Biomechanical Properties of Volar Hybrid and Locked Plate Fixation in Distal Radius Fractures

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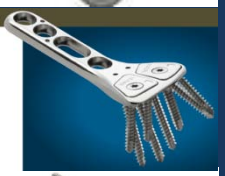
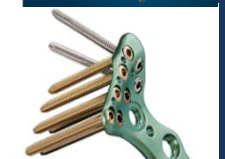
Disclosure

All Materials Provided by:
Medartis (Basel, Switzerland)

Distal Radius Volar Locking Plates





- Diverse Designs
- Superior Stiffness
- Improved Fixation in Comminuted & Osteoporotic Bone
- Can be used with both Locking & Non-locking Screws

Hybrid Construct

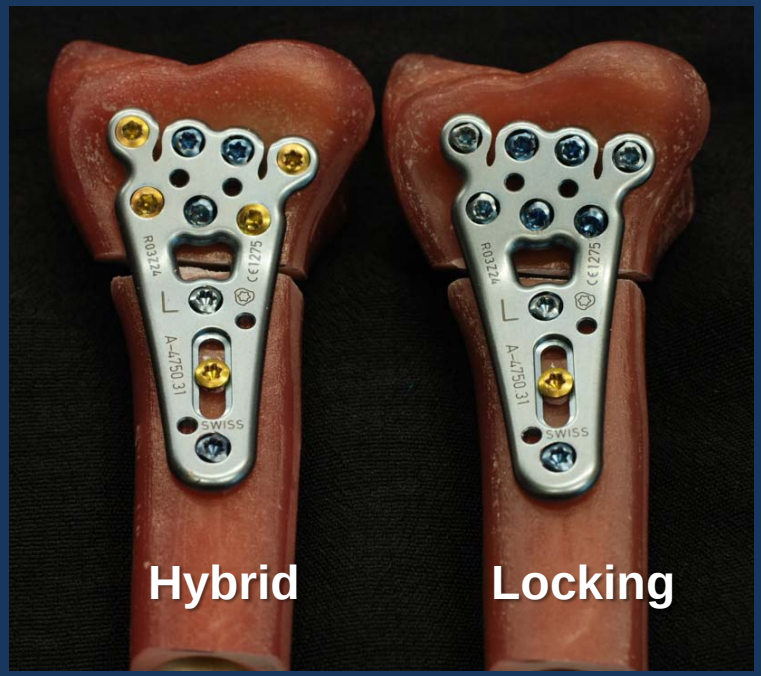
- Non-locking screws
  - Stability from friction by plate-bone compression

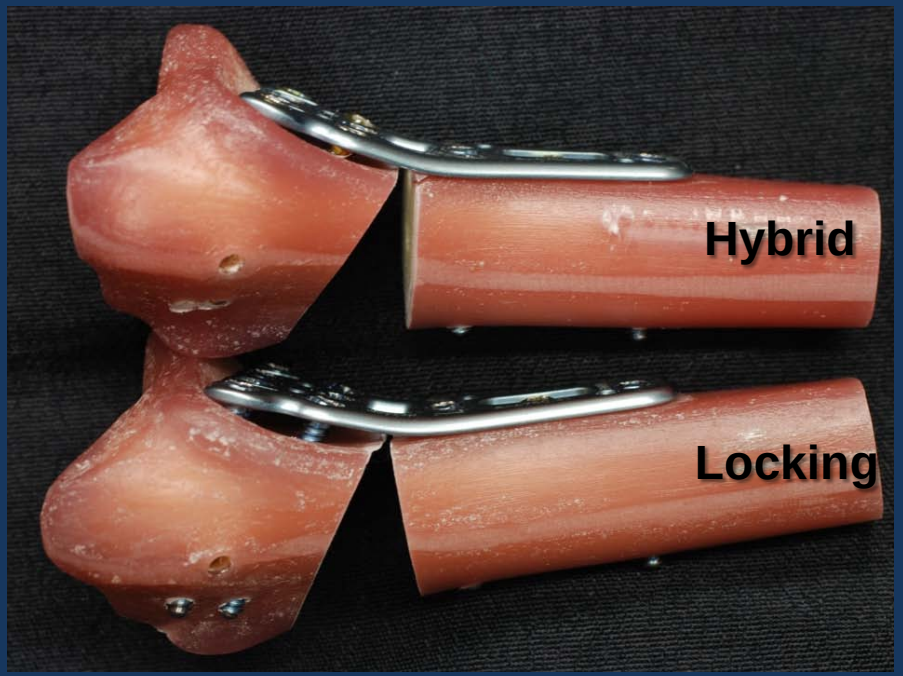
- Locking screws
  - Fixed angle device using the screw-plate interface

Question

Is a hybrid plate construct stronger than a standard all-locking plate construct in the treatment of distal radius fractures?

