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# STRONG BONE-METAL BONDING BY A RESORBABLE GLUE

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## INTRODUCTION

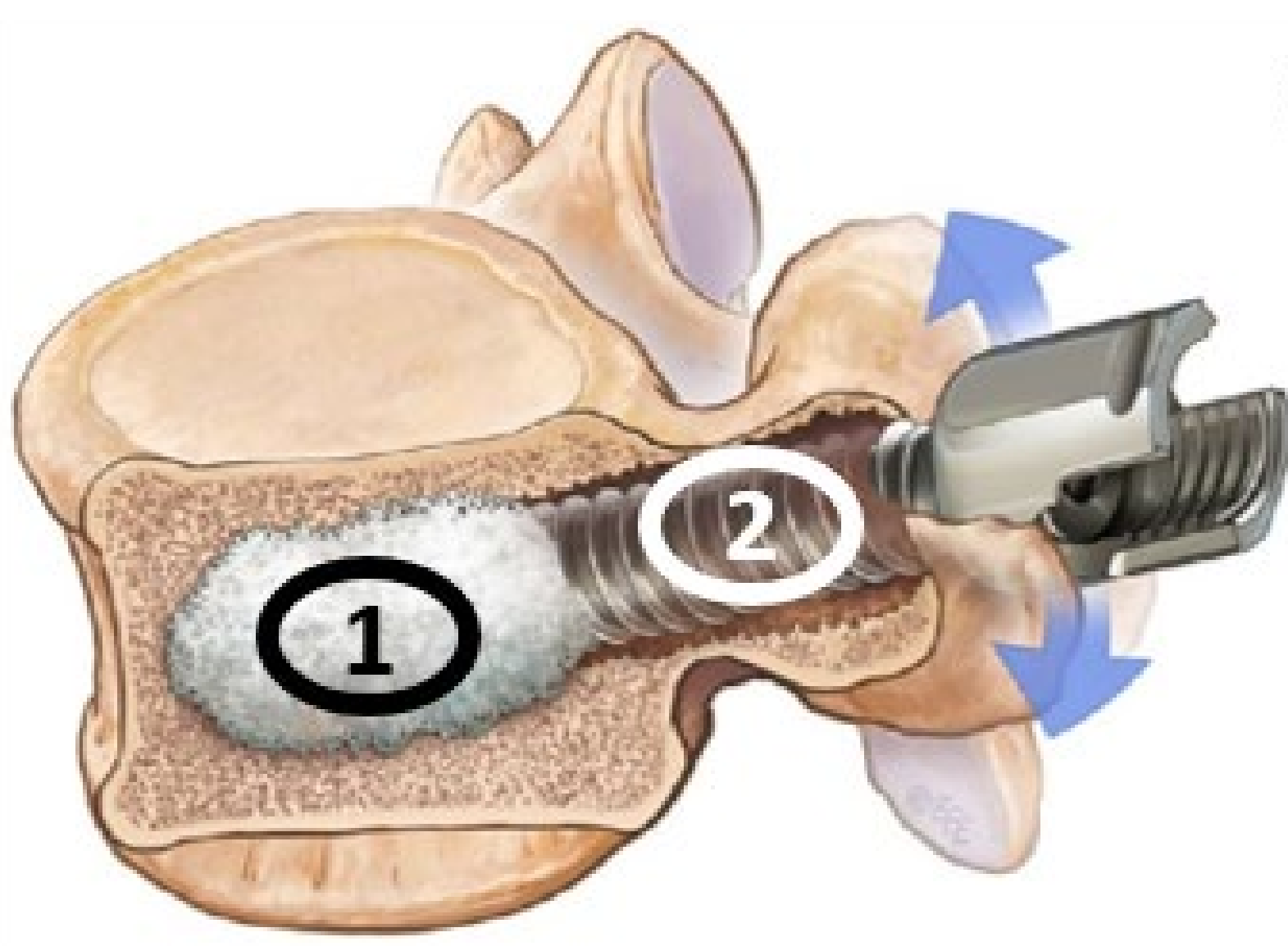
Metal hardware and screws are used to stabilize injured spinal vertebra. When patients have poor bone quality, or excessive loading, the screws can migrate or pull-out.

