orthokey

Miró
Total Knee Arthroplasty

Total Knee Arthroplasty, by Orthokey

Clinical background

At present, in Total Knee surgery, the current implants ensure a high survival rate[1]. Though a correct implant positioning remains the most important factor for the success of this type of surgery.

The advantages of Computer Assisted Surgery, applied to orthopedics, are: the possibility to have a more precise implant positioning and to have a better ligament balance[2,3]. These two factors represent a real advantage for the survivorship of the implant.

In addition Computer Assisted Surgery allows to operate with minimal incision[4,5] which has been demonstrated to reduce the blood-transfusion rates, and speed up the rehabilitation process. Patients have a shorter and safer recovery of the articular function and, therefore, a better quality of life.

In our experience the use of Computer Assisted Surgery, in knee implants, allows not only the achievement of a perfect alignment and balance, but it has reduced the intra-operative complications like the avulsion of tibial spine, an excessive stress tibia or an abnormal patellar tracking[6].

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2. Cossey AJ, Spriggins AJ. The use of computer-assisted surgical navigation to prevent malalignment in unicompartmental knee arthroplasty. J Arthroplasty. 2005 Jan;20(1):29-34

3. Jung KA, Kim SJ, Lee SC, Hwang SH, Ahn NK. Accuracy of implantation during computer-assisted minimally invasive Oxford unicompartmental knee arthroplasty: a comparison with a conventional instrumented technique. Knee. 2010 Dec;17(6):387-91.

4. Confalonieri N, Manzotti A, Pullen C, Ragone V. Mini-incision versus mini-incision and computer-assisted surgery in total knee replacement: a radiological prospective randomised study. Knee. 2007 Dec;14(6):443-7.

5. Jenny JY, Ciobanu E, Boeri C. The rationale for navigated minimally invasive unicompartmental knee replacement. Clin Orthop Relat Res. 2007 Oct;463:58-62.

6. Confalonieri N, Manzotti A. Mini-invasive computer assisted bi-unicompartimental knee replacement. Int J Med Robot. 2005 Dec;1(4):45-50

BLU-IGS navigation system

Using navigation for a Total knee has never been so easy!
Mirò is the software for Total knee implants. Part of the BLU-IGS navigation system family.
Developed at Orthokey, in cooperation with Rizzoli Institute in Italy, our software allows to perform surgery keeping all the key phases under control, ensuring a perfect result.
In few steps it is possible to plan and control optimal resections for femur and tibia, based on bone morphology and a correct ligament balance in extension and in flexion.

Design inputs

Effective interface
•To show in an efficient way only the requested information
•To navigate only the necessary steps

Optimal resections
•Planning of the optimal resection level on tibia and femur, based on the desired final alignment.
•Evaluation of extension and flexion joint gaps before femoral resections.

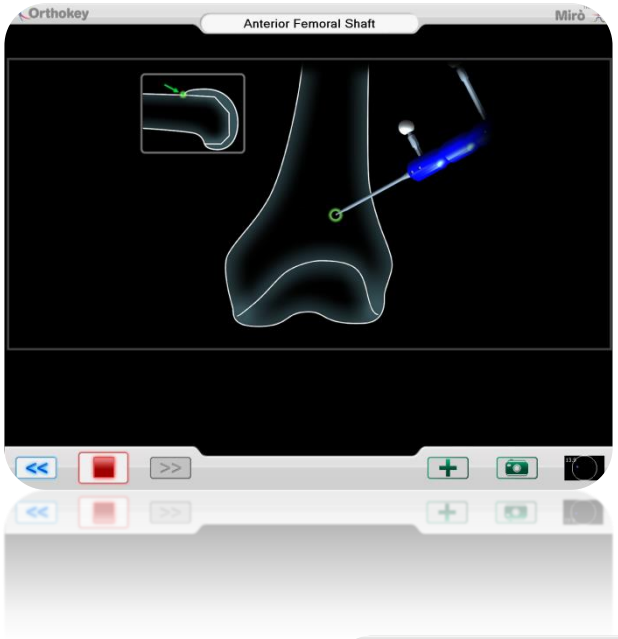
Ergonomic
•Reduced morbidity of the tools
•Competitive cost
•Surgical time comparable to conventional surgery
•Possibility to operate with minimal skin incision
•Integration with the conventional surgical tools
•Reduced number of disposables

Advantages of MIRO' software

Thanks to a dedicated approach to Total Knee Surgery the navigates steps are minimized:

The navigated procedure has been designed for a seamless integration with the conventional approach, reducing additional surgical times and without a significative time expense.

