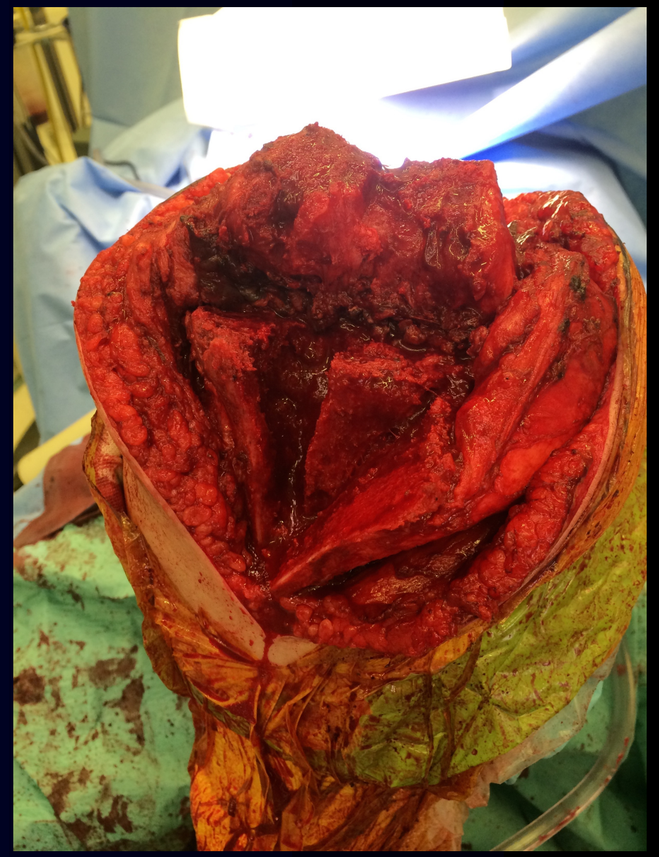
INSTITUTE OF SPORT EXERCISE & HEALTH

Advanced Knee Surgery 2025

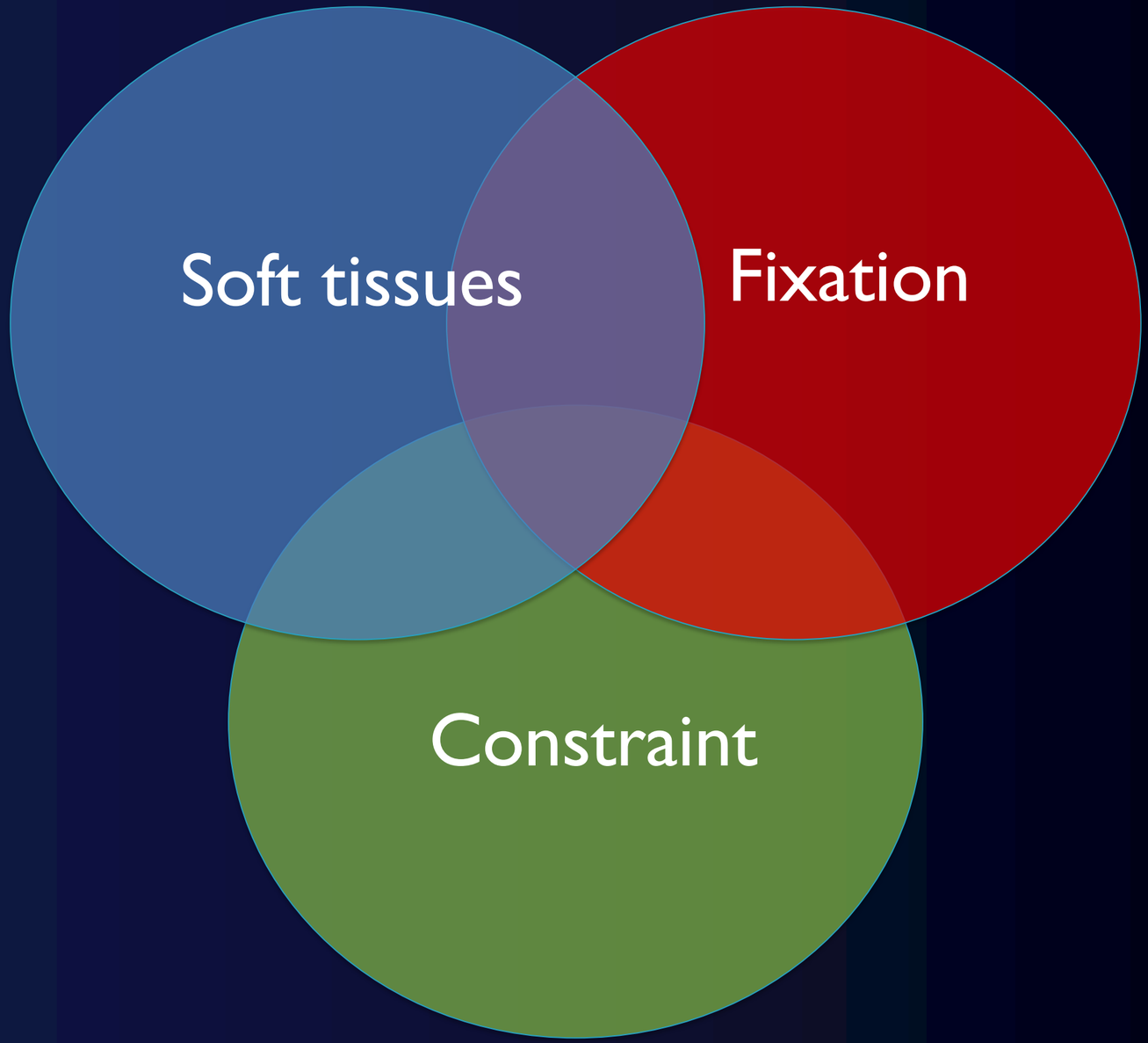
The Wellington Knee Unit

Innovative technology and revision : time for a prime



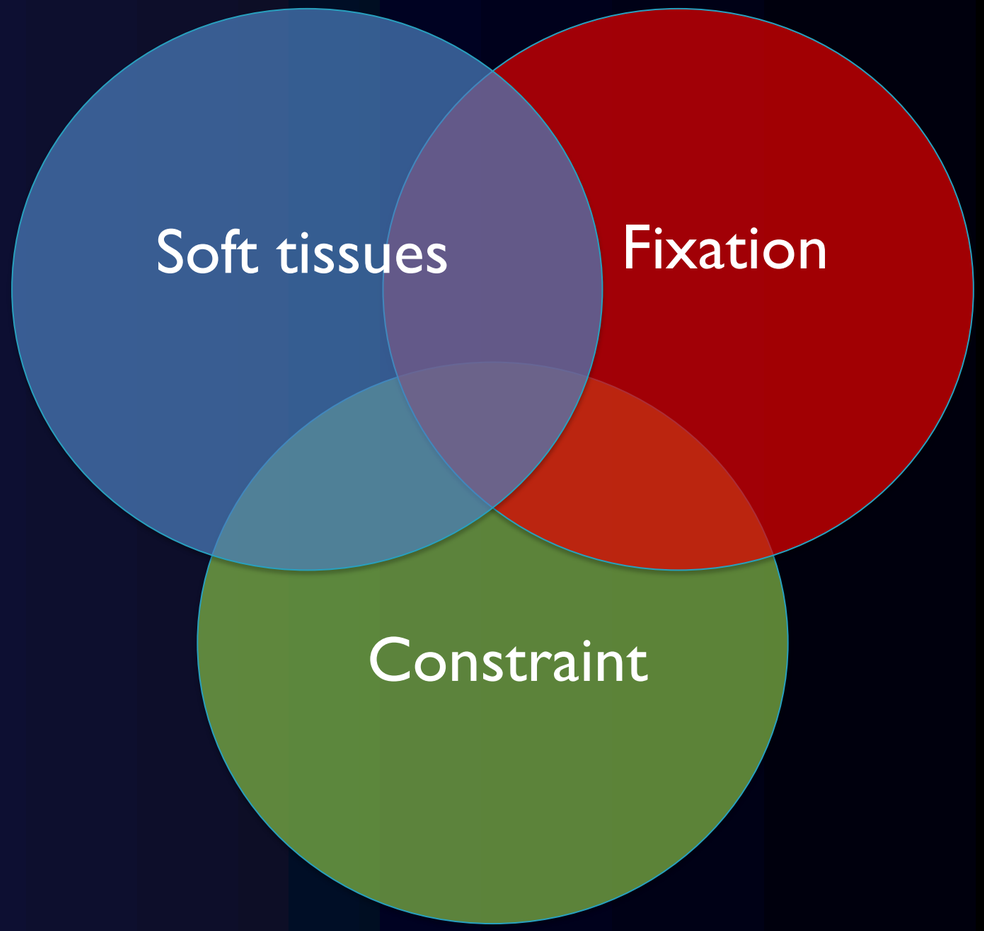
Sam Oussedik BSc MBBS FRCS(Tr&Orth)

Consultant Orthopaedic Surgeon & Clinical Lead, UCLH
Hon. Assoc. Prof., UCL


Soft tissues
Fixation
Constraint

Introduction

- Revision TKR is technically challenging
- What would we want technology to help with?
- What can it offer?



