Navigation vs PSI vs Robotics: which way is it going?

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Optimal restoration of mechanical axis
: One of the key factors for a successful TKA

<Navigation or Robot assisted TKA>

Advantages of Navigation
• Restore neutral mechanical alinment
• Better functional outcomes
• No need to use intramedullary jigs
• : Decreased blood loss
• : Reduced risk of thromboembolism

Disadvantages of Navigation
• Longer Operation Time
  : Computer processing, pin & tracker placement, registration
• Cost
  : Startup costs, training, software, maintenance and upgrade
• Error in navigation system - several factors
  : The abilities of the computer and tracking system to place trackers
  : Dirty reflectors or camera -> Malfunction
  : Cement thickness
Advantages of ROBODOC

- Accurate Preoperative Planning
- Optimal Implant Size and Position Selection by Virtual Surgery
- Highly Precise Intra-operative cutting
- Easier soft tissue balancing
- Excellent Postoperative alignment
- Possible better clinical results in longer term

Disadvantages of ROBODOC

- Longer Operation Time
  : Planning, Registration, Milling
- Heat generated during milling
- Difficult to modify the surgical plan intraoperatively
- Learning curve
- Expensive cost & Quite large size

Patient Specific Instrument>

Computer & Custom designed instrument
Instrument is designed for patient's own knee anatomy
Back in its natural pre-disease alignment

Advantages of PSI

- Surgeon gets a precise preoperative surgical plan
  : Intra-operative accuracy

- Operating room requires fewer instruments
  : Saving in sterilization and storage
  : Simple surgery
  : Low hospital cost
- Decreased surgical time
  : Less set-up, fewer surgical steps, no IM violation

**Disadvantages of PSI**

- Higher cost
  : CT/MRI scans & guide manufacturing
- Delayed surgical date
- Not suitable for all case
- Hazard of radiation
- Learning curve ??