Roborotic Lateral UKA

Sébastien LUSTIG MD, PhD
C. Batailler, E. Servien.

Orthopaedic surgery and sport medicine department

Lyon University Hospital, France

Robotic surgery ?

ROBOTIC SURGERY : EXPERIENCE WITH UNICONDYLAR KNEE ARTHROPLASTY

S. LUSTIG, P. NEYRET

Surgical robotics has been shown to improve the accuracy of bone preparation and soft tissue balance in unicondylar knee arthroplasty (UKA). However, although extensive data have emerged with regard to a CT scanbased haptically constrained robotic arm [1], little is known about the accuracy of a newer alternative, an imageless robotic system.

The Navio™ Precision Freehand Sculpting system (Navio™ , Blue Belt Technologies Inc., Plymouth, MN, USA) is an imageless handheld robotic tool (fig. 1). Implant planning and development of the cutting zone take place entirely intraoperatively without the need for a preoperative CTscan. The system continuously tracks the position of the patient's lower limb and the handheld robotic device using an infrared navigation system. The system is imageless in so much as it does not use a CT or MRI to map the femoral and tibial condylar surface. It therefore relies on accurate registration of intraoperative knee kinematic assessment, anatomic landmarks, and surface mapping of the knee using a calibrated optical probe designed for use with this robotic system.

After percutaneous insertion of bicortical partially threaded pins into the proximal tibia and distal femur and attachment of optical tracking arrays (fig. 2), mechanical and

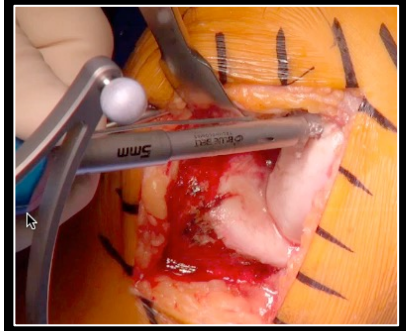
Navio

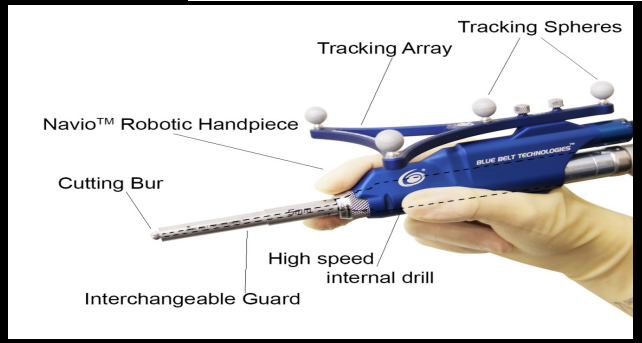
Sports Med Arthrosc. 2014 Dec;22(4):223-8. doi: 10.1097/JSA.0000000000000053.

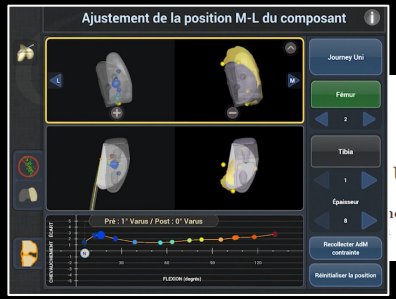
Lateral robotic unicompartmental knee arthroplasty.

Thein R[1], Khamaisy S, Zuiderbaan HA, Nawabi DH, Pearle AD.

Mako RIO







The Journal of Arthroplasty Vol. 27 No. 5

Accuracy of Dynamic Tactile-Guided Unicompartmental Knee Arthroplasty

olas J. Dunbar, BSc,* Martin W. Roche, MD,† Brian H. Park, BSc,*
H. Branch, BSc,‡ Michael A. Conditt, PhD,‡ and Scott A. Banks, PhD*

Timeline

2013 — 2015 — 2017 — 2019 — 2021 — 2022

n= 50
Image free
Robotic TKA

ORTHOPÉDIE
Lyon Croix Rousse

n= 400
Image free
Robotic UKA

Image based
Robotic UKA/TKA

	Robotic	Mechanical	p
IKS score - function	93 ±13	92 ±13	NS
IKS score - knee	90 ±11	88 ±15	NS

