

# X-Ray Image-Guided Navigation for Hip Osteotomy

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## Goals:

- Develop surgical workflow and software pipeline for X-ray navigation system used for periacetabular osteotomy (PAO) with in-image fiducials (BBs and FTRAC).
- Compare novel method with currently used, optical tracker-based method.

## Significance:

- C-arm imagers more commonly available in hospitals, making X-ray-based navigation systems easier to install and use.
- Surgeons more accustomed to working with X-ray images than with optical trackers.

## Results:

Novel method tested in cadaver study, and fiducial registration errors and transformation errors reported for both novel method and optical tracker-based method.

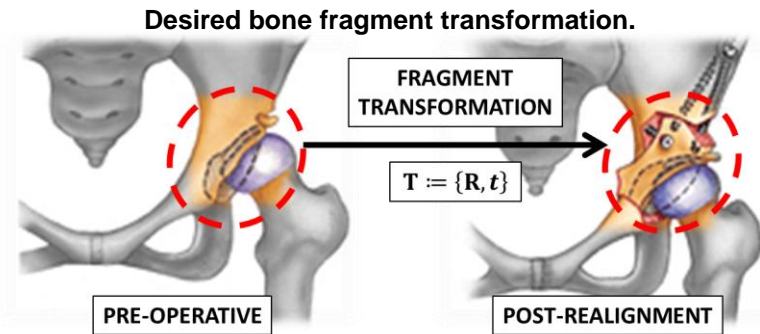


Image courtesy of hipandpelvis.com

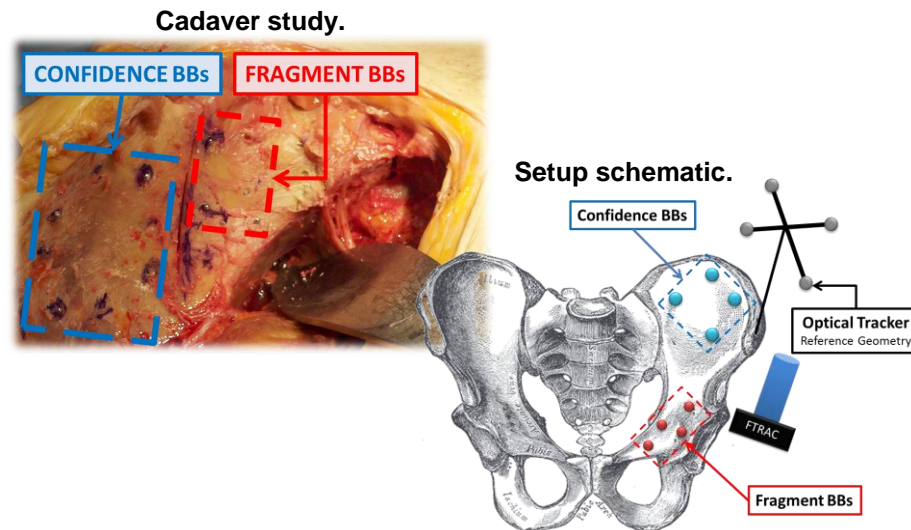
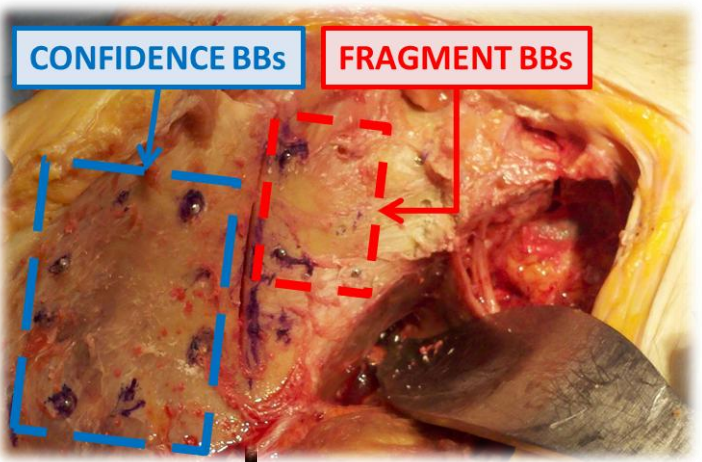
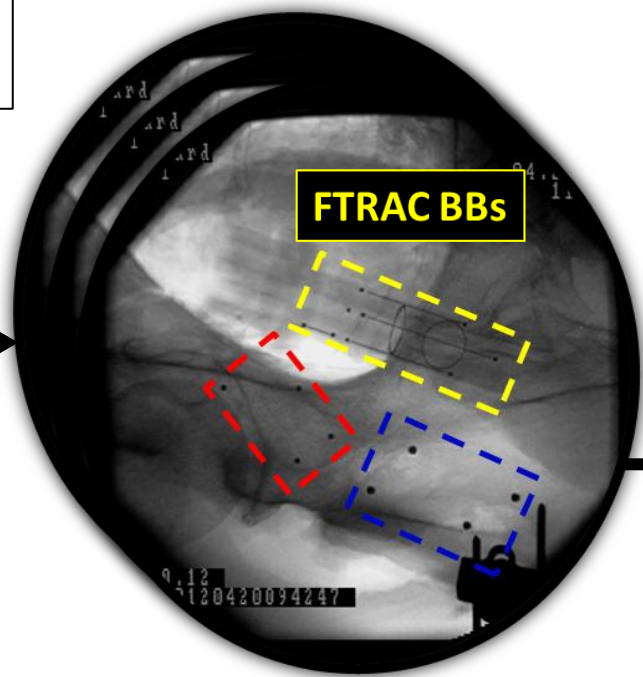


