Evaluation of Less-Invasive Hip Implants

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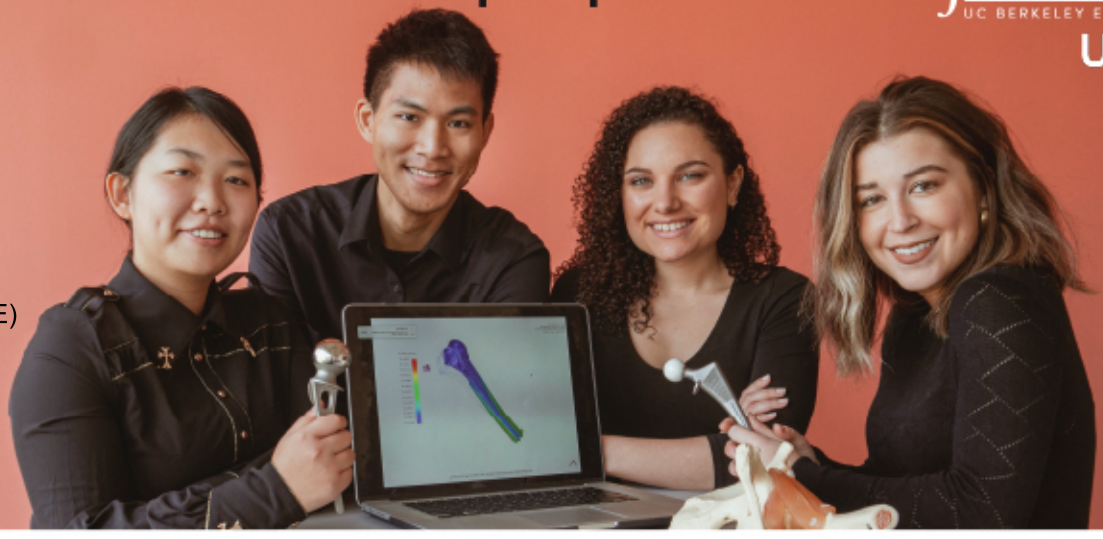

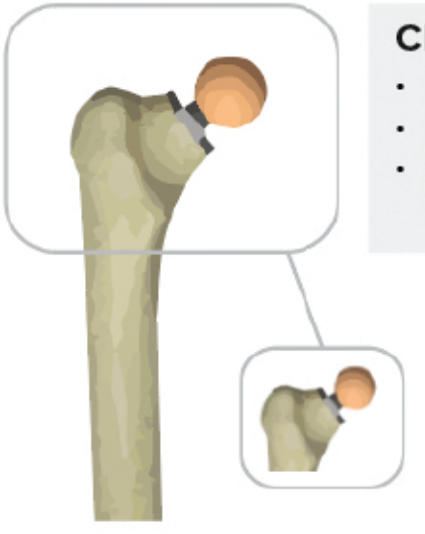

Clinical Unmet Need

- 370,000 total hip replacements performed each year in the United States
- Successful implants last 15-20 years, then are replaced in a revision surgery
- 70,000 revision surgeries are done each year in the US, but have a much lower success rate due to bone loss when removing the original implant

Significance of Less-Invasive Implants

- Approximately 7x smaller than current market implants
- Less bone removed for original surgery
- More bone left for revision surgeries, improving their success rate
- Size reduction may decrease stress shielding, the loss of bone density due to decreased loads on the bone

FEA to Evaluate Design Efficacy

- Implant designs must be tested to verify they can withstand physiological loads
- 3D modeling of forces applied to femoral head during three common high load activities; walking, jogging, sit to stand
- Finite element analysis tests stress distribution in implant and surrounding bone to determine any material failure or stress shielding
- Implants with acceptable stress distributions can proceed to the next stage of development; production and cadaver testing