Polymethyl methacrylate (PMMA) is routinely used to augment screws, creating stronger holding force and resistance to pull-out.



This study evaluated whether a resorbable bioadhesive could produce similar immediate fixation strength in pig.

## MATERIALS



- ① 1mL volume
- ② 1.5 cm depth
- ③ Groups:

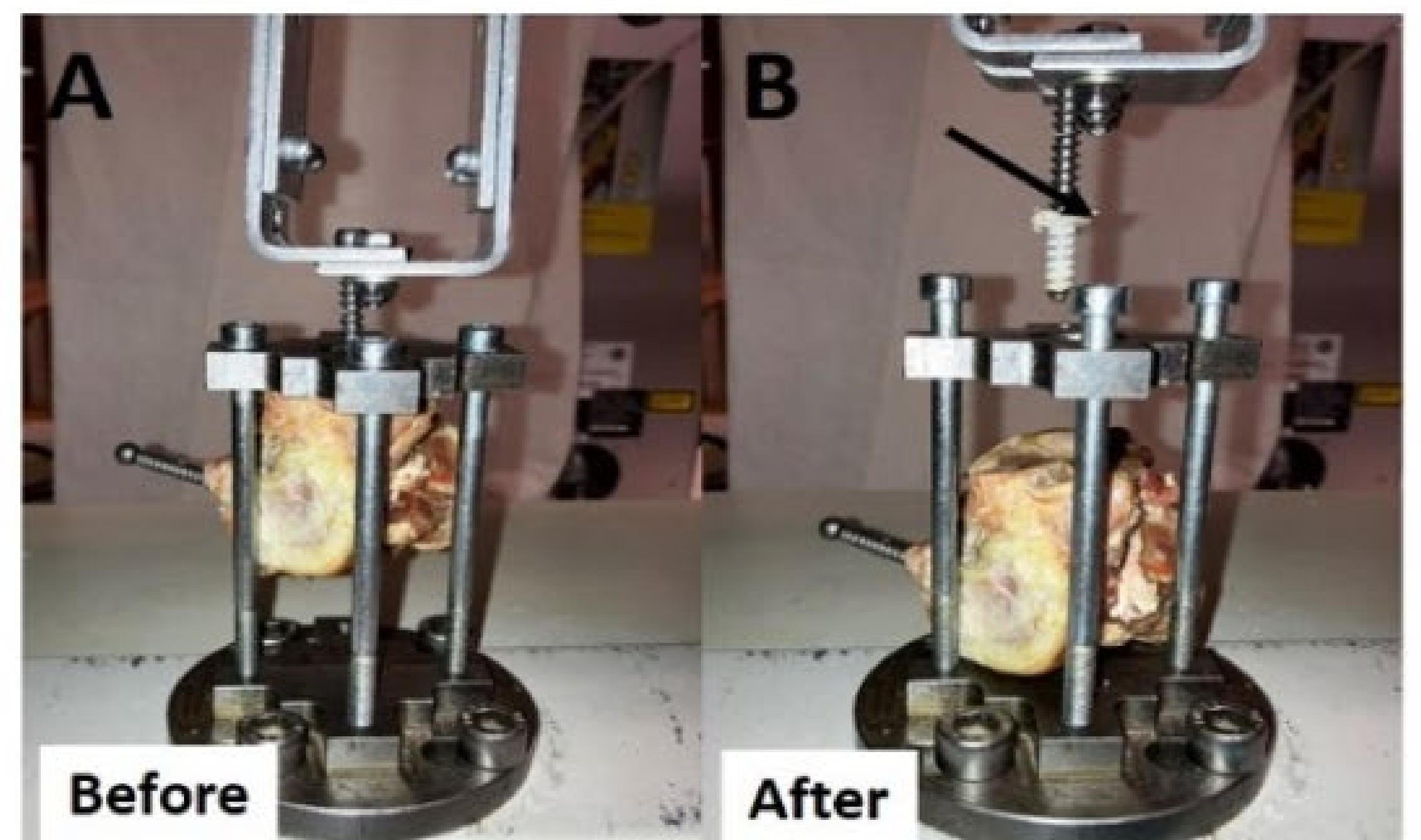
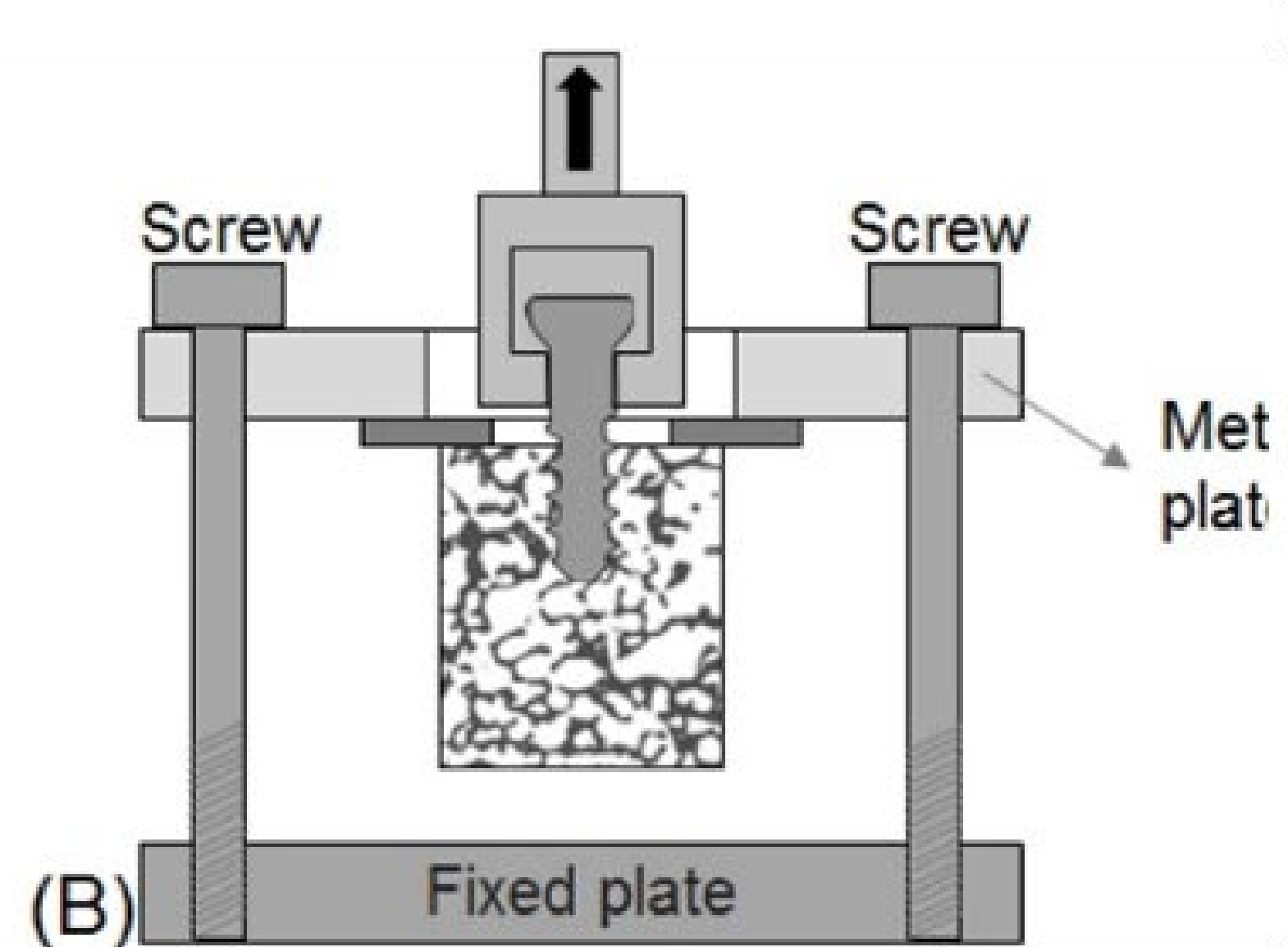
**CONTROL**