- No specific complication of the robot
- Early functional results Robotic = Mechanical
- Revisions rate Robotic > Mechanical (Lateral)
- Implants positioning Robotic > Mechanical (Lateral and Medial)

	Lateral UKA	182° ±4	181° ±3	NS
HKA (°)			±3	NS
Outliers			1%)	0.006
			2%)	0.039

Knee Surgery, Sports Traumatology, Arthroscopy
https://doi.org/10.1007/s00167-018-5081-5

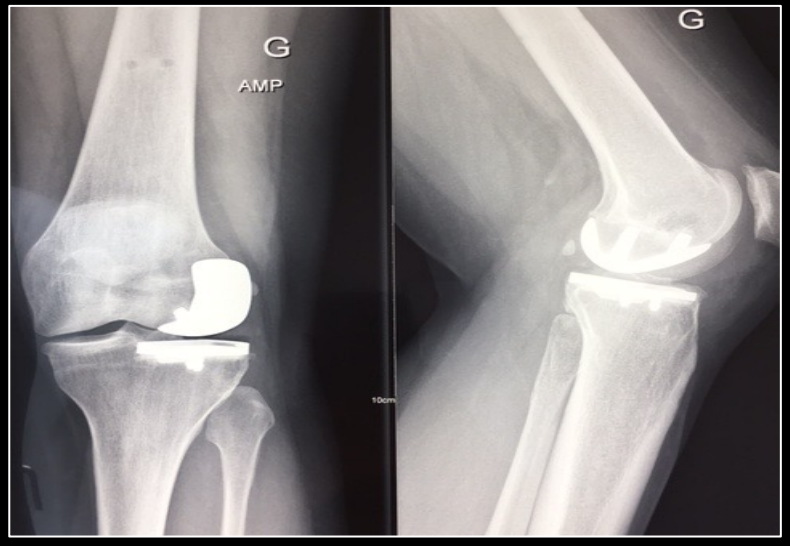
KNEE

CrossMark

Improved implant position and lower revision rate with robotic-assisted unicompartmental knee arthroplasty

Cécile Batailler[1] · Nathan White[1] · Filippo Maria Ranaldi[1] · Philippe Neyret[1] · Elvire Servien[1] · Sébastien Lustig[1]

2 months FU

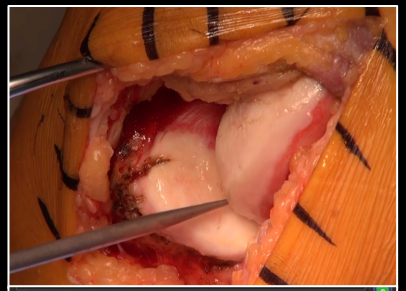


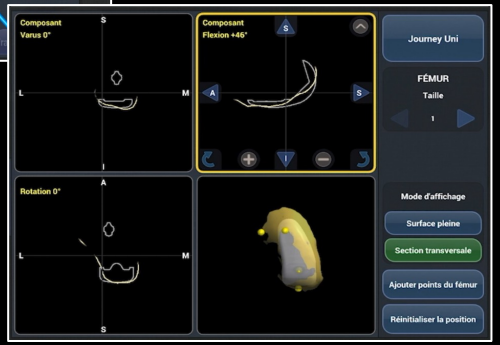
Archives of Orthopaedic and Trauma Surgery (2018) 138:1765–1771
https://doi.org/10.1007/s00402-018-3042-6

KNEE ARTHROPLASTY

Faster return to sport after robotic-assisted lateral unicompartmental knee arthroplasty: a comparative study

R. Canetti[1] · C. Batailler[1] · C. Bankhead[2] · P. Neyret[1] · E. Servien[1] · S. Lustig[1]





THE BONE & JOINT JOURNAL EST. 1948

■ KNEE

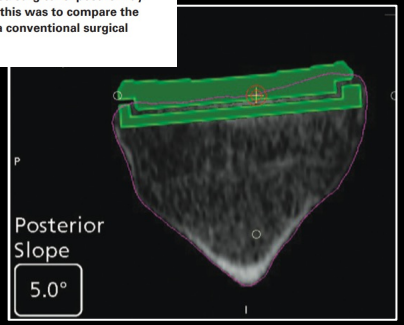
Improved sizing with image-based robotic-assisted system compared to image-free and conventional techniques in medial unicompartmental knee arthroplasty

