

Clinical Monograph

EFR™ Bone Screws

(Enhanced Fatigue Resistance)

Comparison of Biomechanical Strength



Background:

The proprietary Arthrosurface Ø4.0mm titanium alloy (Ti-6Al-4V) EFR™ (Enhanced Fatigue Resistance) Screw is a partially threaded cortical bone screw with a combination of surface finishes along its length. This combination of surface finishes provides a significant improvement in the fatigue resistance of the screw as compared to a traditional cortical bone screw.

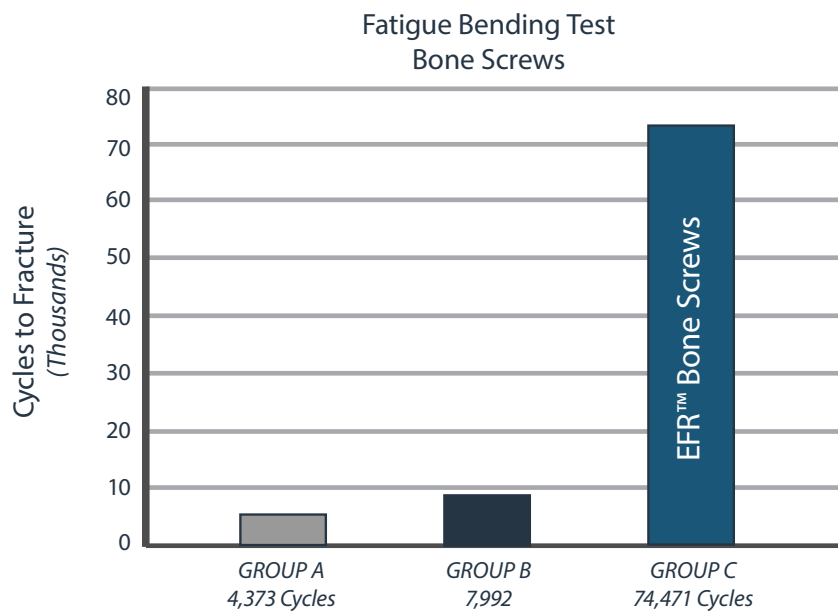
Fatigue Test:

This test was performed to simulate the repetitive loads that the bone screws might experience in an anterior glenoid bone block fixation.

- **Group A:** Ø3.5mm Fully Threaded; 316L SS
- **Group B:** Ø4.0mm Partially Threaded; Ti-6Al-4V
- **Group C: Arthrosurface EFR™ Bone Screws,** Ø4.0mm Partially Threaded; Ti-6Al-4V

All tests conducted at an applied load of 2000N until runout or device failure.

The data chart below shows the average number of cycles prior to bone screw fracture for all three groups tested.



Arthrosurface EFR™ Bone Screws improve fatigue resistance by 1600% when compared to 3.5mm stainless steel screws (Group A) and by 830% when compared to 4.0mm titanium screws (Group B).

