



Total Hip Arthroplasty, by Orthokey

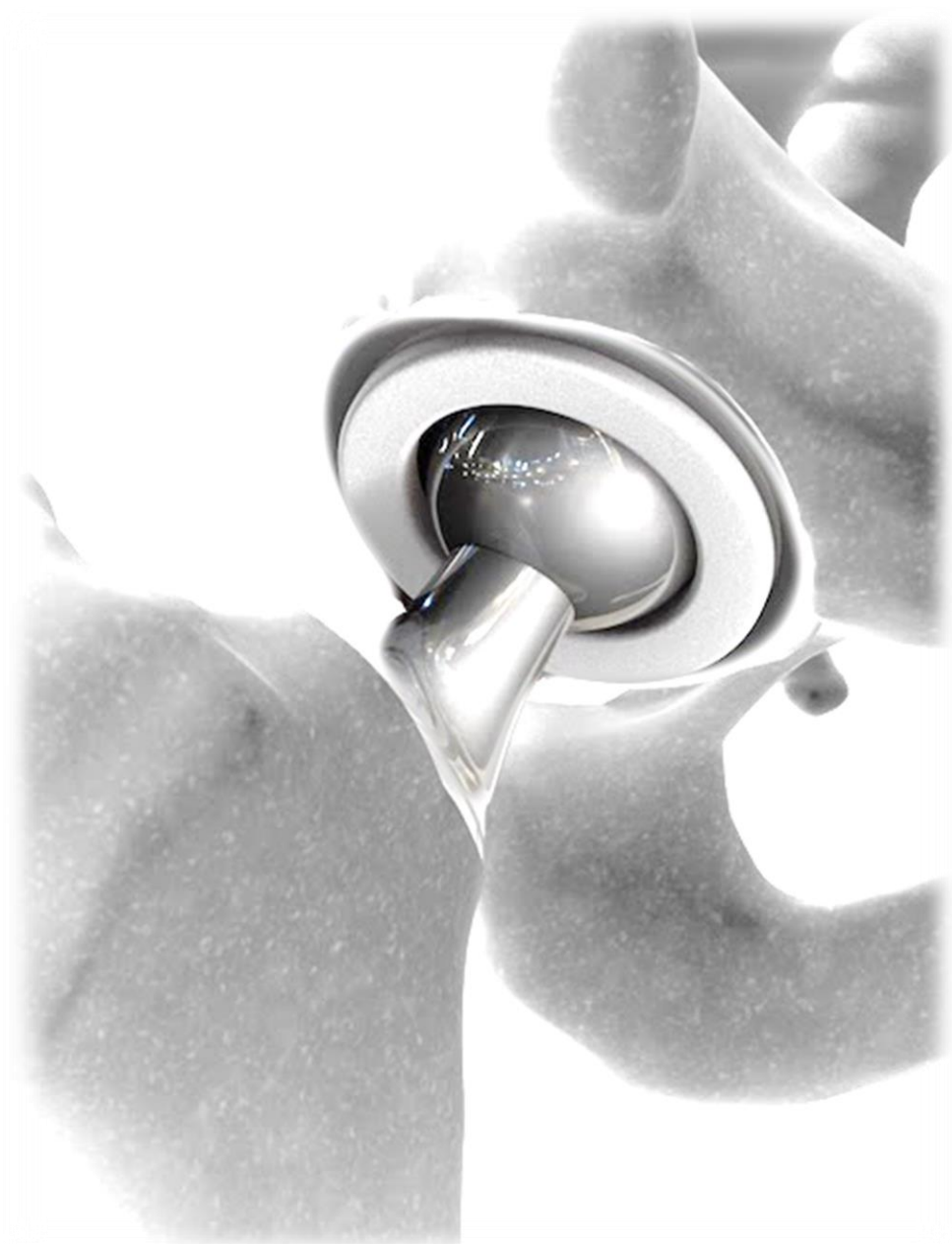
Clinical background

Total hip arthroplasty (THA) has become one of the most common and successful orthopedic procedure with a survivor rate of approximately 93% at 20 years^{1,2}. Though precise placement of the acetabular component and correct offset and length restoration is the key to surgical success and leads to a good long-term prognosis and patient satisfaction.

