ROUND TABLE:
MY KEYS FOR SUCCESS TO AVOID PAIN AT INDEX TKA

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Key Factors

- Patient Selection and Education
- Comprehensive Anaesthesia & Analgesia Regime
- Surgical Technique
  Anatomic Alignment
  Anatomic Tibia, Balanced Femur

Patient Selection

- Must have advanced OA – bone on bone on weight bearing X rays
  Only exception is avascular necrosis

- Preoperative Education – realistic postop expectation
  6 month recovery process
  Night pain is common particularly in the first 8 weeks
  Knee will be stiffer in the morning so it will be more painful to get going in the morning than the night before

Preoperative Medication

- Oxycontin 5-10mg
- Gabapentin 100-300mg

Intraoperative Medication

- Bupivicaine 0.5% - 2.5 -3.5mls Spinal

- Cocktail – Around the capsule and ligaments

  40mls 0.25% Bupivicaine with adrenaline
  5-10mg Morphine

  75mcg Clonidine

  Vancomycin 1g

  Kenacort 40mgs

  In the quads tendon, subcutaneous tissue and medial skin 40mls 0.25% Bupivicaine with adrenaline

Post operative Medication

- Tramadol SR 100mg bd Codeine 30mg q6h
- Gabapentin 200-300mg tds
- Celebrex 200mg daily
- Paracetmol 1 g q6h
- Oxycontin 5-10mg b.d
- Oxynorm 5-10mg q2h prn
- PCA – Oxycontin – 36-48 hours
- Anti-emetic prn – Ondandestron 4-8mg q8h IV/PO Cyclizine 12.5-25mg IV, Scopoderm patch

Discharge Medication

- 6 week course
- Tramadol SR 100mg bd
- Gabapentin 200-300mg tds
- Celebrex 200mg daily
- Paracetmol 1 g q6h

Anatomic Tibia Balanced Femur TKA

- CAS controlled – BrainLab 3.0 software
- Aim to restore constitutional varus to a max 3° varus
- Tibia cut anatomically to a max of 3° varus
- CAS Ligament Balancer used to optimize femoral component position to enable an equal gap through a full ROM
- Favour balanced femur over anatomic
  Based on 10 years of CAS balanced TKA where marked variability in femoral rotation and posterior femoral bone cuts

Brainlab 3.0 Software

- Sophisticated Balanced Approach
- Enables real time feedback on implant positioning
- Determines balance through a full ROM
- Enables improved femoral component positioning

Attune TKA

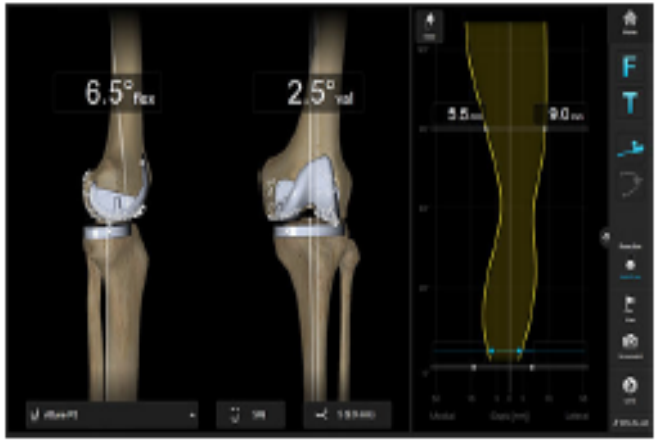
- Femoral Component - Graduated Radius Better stability in flexion
- 1mm poly – enables better stability
- 14 Femoral component sizes - enables better anatomical fit and no overhang – less pain
- More anatomical PFJ