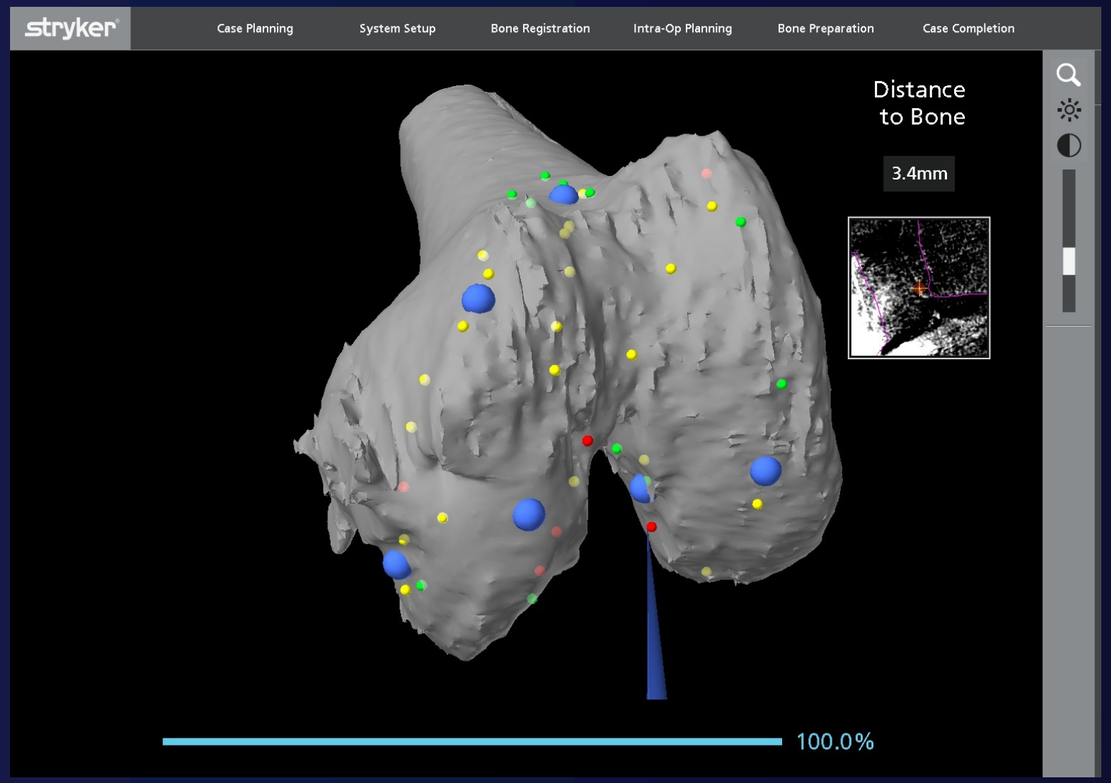
Revision TKR

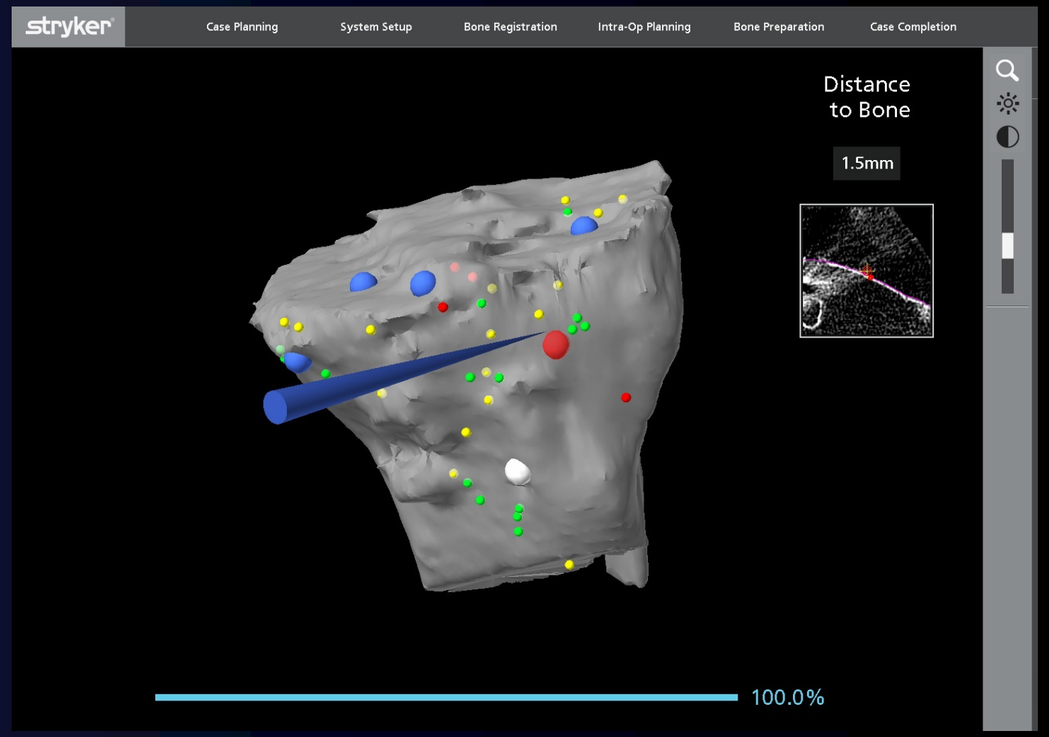
- Revision TKR is technically challenging
- What would we want technology to help with?