Computer Assisted Surgery applied to MIS THA, thanks to CAS potential to overcome the limited visibility of anatomical landmarks, allows to increase accuracy in acetabular component implantation and to enhance the surgeon's ability to correct limb offset and length discrepancy, as reported in literature^{3,4,5}.

These two factors represent a real advantage for the survivorship of the implant and to reduce possible cause of litigation that are increasing in USA and Europe in the last years⁶.

1. Havelin LI, Engesaeter LB, Espehaug B, Furnes O, Lie SA, Vollset SE (2000) The Norwegian Arthroplasty Register: 11 years and 73,000 arthroplasties. *Acta Orthop Scand* 71:337–353
2. Sathappan SS, Teicher ML, Capeci C, Yoon M, Wasserman BR, Jaffe WL (2007) Clinical outcome of total hip arthroplasty using the normalized and proportionalized femoral stem with a minimum 20-year follow-up. *J Arthroplasty* 22(3):356–362
3. Liu Z, Gao Y, Cai L. Imageless navigation versus traditional method in total hip arthroplasty: A meta-analysis. *Int J Surg*. 2015 Sep;21:122-7.
4. Manzotti A, Cerveri P, De Momi E, Pullen C, Confalonieri N. Does computer-assisted surgery benefit leg length restoration in total hip replacement? Navigation versus conventional freehand. *Int Orthop*. 2011 Jan;35(1):19-24
5. Hohmann E, Bryant A, Tetsworth K. A comparison between imageless navigated and manual freehand technique acetabular cup placement in total hip arthroplasty. *J Arthroplasty*. 2011 Oct;26(7):1078-82.
6. Rubash HE, Parvataneni HK (2007) The pants too short, the leg too long: leg length inequality after THA. *Orthopedics* 30:764–765



BLU-IGS navigation system

Using navigation for a Hip Surgery has never been so easy!

Hopper is the software for Total knee implants. Part of the BLU-IGS navigation system family.

Developed at Orthokey, in cooperation with Italian and French surgeons, our software allows to perform surgery keeping all the key phases under control, ensuring a perfect result.

In few steps it is possible to control optimal acetabular cup implant based on pelvic anatomy and a correct offset and length restoration.

Design inputs

Effective interface

- To show in an efficient way only the requested information
- To navigate only the necessary steps

Optimal resections

- Precise cup placement. With a reduced set of navigated tools compatible with manual instruments
- Evaluation of femoral length and offset variation without bone mounted reference on femur.

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 HOPPER software

HOPPER-THA is the surgical navigation software for Total Hip Arthroplasty. Accurate positioning of the acetabular cup relative to the pelvis and controlled restoration of offset and length are crucial for an optimized joint mechanics and better long-term durability. **HOPPER-THA**, with independent software modules adapting to any surgeon's need, provides patient's specific anatomical references and effective guiding tools for enhanced implant placement.

Effective and essential interface

Our navigation system has an optimized interface. Time reduction means optimized surgical time and less effort for the surgeon.