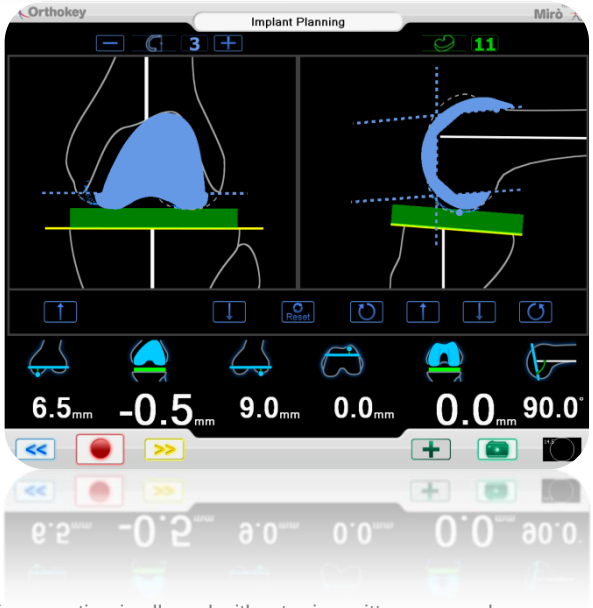
If you want, before all femoral resection you can evaluate joint space in extension and flexion and find the appropriate cuts. Optimal results with less effort.



Effective and essential interface

Our navigation system has an optimized interface. Time reduction means optimized surgical time and less effort for the surgeon. **MIRO'** achieved this goal following few simple rules:

- Reduced set of anatomical data required
- Effective interface. The right information at the right time.
- Flexible workflow
- Ergonomic Instruments



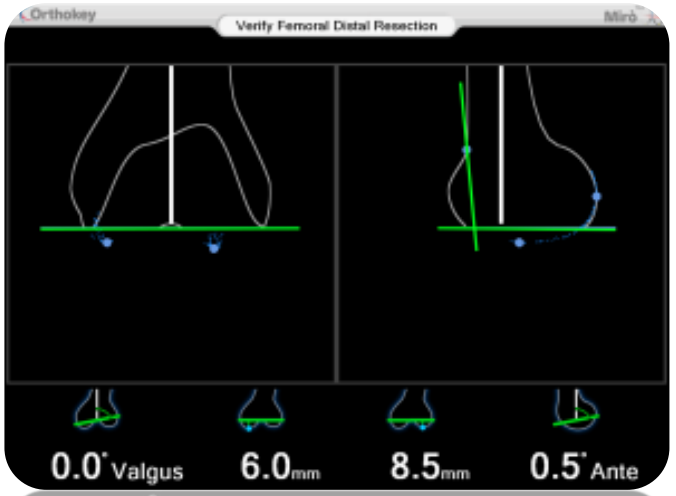
Light anatomical model

No data to reconstruct patient model are required other than those used to plan the intervention. No morphing or image registration.

Orthokey system contains and anatomical database based on more than 100 real patients, to verify acquisition efficacy. registration errors are reduced.

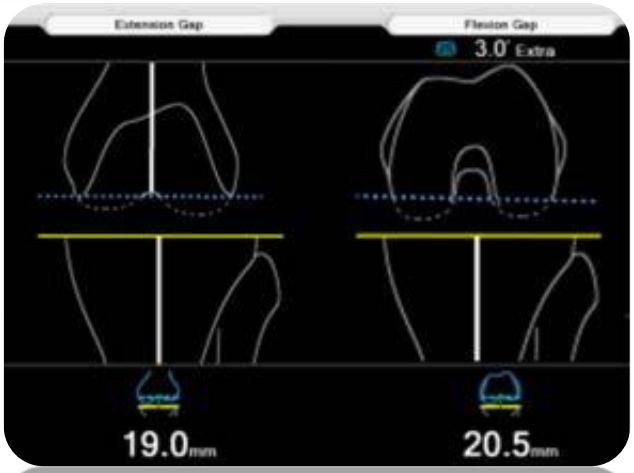
Advantages of MIRO' software

MIRÒ – TKA is the software dedicated to total knee arthroplasty. Correct limb alignment and ligaent balancing are the key factor for a successful TKA. **MIRÒ – TKA** enanched surgeon confidence during all steps of the procedure, giving the fundamental tools to determine the best surgical approach. This is achieved with a reduced set of surgical instruments and a fast anaomical registration.



