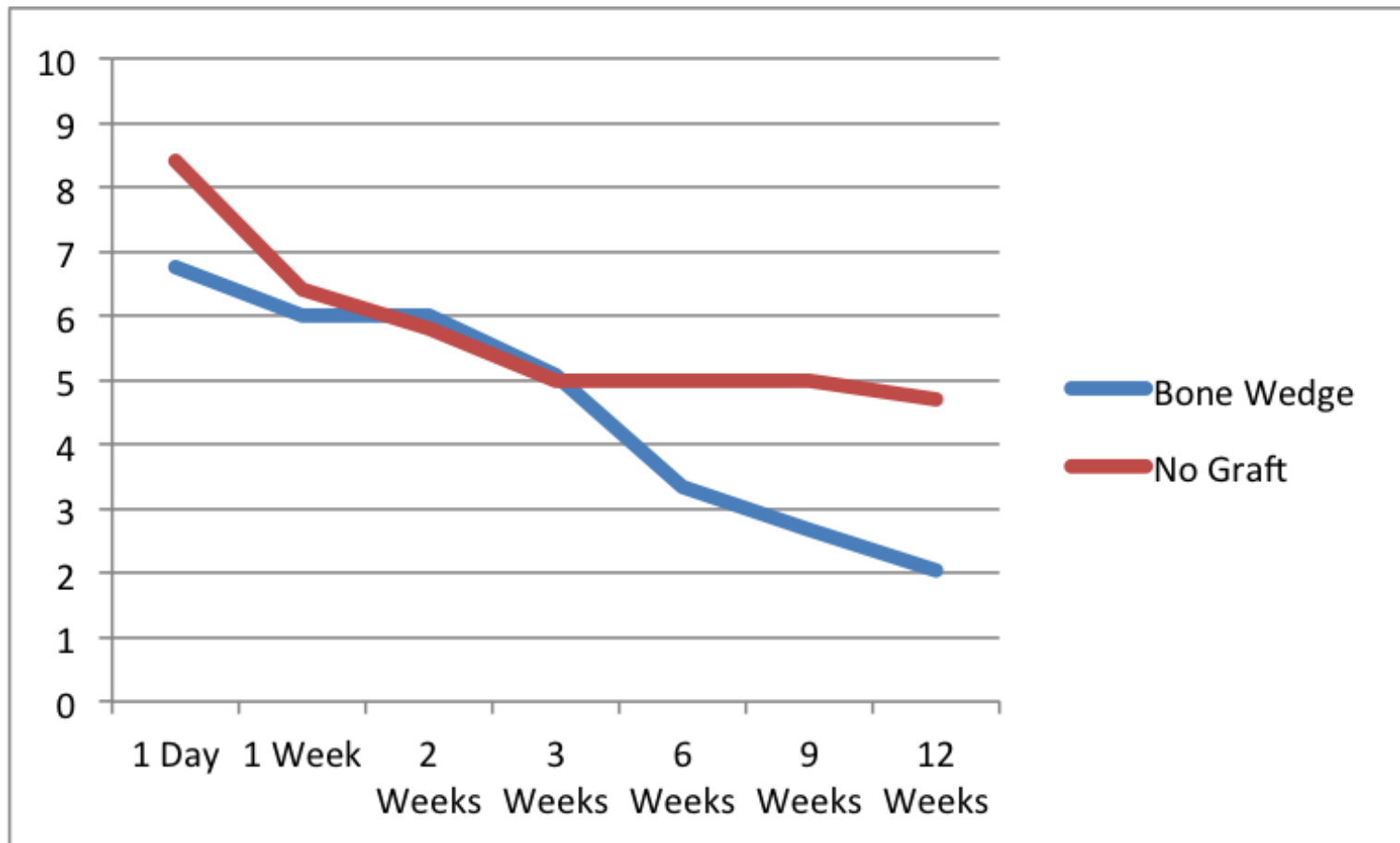
Results Bone Wedge Patients

VAS Pain Post-Op

Time Point	Mean VAS Pain	Normal HTOs (N=5)
1 Day	6.75	8.4
1 Week	6.00	6.4
2 Weeks	6.00	5.8
3 Weeks	5.08	5.0
6 Weeks	3.33	5.0
9 Weeks	2.66	5.0
12 Weeks	2.04	4.7