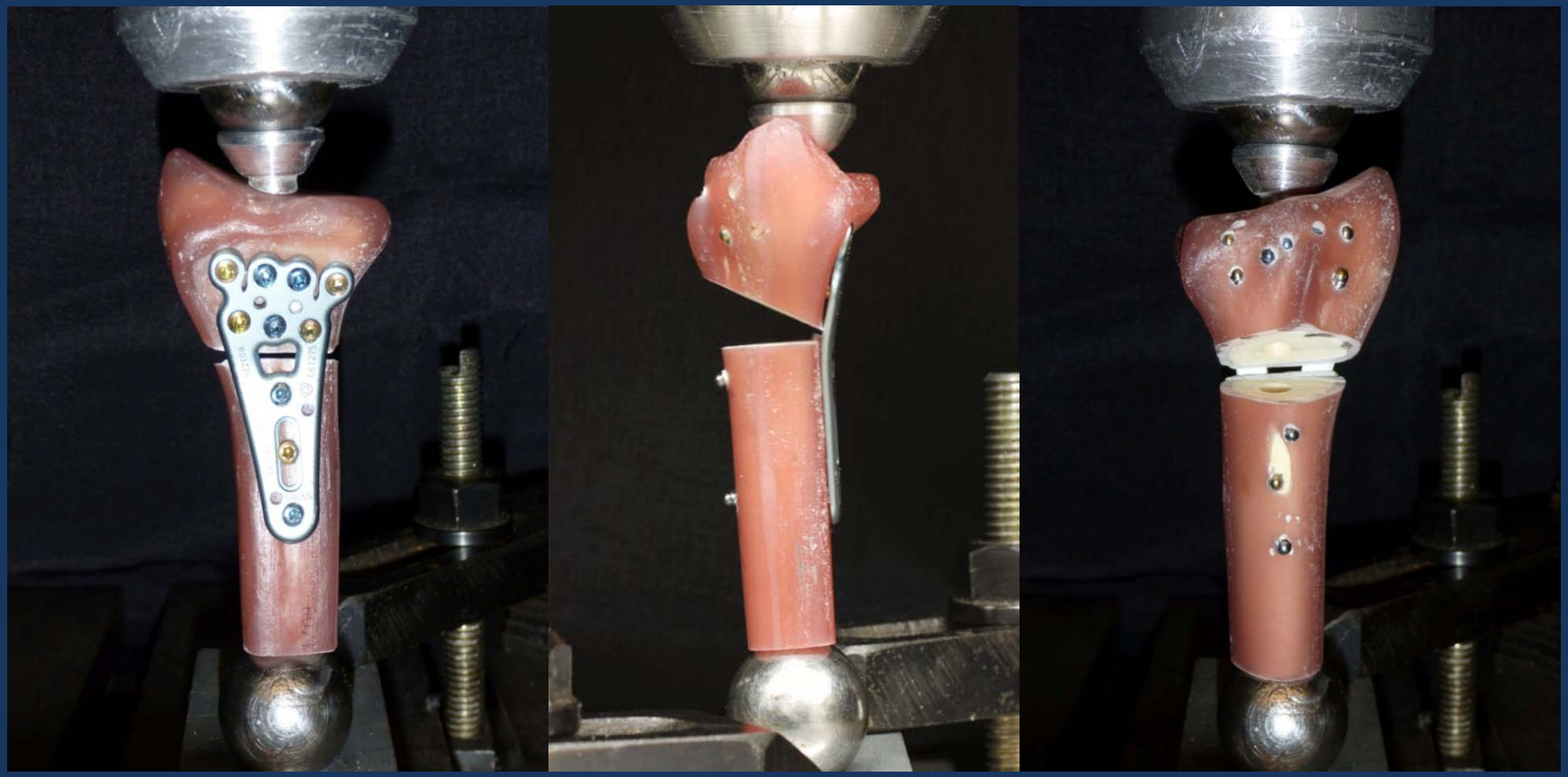
Materials & Methods





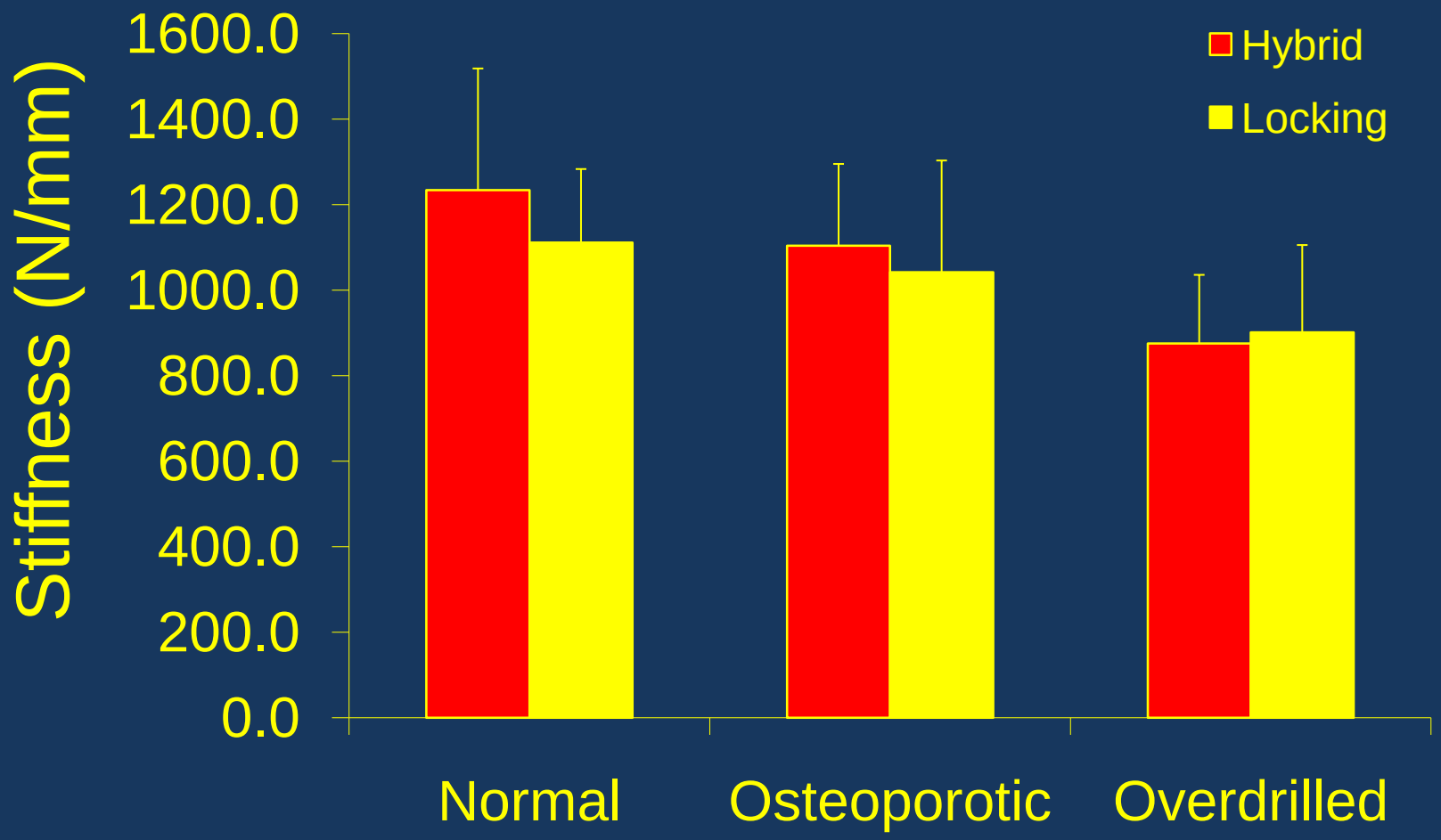
- 3 Groups: Normal, Osteoporotic, Overdrilled
- Each Group Drilled and Plated with All-Locking (n=14) or Hybrid (n=14)
- 10 mm Dorsal Opening Wedge Centered 20 mm Proximal to Lunate Fossa

