

Strong Resorbable Glue for Canine Tarsal Arthrodesis

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INTRODUCTION

- Joint injuries may progress to joint degeneration with chronic pain and immobility
- Fusion of the joint (Arthrodesis) is a common surgery, performed to restore function and reduce pain in intractable joint injuries
- Arthrodesis has a high incidence of complications (5% – 80%)
- A resorbable glue¹ may improve fixation strength, reduce complication rates
- The glue used in this study resorbs into new bone, with high bond strength

METHODS

- Disarticulation of canine calcaneo-quartal joint
- Inject 0.4cc of glue (70% Ca-Silicate + 30% amino acid). Test at 24h (shear), at 1 mm min⁻¹
- 3 biomechanical cadaver models with either: no (1), little (2), or most (3) soft tissues preserved



CONCLUSIONS

- ✓ Glue strengthens arthrodesis (10⁴ kg cm⁻²)
- ✓ Developed new cadaver model(s)
- ✓ Glue is safe in animals¹
- ✓ Bonds strongly to subchondral bone

RESULTS

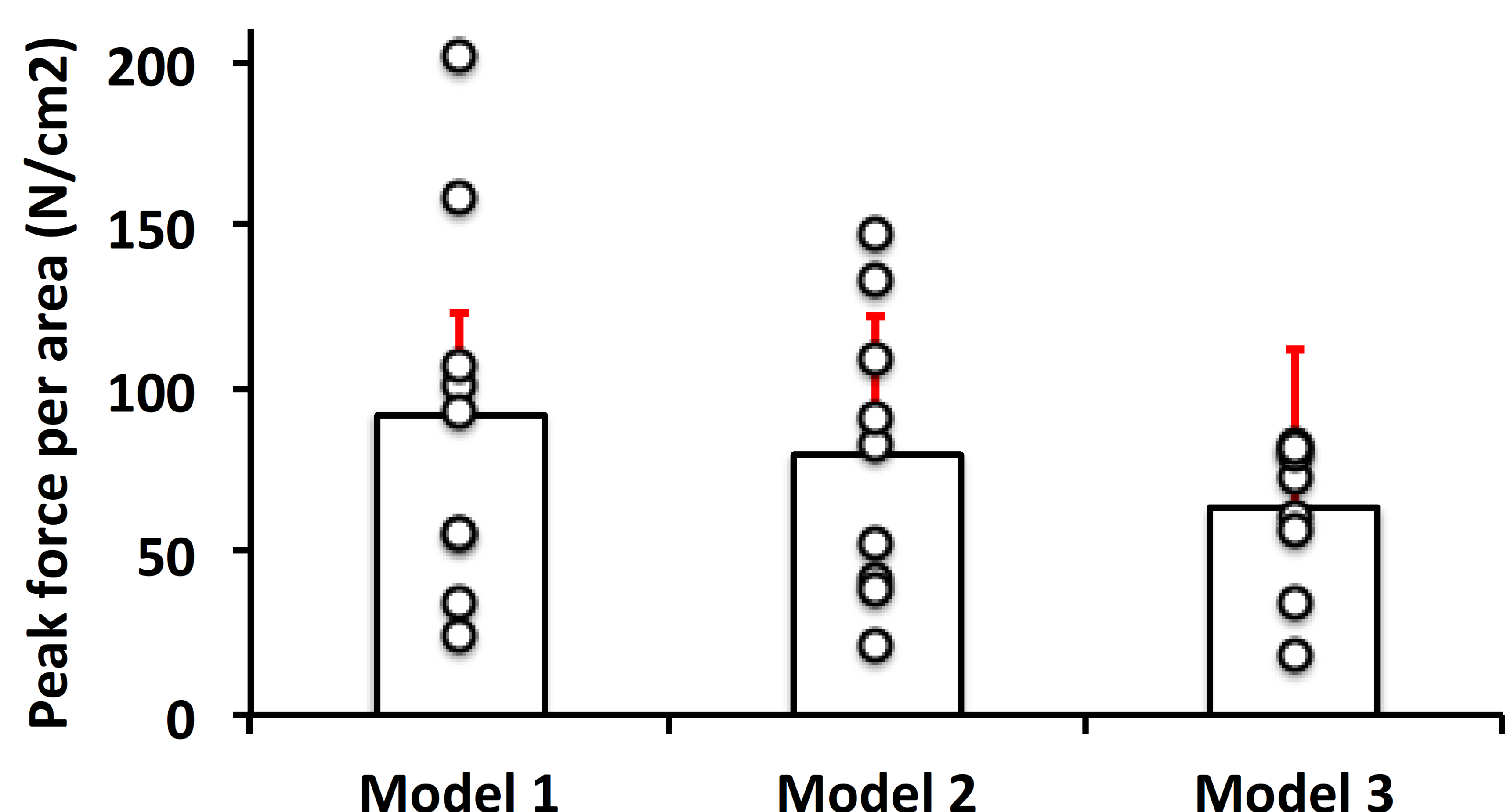


Figure 1. Average glue strength, at the calcaneo-quartal joint, in cadaver canine joints, after 24 hours. Shear force applied to calcaneus (Model 1) or IV bone (Models 2, 3).