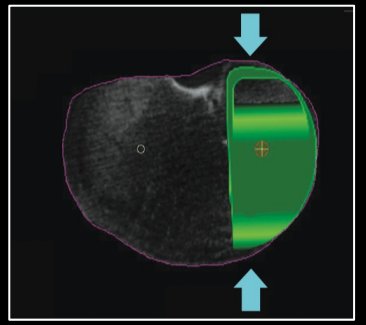
A CASE CONTROL STUDY

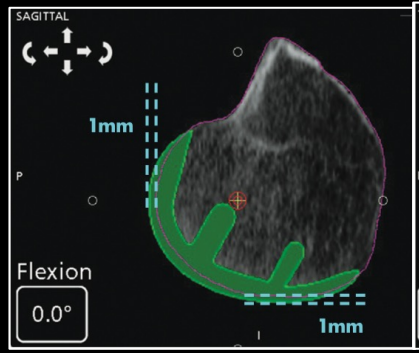
C. Batailler,
M. Bordes,
T. Lording,
A. Nigues,
E. Servien,
T. Calliess,
S. Lustig

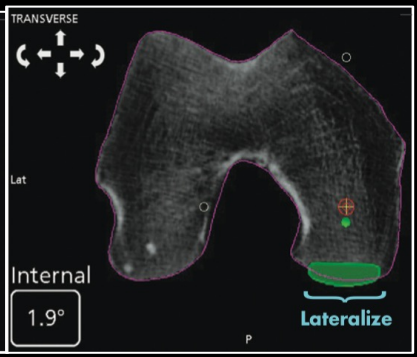
Aims

Ideal component sizing may be difficult to achieve in unicompartmental knee arthroplasty (UKA). Anatomic variants, incremental implant size, and a reduced surgical exposure may lead to over- or under-sizing of the components. The purpose of this was to compare the accuracy of UKA sizing with robotic-assisted techniques versus a conventional surgical technique.