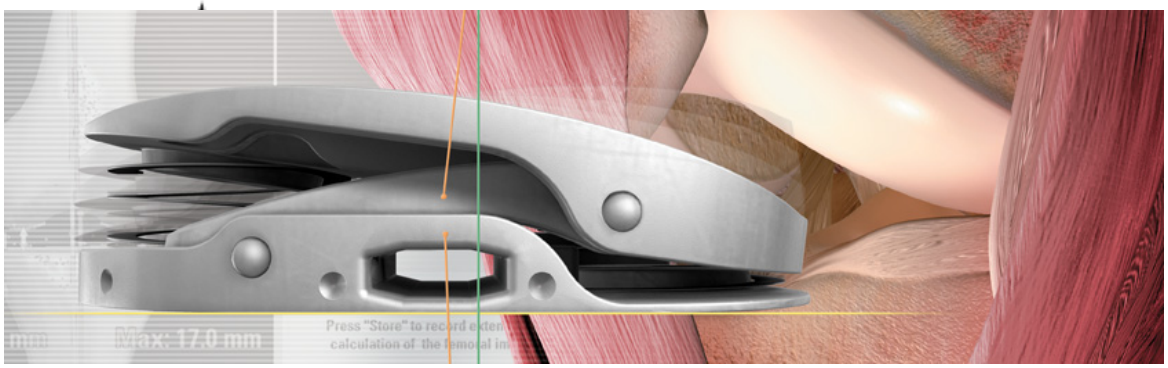
- Studies shows less pain cf PFC Sigma

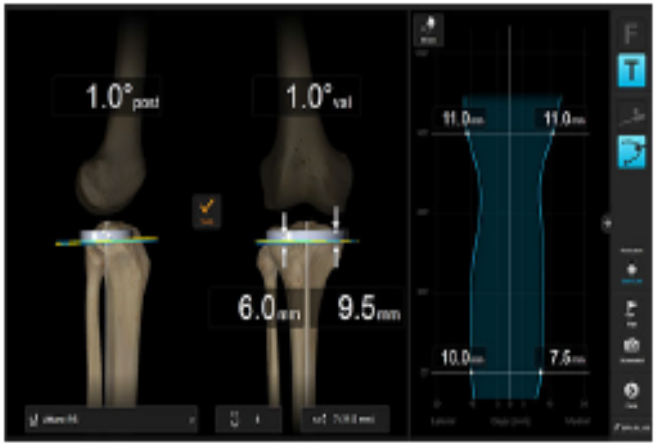
Surgical Technique

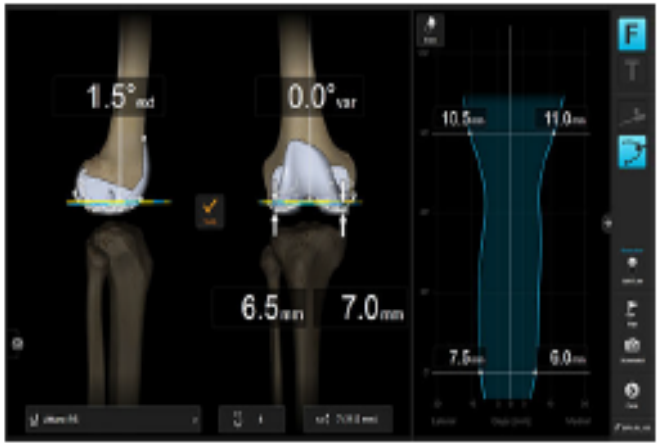
- Remove medial & lateral osteophytes
- Determine alignment and correctability. Happy to leave TKA in max 3° of varus
- Estimate chondral and bone loss in arthritic compartment.
  Cut the tibia anatomically in up to 3° of varus
  Resect extra tibia if fixed flexion >10°
- Remove any posterior osteophytes, release posterior capsule if necessary
- Insert ligament tensor place knee through ROM
- Optimize femoral component position ensuring a balanced knee
- Release PCL if medial compartment tight in flexion
  Release popliteus of femur if lateral compartment tight in flexion
- Piecrust MCL if tight - rare