Main key features of MIRÒ

- Implant positioning based on limb alignment and ligament balancing
- Optimized software interface
- Personalized workflow
- Optimized surgical tool compatible with all conventional surgical instruments
- No preopeative images required
- Suitable for al implant designs
- Possibility to evaluate knee kinematics and stability with the KLEE module



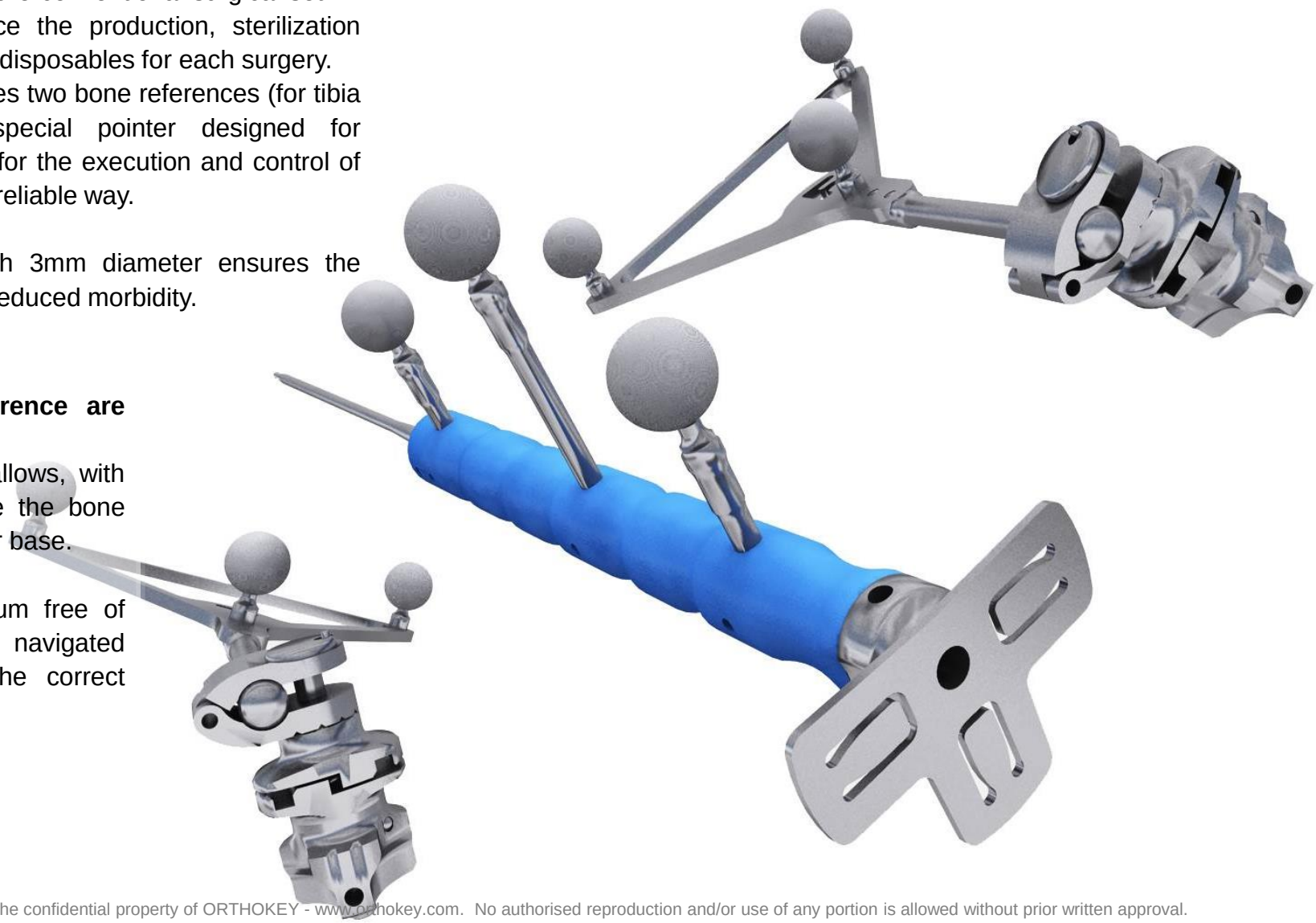
Advantages of MIRO' software

Your surgical habits are not modified.
Our navigated surgical tools have been designed to integrate seamless with the conventional surgical set. In this way we can reduce the production, sterilization costs and the number of disposables for each surgery.
The navigation kit includes two bone references (for tibia and femur) and a special pointer designed for registration phases and for the execution and control of bone cuts in a easy and reliable way.

