



Home > Research > Browse Publications

HipNav: Pre-operative Planning and Intra-operative Navigational Guidance for Acetabular Implant Placement in Total Hip Replacement Surgery

Anthony M. Di Gioia, David Simon, Branislav Jaramaz, Mike Blackwell, Fredrick M. Morgan, Robert V. O'Toole, Bruce Colgan, and Eric Kischell

Computer Assisted Orthopaedic Surgery Symposium, November, 1995.

Download

- Adobe portable document format ([pdf](#)) (256KB)

Copyright notice: This material is presented to ensure timely dissemination of scholarly and technical work. Copyright and all rights therein are retained by authors or by other copyright holders. All persons copying this information are expected to adhere to the terms and constraints invoked by each author's copyright. These works may not be reposted without the explicit permission of the copyright holder.

Abstract

The Hip Navigation or HipNav system allows a surgeon to determine optimal, patient-specific acetabular implant placement, and accurately achieve the desired acetabular implant placement during surgery. Hip-Nav includes three components: a pre-operative planner, a range of motion simulator, and an intra-operative tracking and guidance system. The goals of the current HipNav system are to: 1) reduce dislocations following total hip replacement due to acetabular malposition; 2) determine and potentially increase the "safe" range of motion; 3) reduce wear debris resulting from impingement of the implant's femoral neck with the acetabular rim; and 4) track in real time the position of the pelvis and acetabulum during surgery. This information will help the surgeon achieve more reliable and accurate positioning of the acetabular cup and take into account specific anatomy for individual patients. The HipNav system provides for a new class of research tools that can be used intra-operatively to permit surgeons to re-examine commonly held assumptions concerning bone and implant motion, range of motion testing, and the "optimal" alignment of acetabular cups.

Notes

- **Associated Center(s) / Consortia:** [Medical Robotics Technology Center](#)
- **Associated Lab(s) / Group(s):** [Medical Robotics and Computer Assisted Surgery](#)
- **Associated Project(s):** [Hip Navigation System](#)

Text Reference

Anthony M. Di Gioia, David Simon, Branislav Jaramaz, Mike Blackwell, Fredrick M. Morgan, Robert V. O'Toole, Bruce Colgan, and Eric Kischell, "HipNav: Pre-operative Planning and Intra-operative Navigational Guidance for Acetabular Implant Placement in Total Hip Replacement Surgery," Computer Assisted Orthopaedic Surgery Symposium, November, 1995.

BibTeX Reference

```
@inproceedings{Di_Gioia_1995_1773,  
  author = "Anthony M. Di Gioia and David Simon and Branislav Jaramaz and Mike Blackwell and Fredrick M. Morgan and Robert V. O'Toole and Bruce Colgan and Eric Kischell",  
  title = "HipNav: Pre-operative Planning and Intra-operative Navigational Guidance for Acetabular Implant Placement in Total Hip Replacement Surgery",  
  booktitle = "Computer Assisted Orthopaedic Surgery Symposium",  
  month = "November",  
  year = "1995",  
}
```