Materials & Methods

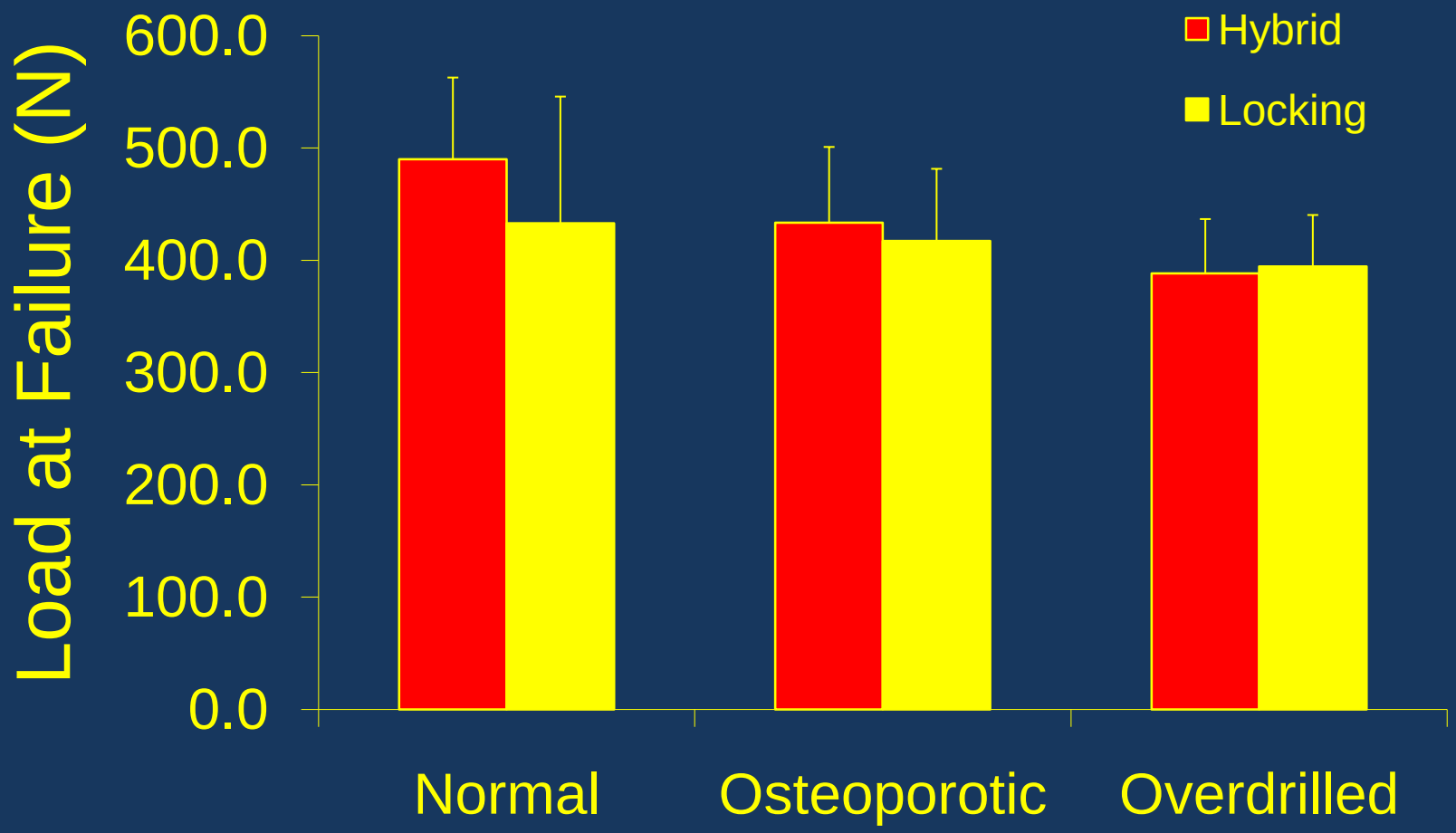


- Mounted into Instron, 6˚ of freedom
- 10 N preload
- 3 cycles from 20 N to 100N at 1 N/s
- Failure at 1 mm/min

Locking and Hybrid Distal Radius Constructs Have a Similar Stiffness



Locking and Hybrid Distal Radius Constructs Have a Similar Load at Failure



Conclusions

Good fixation of extra-articular distal radius fractures does NOT require all-locking screw fixation

Conclusions

Hybrid constructs provide similar stiffness and stability compared to all-locked constructs in the three different bone models tested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