Two bi-cortical pins with 3mm diameter ensures the perfect stability and the reduced morbidity.

Removable bone reference are also available.
A fast locking system allows, with just one act, to remove the bone reference tools from their base.

This allows the maximum free of movement, during non navigated phases and ensures the correct marker neatness.



Advantages of MIRO' software

Intraoperative Kinematics

A suitable understanding of the osteoarthritic (OA) knees kinematics and a careful analysis of the arthroplasty effects on the patterns of motion, may improve implant design and surgical techniques.

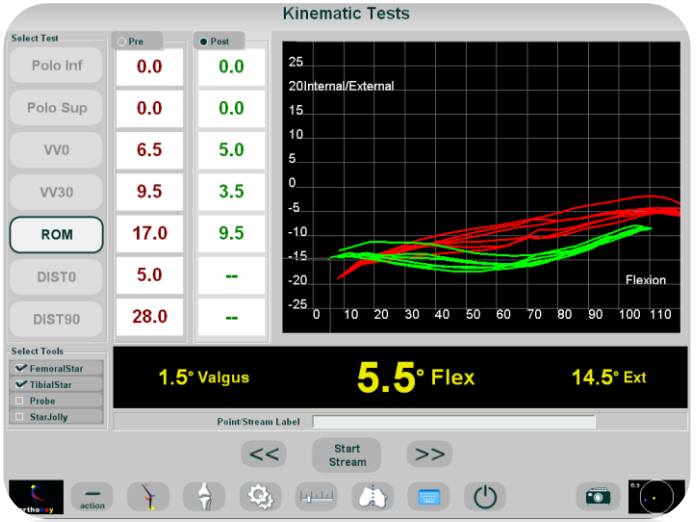
The main sources of information about the kinematics of the osteoarthritic and reconstructed knees have been so far anatomical investigations, postoperative radiographic analyze, gait analysis and fluoroscopy.

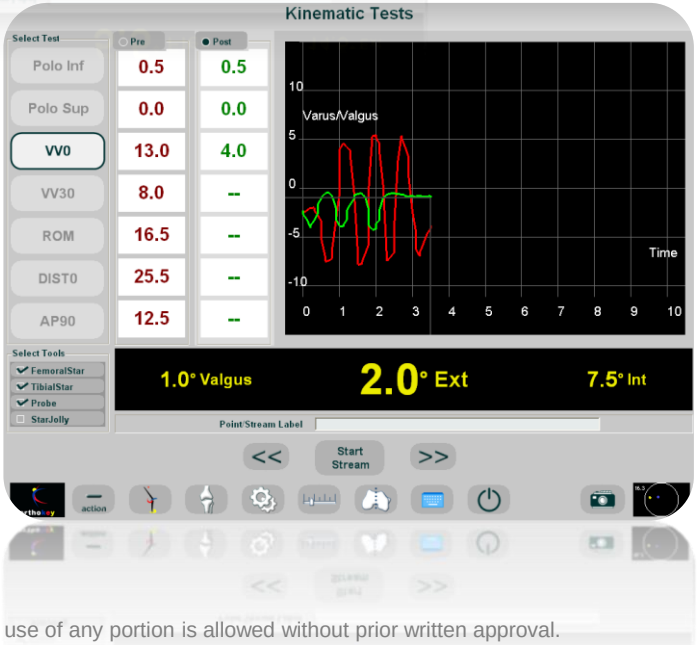
Post operative analysis has the disadvantage to be performed at follow-up, when no surgical actions are more possible.

With Klee now it is possible to record intra-operatively pathologic and prosthetic patients' specific kinematics.

What does it records

The system record a screenshot after each test execution, so you can see the graphs and use for your presentations or papers. In addition the numerical value of the test are recorded for statistical analysis in a log file, with all the data of the intervention.





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