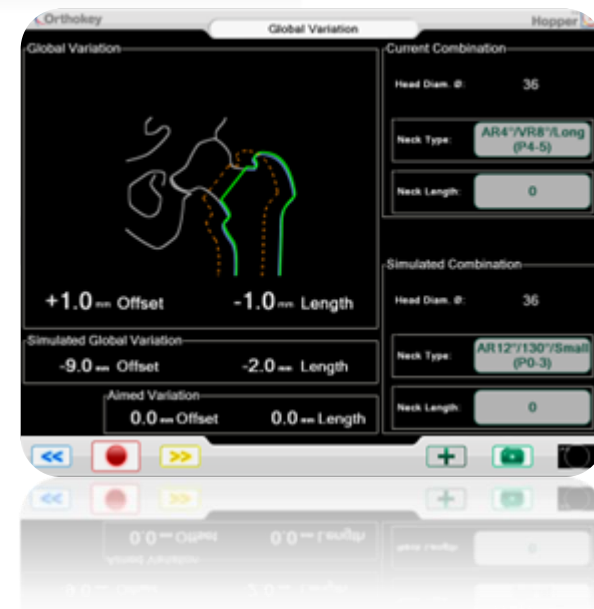
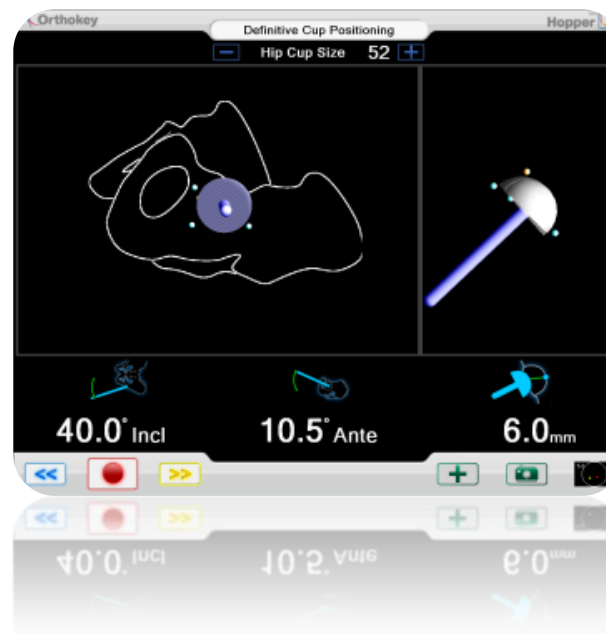
HOPPER-THA achieved this goal following few simple rules:

- 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 an anatomical database based on more than 100 real patients, to verify acquisition efficacy, registration errors are reduced.



Advantages of HOPPER software

Precise Cup Placement:

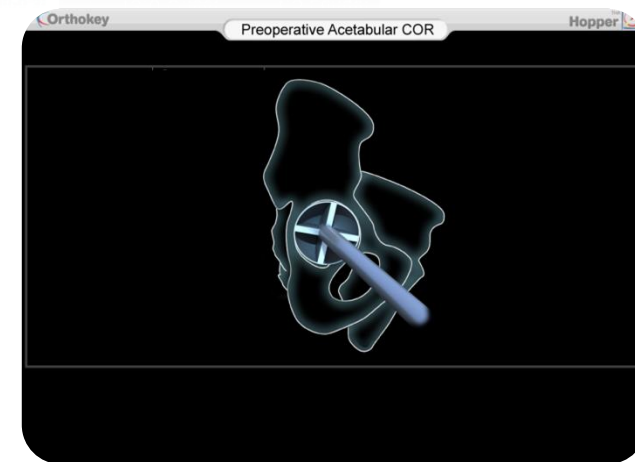
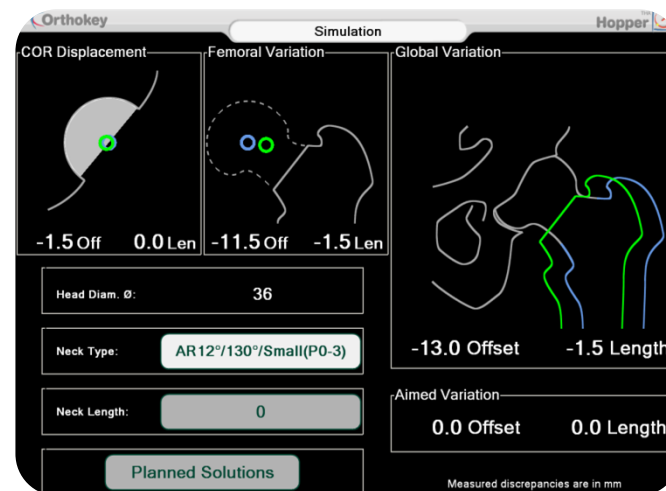
With a reduced set of navigated tools compatible with manual instruments HOPPER-THA provides real time cup positioning control respect to pelvis anatomy both during acetabular reaming and during cup positioning.

Intraoperative measuring of cup COR displacement

Starting from initial acquired anatomical data and data acquired after cup positioning, allows to measure cup COR displacement respect to preoperative acetabular COR in the three main anatomical directions.