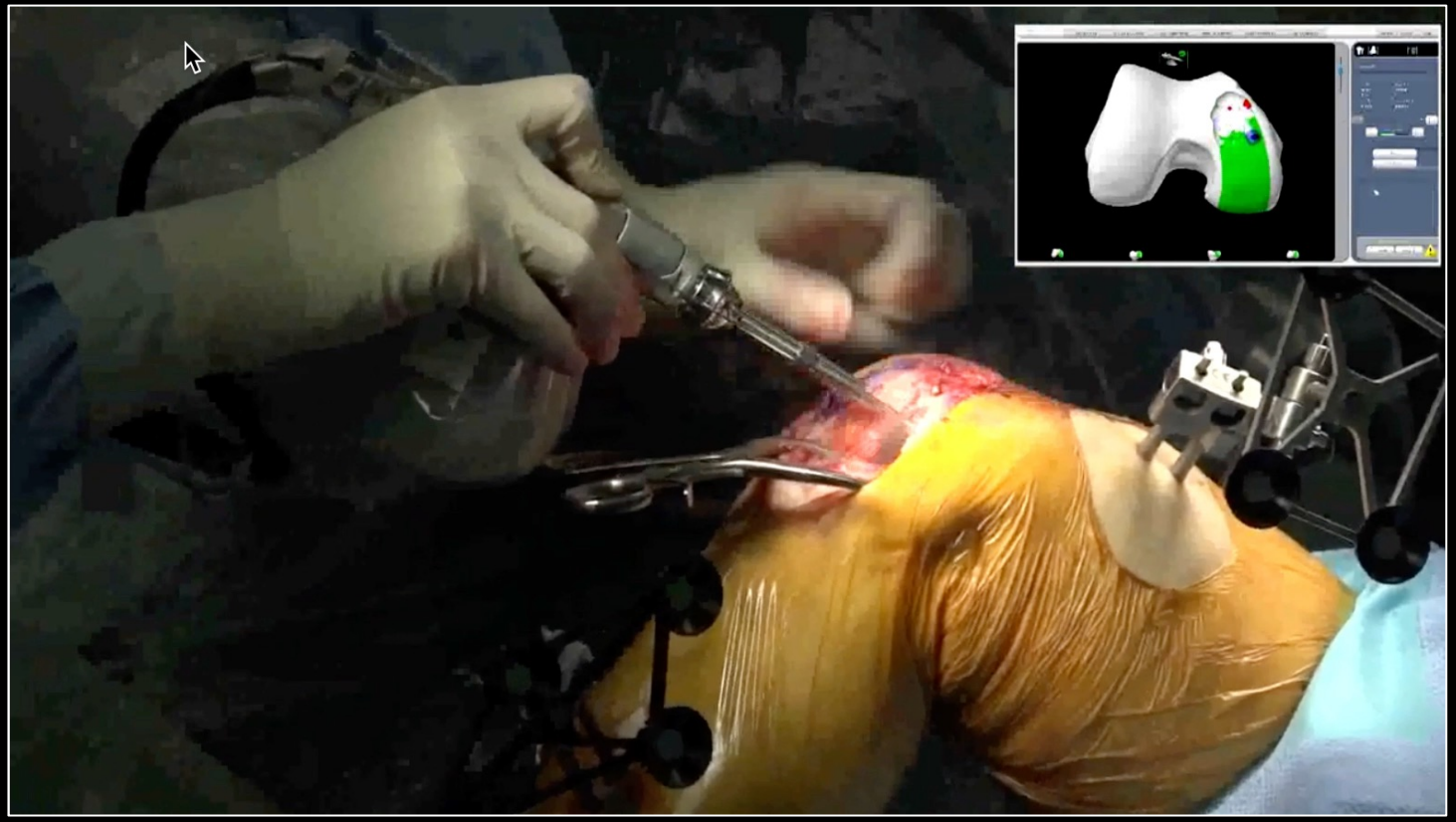


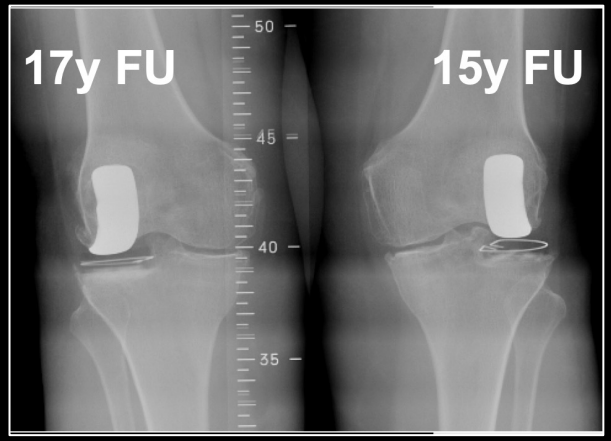
Image Based

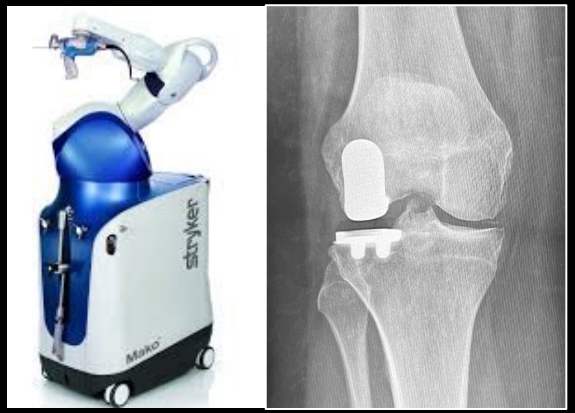
D

Take Home Message

- Lateral UKA has the potential to give better outcomes,
- Anatomy & biomechanics are on our side if we get the basics right,
- Excellent outcome even in young and active population,

- Robotic can help





European Knee Society

Thank you

sebastien.lustig@gmail.com