

EVIDENCE MATTERS

RESEARCH BULLETIN

Stryker® Biosteon® Interference Screws Exhibit Lower Insertion Torque (ease of insertion) and Higher Fixation Strength

TOP-LEVEL SUMMARY

Biosteon interference screws were compared to Milagro, BioComposite, and Biosure HA screws in insertion torque and fixation strength. Similar mechanical properties were observed for all the composite screws; however, only Biosteon demonstrated the ideal combination of low insertion torque and high fixation strength.¹

METHODS

Whipstitched double-stranded grafts were prepared using #2 high strength suture and bovine flexor digitorum profundus tendons. Tibial tunnels (9mm) were formed in porcine tibiae and the tendon graft was fixed inside the tunnel with one 10 x 35mm interference screw. Four types of interference screws were tested: Biosteon (Stryker), Milagro (DePuy Mitek), BioComposite (Arthrex) and Biosure HA (S&N). Peak insertion torque was measured as the screws were inserted with each manufacturer's driver. The tibia-tendon constructs were cyclically loaded for 500 cycles and then loaded in tension until failure, indicated by a sudden decrease in load during mechanical testing. Load and displacement were measured continuously.

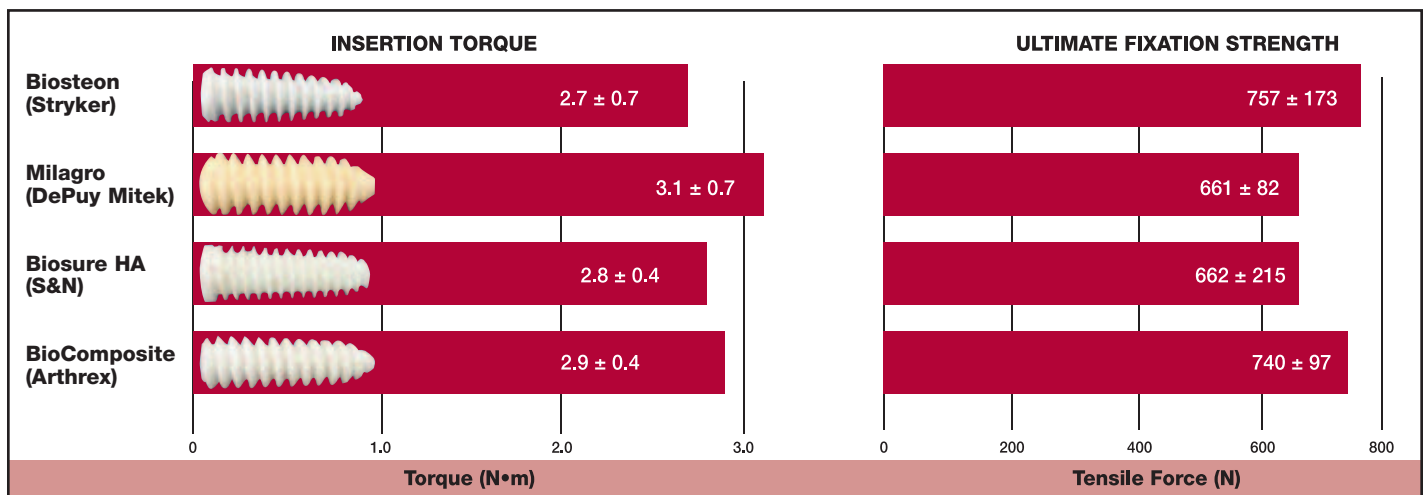
RESULTS

There were no significant differences in insertion torque or fixation strength among the screws tested. The Biosteon screws demonstrated the lowest average insertion torque and the highest ultimate tensile load.

CLINICAL RELEVANCE

Biosteon screws demonstrated that higher insertion torque is not necessary to achieve higher fixation strength. The advantage to having a lower insertion torque is that it is easier to insert the screw with less chance of breakage. Combined with Biosteon's success in over 6 years of clinical use as well as its unique blend of HA and PLLA, the Biosteon screw is a clinically proven choice for ACL reconstruction.

Mechanical properties for the interference screws tested shown as Ave $\pm$ SD with N=5.



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Reference:

1. Tech Report #RD-10-015

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