- What can it offer?

Revision TKR

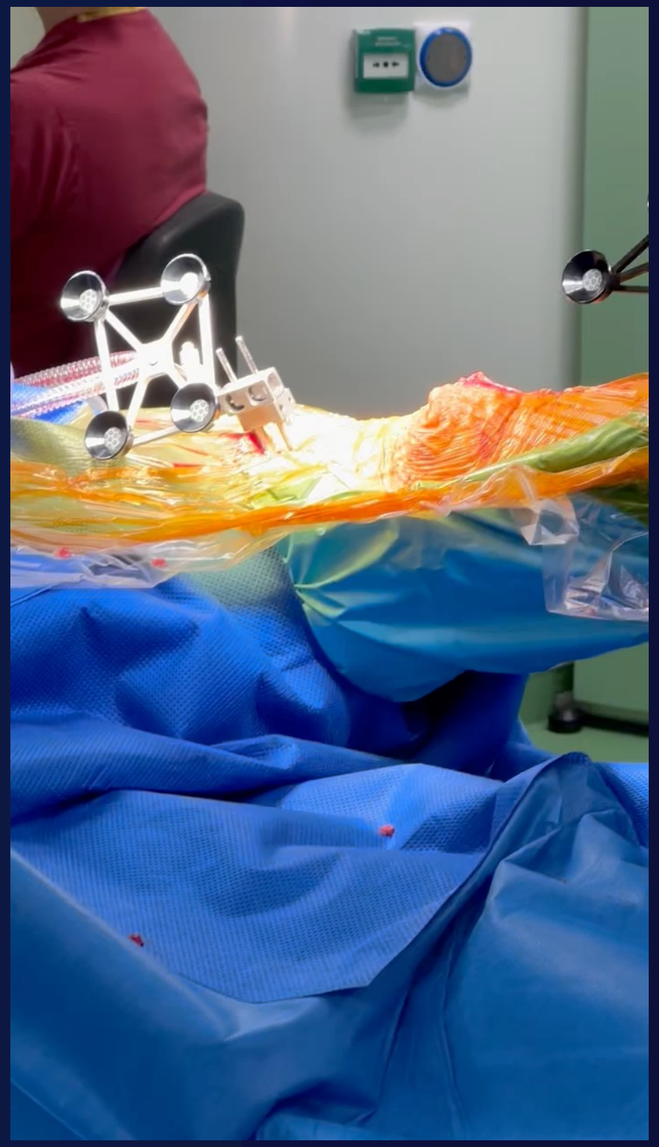
- Assessment of bone loss from CT
- Laxity assessment
- Implant removal
- Bone preparation
- Joint line
- Balance