N = 12

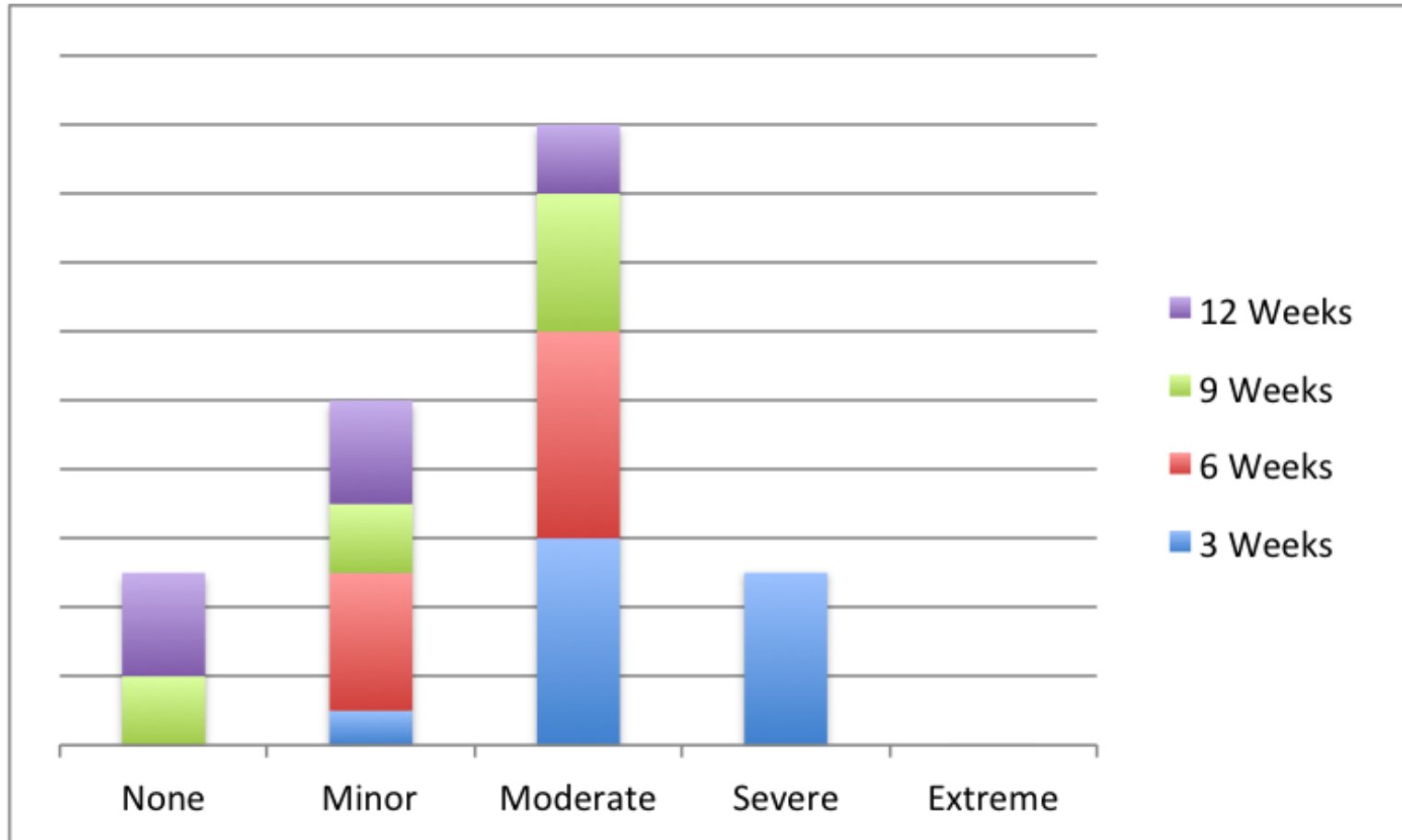
VAS Pain Post-Op



Swelling Post-Op

Time Post-Op	None	Minor	Moderate	Severe	Extreme
3 Weeks	0	1	6	5	0
6 Weeks	0	4	6	0	0
9 Weeks	2	2	4	0	0
12 Weeks	3	3	2	0	0