Workflow Steps





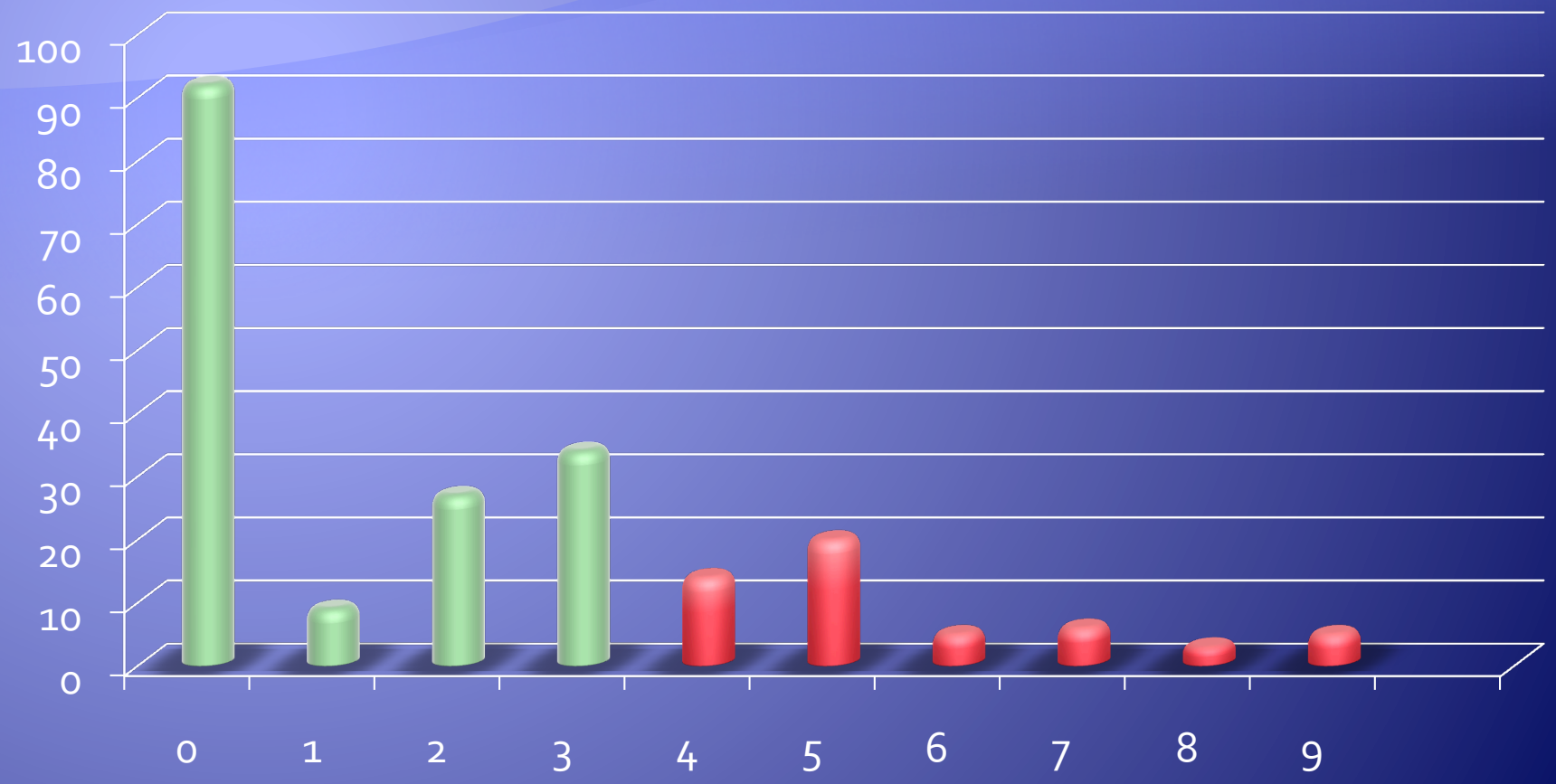




Anatomic Tibia Balanced Femur Technique Evaluation

- 215 patients with a varus knee July 2013 - 2015
- 75% anatomic tibial cut
  43% neutral tibial cut, 32% anatomical varus cut ,
  25% cut in 3° varus – under-corrected
- 79% patients correctable to neutral in extension
  All patients correctable to a max of 3° of varus
  No collateral ligament releases – with anatomic tibial cut
- All TKA's final alignment ≤ 3° of varus
- 75% of anatomic tibias +/- 3° to neutral posterior condylar axis cf 48% non anatomical tibias