Surface matching to CT



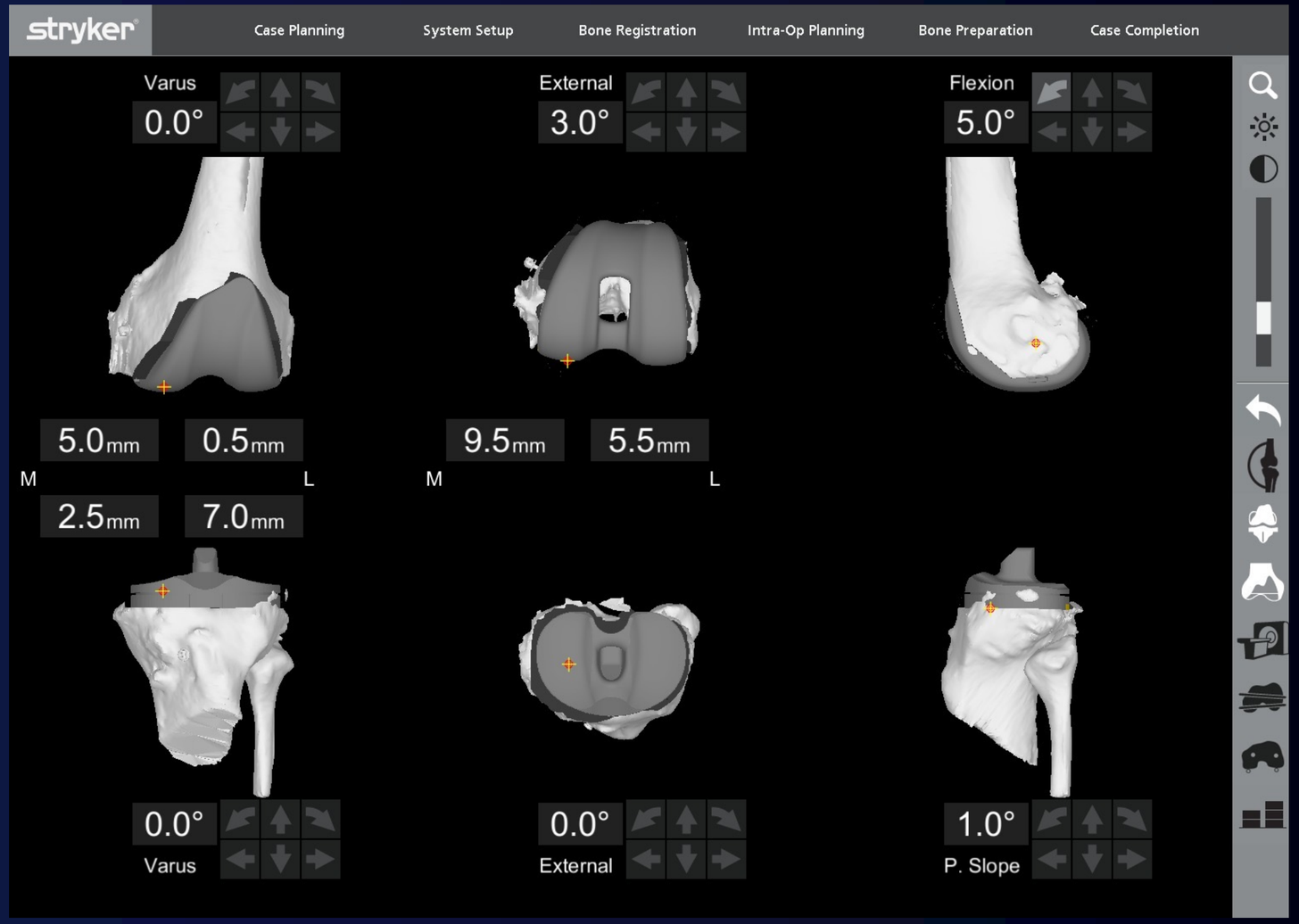


Laxity assessment

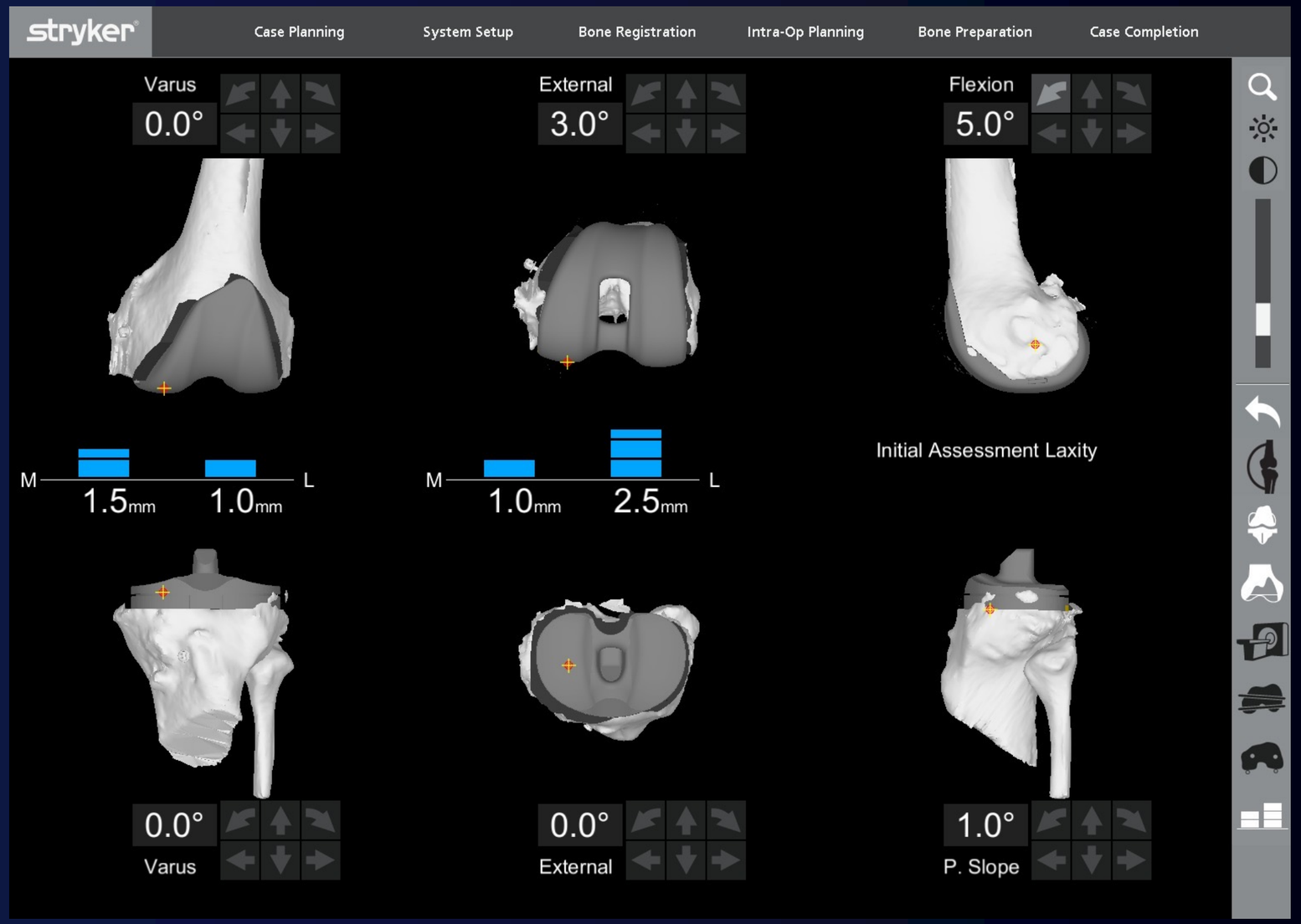


Laxity assessment

Modify cuts


stryker
Case Planning
System Setup
Bone Registration
Intra-Op Planning
Bone Preparation
Case Completion
Varus
0.0°
External
3.0°
Flexion
5.0°
5.0mm
0.5mm
M
L
9.5mm
5.5mm
M
L
2.5mm
7.0mm
0.0°
Varus
0.0°
External
1.0°
P. Slope