Swelling Post-Op



N = 12

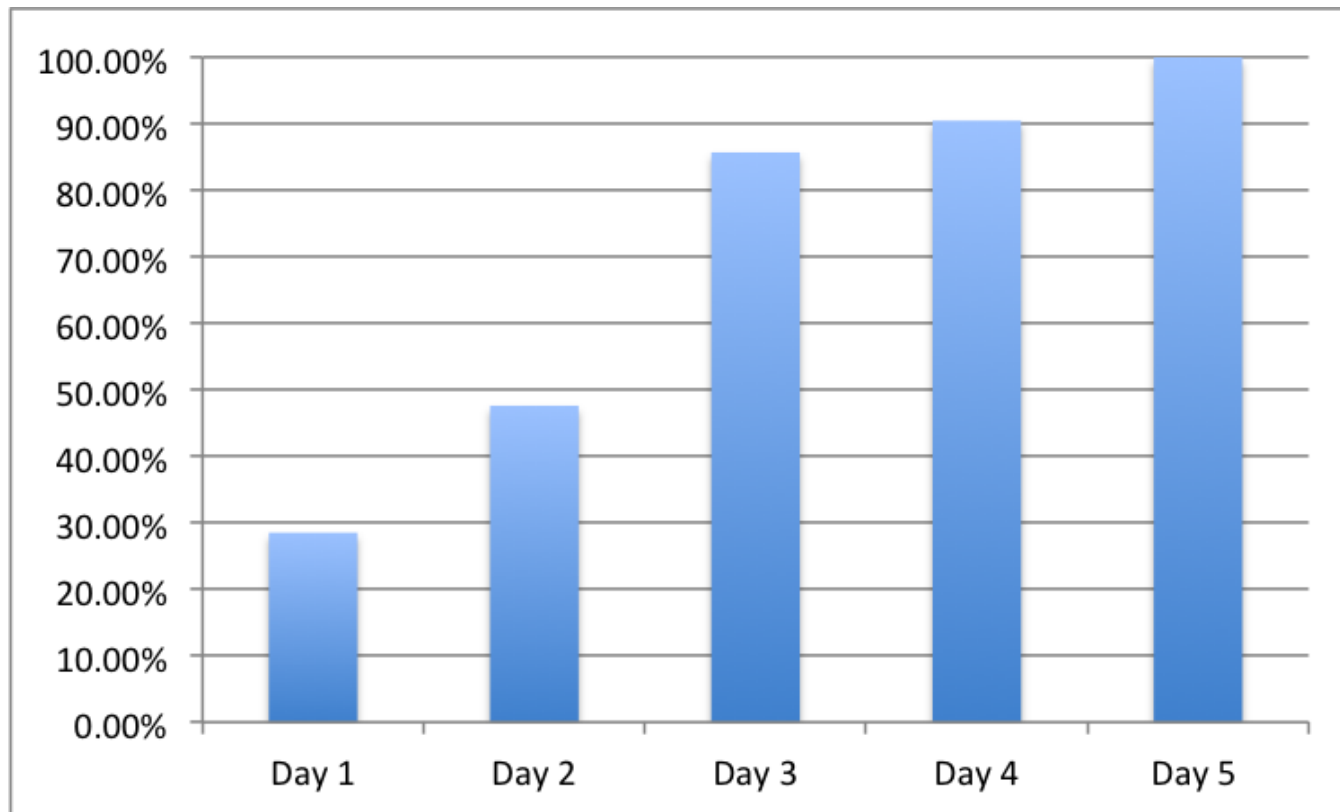
Mean PROMs at 3 Months Post-Op

OKS	OKS APQ	KOOS Total	KOOS Sym	KOOS Pain
35.6	20	68.304	62.5	71.527

KOOS ADL	KOOS Sport	KOOS WOMAC	KOOS WOMAC	VAS Health
80.698	41.875	51.563	20.37	83.62



Length of Hospitalisation



Biomechanical Study

- Upcoming biomechanical study assessing the stability and bio-mechanics of Bone Wedge Allograft compared to no graft
- Study to be conducted in partnership with the University of Winchester's Sport and Exercise Research Centre

SERC
SPORT AND EXERCISE
RESEARCH CENTRE

New Technique Summary HTO

- Minimally invasive Approach
- Precision Bone Wedge
- Smaller Plates
- Game Ready



Slope changing osteotomy 6 months review

- Pain Free
- Normal Gait
- Working as a roofer again
- Climbing and lifting



Masterclasses

Northumbria Knee Osteotomy MASTERCLASSES

22-23 June 2015

St James' Park, Newcastle Upon Tyne

Basingstoke Knee Osteotomy MASTERCLASSES

3-4 December 2015

The Ark Conference Centre, North Hampshire Hospital, Basingstoke
Hampshire Hospitals NHS Foundation Trust



Questions?

Visitation

Arthrex – Teri Blythe

teri.blythe@arthrex.co.uk

Depuy-Synthes – Michael Bull MBull@ITS.JNJ.com

Thank You