**OsStic:**

- 73.5% Tricalcium phosphate
- 25% Phososerine
- 1.5% Calcium silicate



## TESTING



- ① Cure for 1h or 3h at 21C
- ② Tensile test at 1 mm min<sup>-1</sup> (Shimadzu AGS-X, 5kN load cell)
- ③ Record failure as peak pull-out force
- ④ Revision model: Re-fill immediately, cure, re-test

## RESULTS

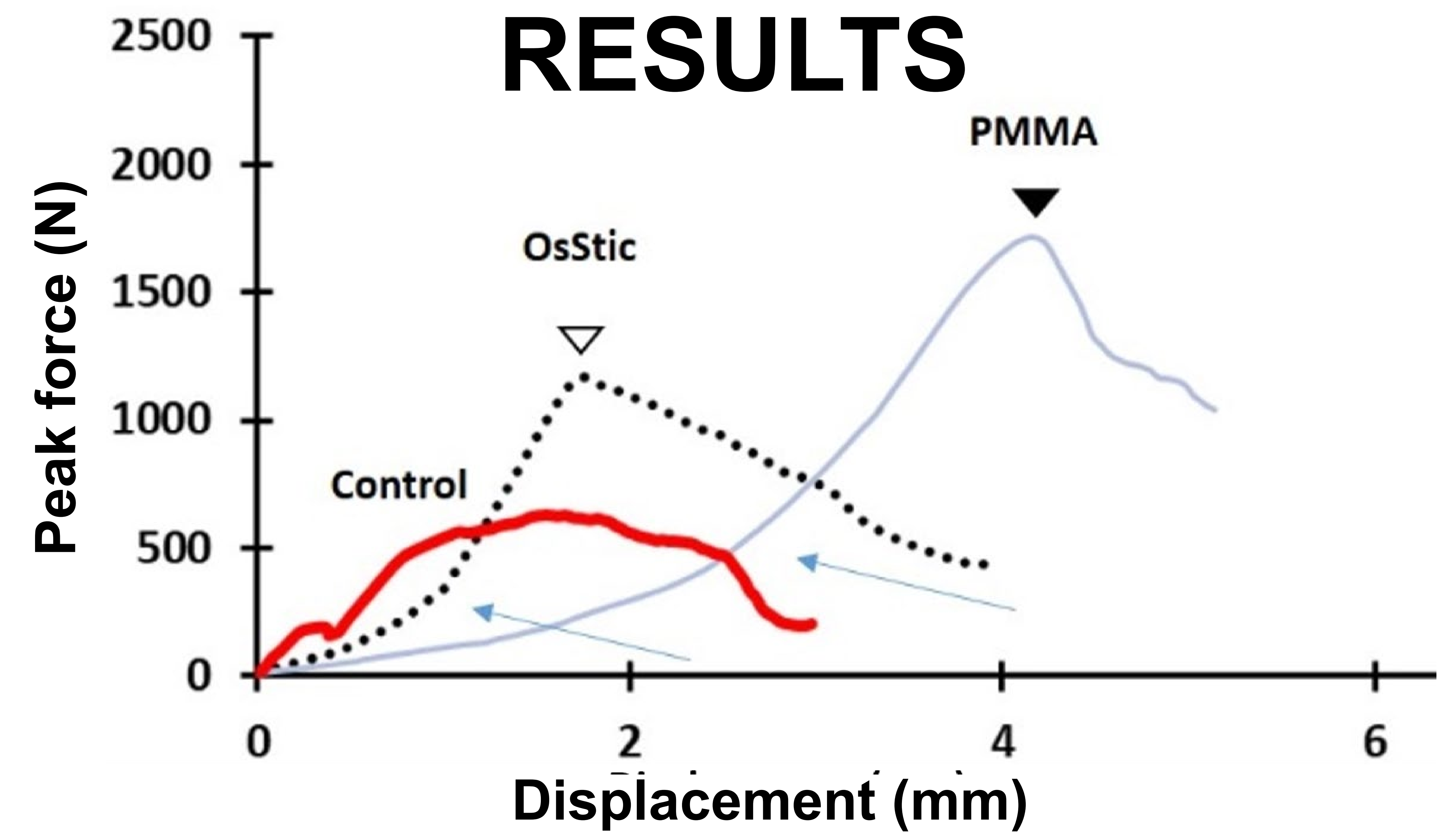


Figure 1. Representative stress-strain curves.