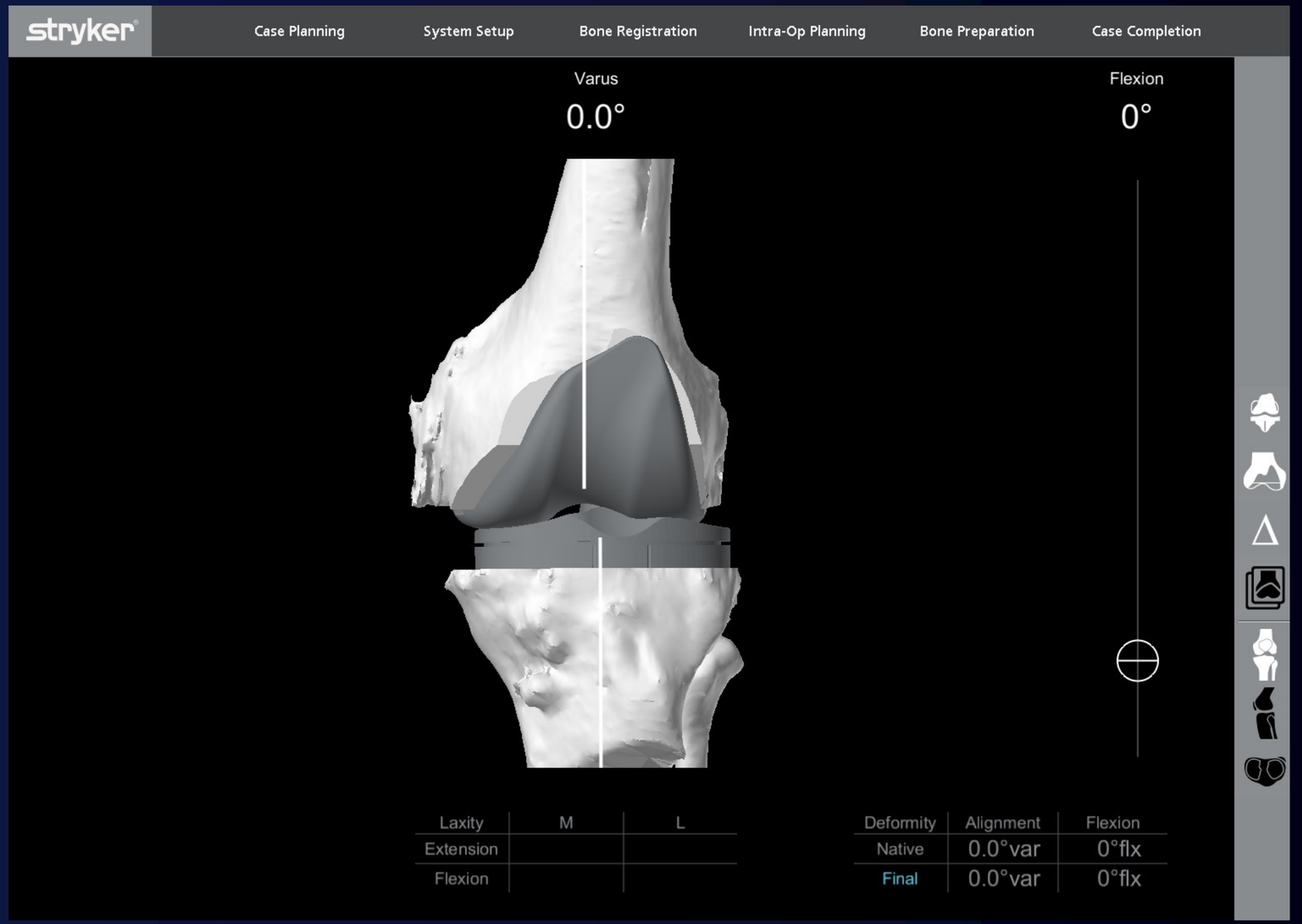
Modify cuts


stryker
Case Planning
System Setup
Bone Registration
Intra-Op Planning
Bone Preparation
Case Completion
Varus
0.0°
External
3.0°
Flexion
5.0°
M
L
1.5mm
1.0mm
M
L
1.0mm
2.5mm
Initial Assessment Laxity
0.0°
Varus
0.0°
External
1.0°
P. Slope

Remove implants

Remains a 90% manual process

Trial implantation



Post op

Current limitations

- Implant design limits alternative alignment goals
- Using a system designed for primary TKR limits use in revision
- Novel tools may be required to aid implant removal

Conclusion

- Robotic assisted revision TKR remains can be a useful adjunct
- Can help with joint line, balance, precision of bone preparation
- Next step will be to produce custom cutting tools that help with implant removal
- ?need for adjustable stem angles to allow more functional alignment

Thank you

Elective Orthopaedic Centre @ Grafton Way Building, UCLH