Rapid Global offset and length assessment

Effective leg length and offset variations control without increasing the operative time. No femoral star is required. Easy anatomical references detection. Moreover Hopper allows to simulate offset and length variations corresponding to any prosthesis component combination.



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.

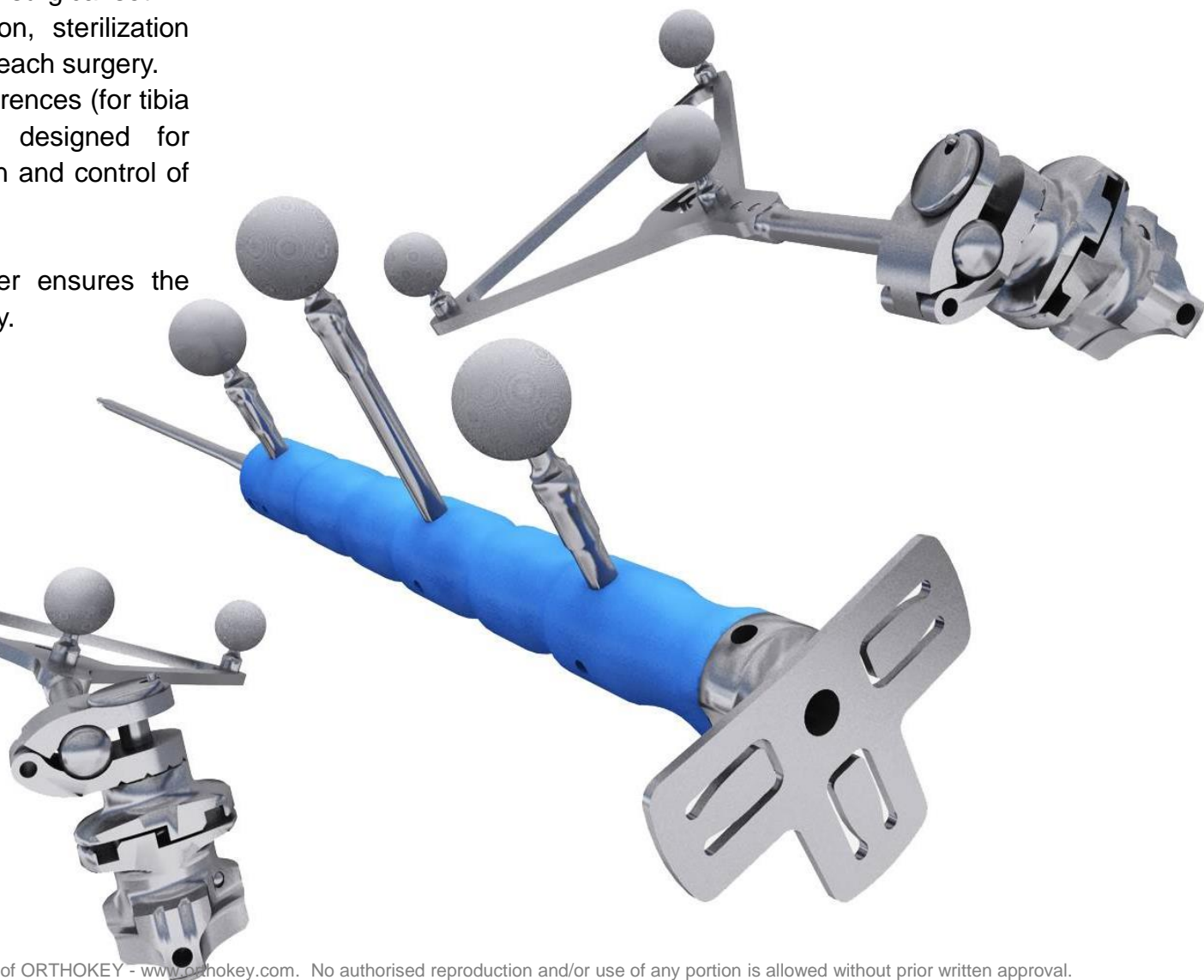
The navigation kit includes two bone references (for tibia and femur) and a special pointer designed for registration phases and for the execution and control of bone cuts in a easy and reliable way.

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.



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