

Fractured

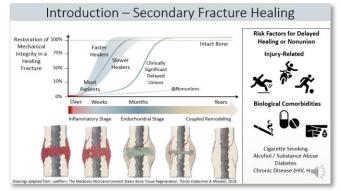
Boundary

## Clinical Application of Virtual Mechanical Testing Measures Slow Fracture Healing in Patients with Comorbidities

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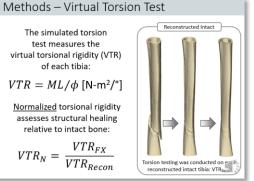
The simulated torsion

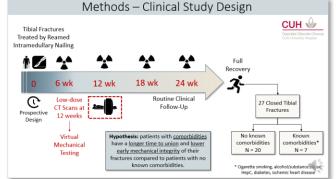
test measures the

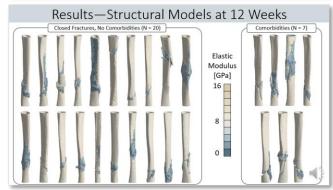
of each tibia:

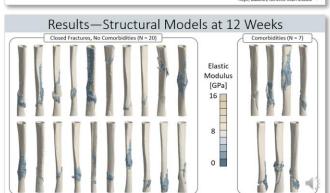
relative to intact bone:

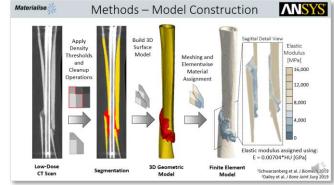
 $VTR_{FX}$ 



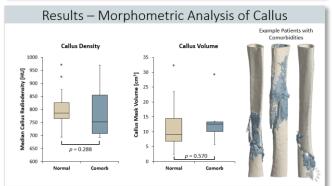




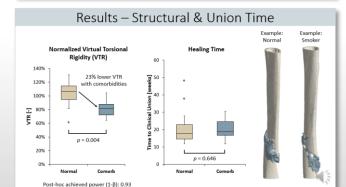








More Info



## **Discussion & Conclusions**

- Virtual mechanical testing detected poor structural bone healing (23% lower VTR compared to normal) in patients with comorbidities with a large effect size even at small N.
- Previous clinical studies have required very large sample sizes (100s or 1000s of patients) to show significant contributions of risk factors to nonunion or delayed healing.
- As an assessment tool, virtual mechanical testing may enable clinical study design with much lower sample size requirements to study the effects of interventions and risk factors.



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For additional information on the methods for virtual mechanical testing as an assessment of fracture healing, refer to:



Schwarzenberg P. et al., "Virtual structural analysis of tibial fracture healing from low-dose clinical CT scans," J Biomech, 83

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Conflict of Interest Statement:

All co-authors' disclosures are

listed on the ORS website.