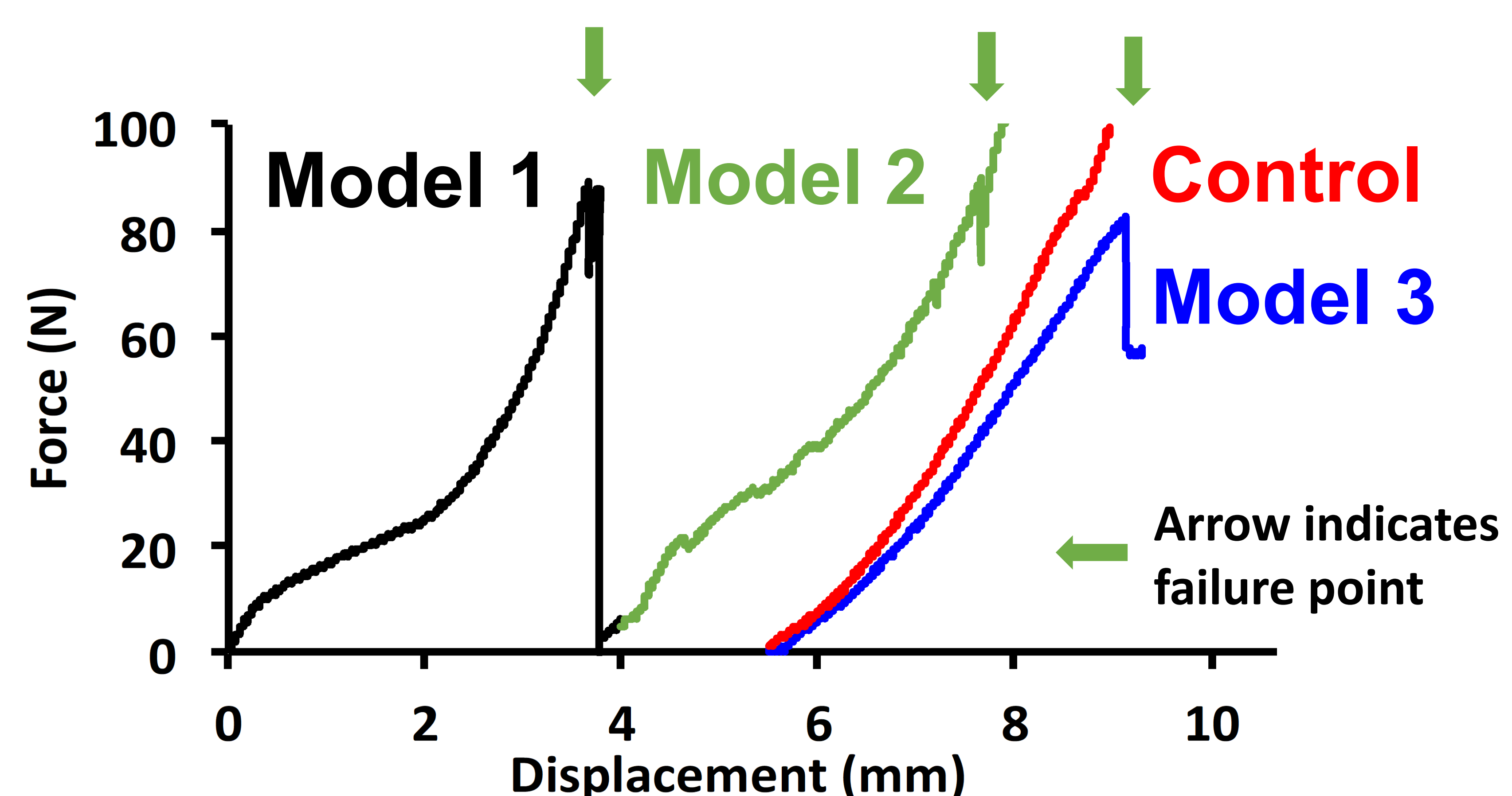


Figure 2. Force-displacement curves showing both the strength, and failure behavior, of glue and bone

Reference

1. Gluing Living Bone Using a Biomimetic Bioadhesive: From Initial Cut to Final Healing. Front. Bioeng. Biotechnol. 2021; 9 (728042).