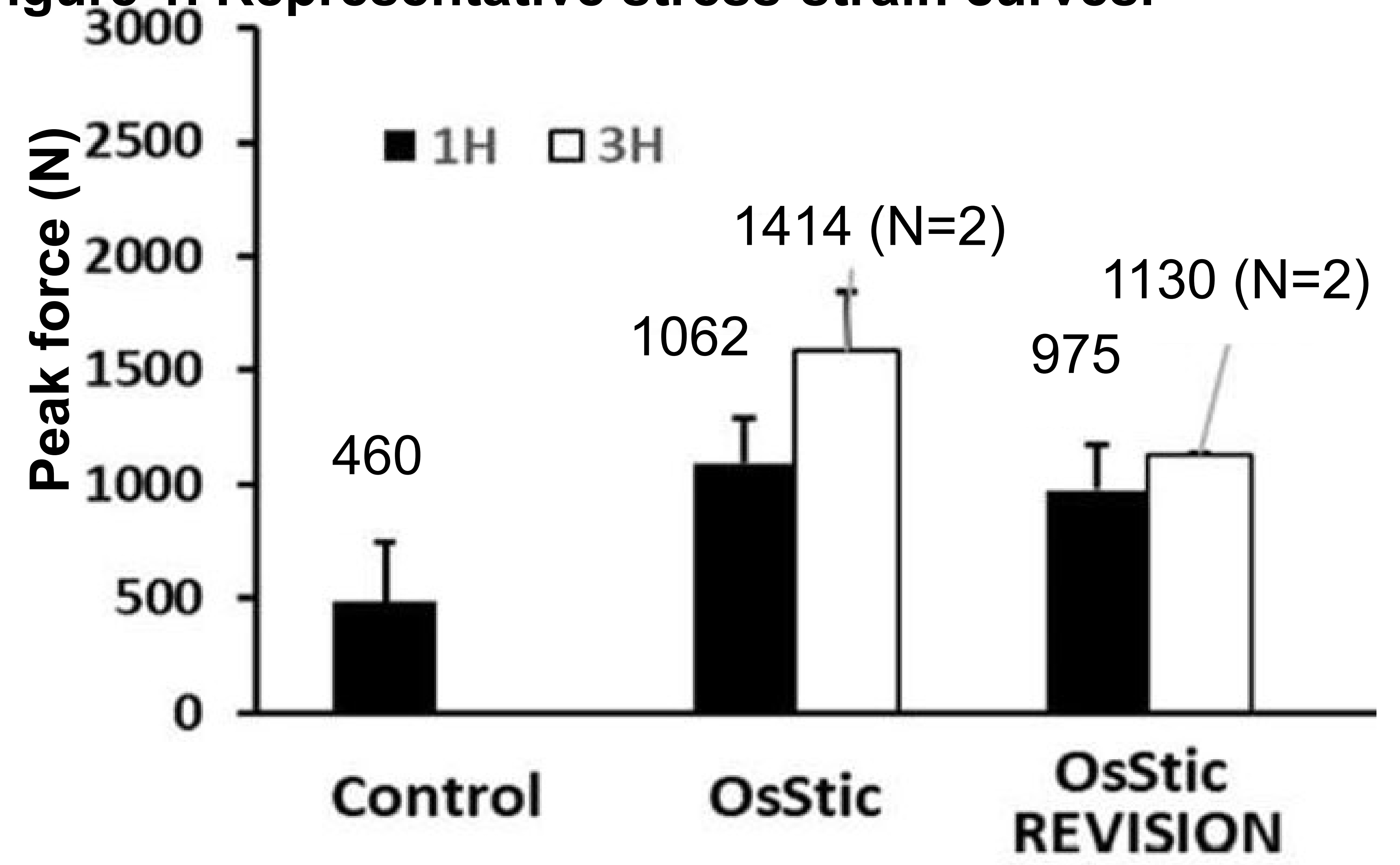


Figure 2. Peak pull-out force (average per group).

## Conclusions

- ✓ OsStic augments screws
- ✓ OsStic is easily revised
- ✓ Increases pull-out, up to 120-240%

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