Anatomic Tibial Cut

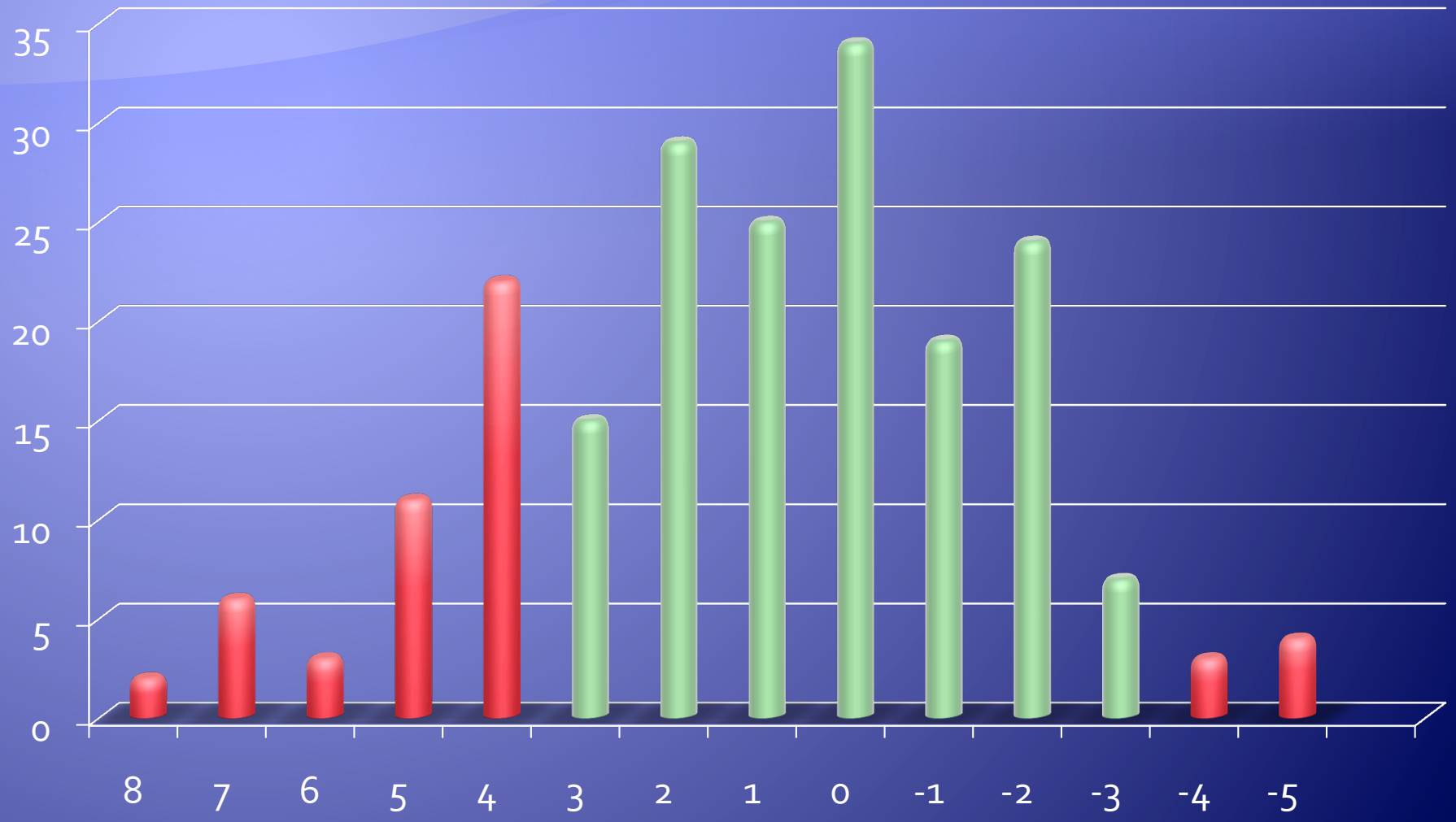


- Mean 2.3° varus

43% of tibia's are neutral

- 75% of tibia's can be cut anatomically

Femoral Rotation - PCA



75% +/-3 ° to neutral PCA – Mean 1.4° ext

Summary

- Concept – Anatomical Tibial Cut so the natural joint line is restored to enable better TKA kinematics
  75% of the time this achieved
  43% tibia is in neutral

- Concept – Balanced Femur to enable the TKA to be stable through a full ROM
  Ideally the femoral cuts would be anatomical
  Distal Femoral cut - 80% ± 1mm of 9mm
  Femoral Rotation – 75% ± 3° of rotation relative neutral
  Posterior medial femoral cut - 56% ± 1mm of 8mm
  Posterior lateral femoral cut – 31% ± 1mm of 8mm

Summary

- If you cut the femur anatomically there maybe a degree flexion extension mismatch and medial lateral imbalance
- The anatomic tibia balanced femur technique using CAS to determine balance and maintain the 3° boundary will give you a reproducible well balanced TKA

CAS ANATOMIC TIBIA BALANCED FEMUR TOTAL KNEE ARTHROPLASTY CLINICAL STUDIES

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Results

- Six month NZJR Oxford Outcome Study
- In hospital early Outcome Study

NZ Joint Registry Study

- Attune Oxford Score 6 months – 392 patients
- Mean Attune score - all surgeons 39.5
- Mean anatomic tibia balanced femur score 41.3
- Mean neutral tibial cut varus Attune 35.2 p=0.025
- Measured resection non navigated Attune 38.3 p=0.000004

Hospital Outcome Study

Alignment	Patients	Flexion	Exercycle	VAS Rest	VAS Exercise	SF 1
Varus Neutral Tibia	18	97	66%	0.89	4.6	5.2
Varus Anatomical Tibia	42	111	84%	0.56	2.8	5.6
T Test		0.23		0.66	0.46	0.44

Conclusion

- There is significant variation in the bony topography and soft tissue envelope of the osteoarthritic knee
- CAS Anatomic Tibia Balanced Femur technique enables the surgeon to implant a reproducible well balanced TKA that better matches the patients anatomy
- Oxford scores @ 6months show significantly better scores
- In hospital study shows a trend to increased ROM, less pain and function – numbers small