Image courtesy of Gray's Anatomy.

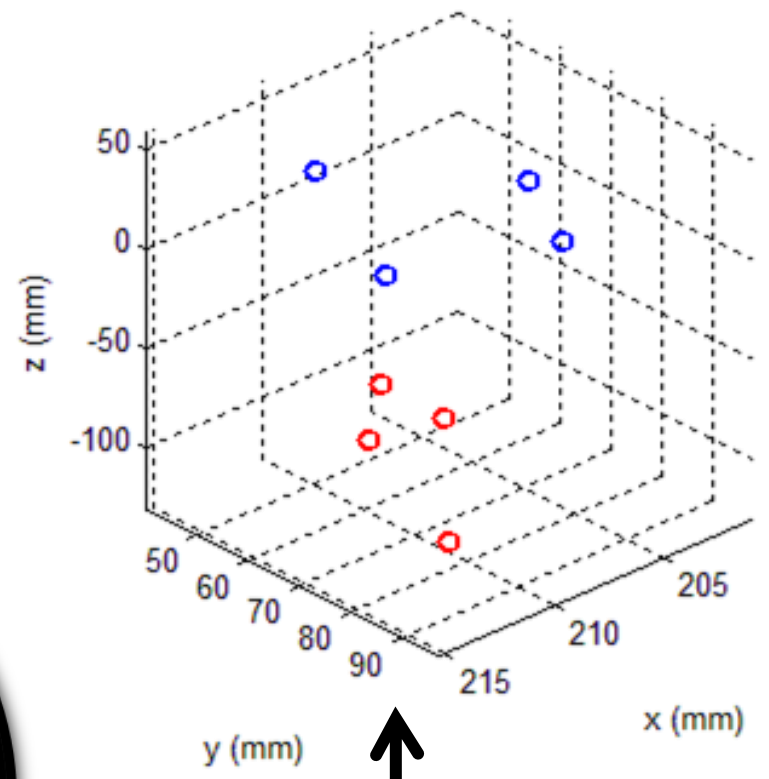




C-arm fluoroscopy  
at several angles.



3-D BB Locations w.r.t. FTRAC



Pose estimation  
and backprojection  
of segmented BBs.

