

Triathlon Tritanium Cone Augments

Stability of Novel Porous Metal Metaphyseal Tibial Cones Designed for Surgical Efficiency is Comparable to Traditional Cones

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Goal of study:

To compare the initial mechanical stability of novel porous tibial cones designed to optimize surgical efficiency to traditional porous metal cones

Materials and methods:

- Mechanical testing of a novel porous metal tibial cone system (new cone) (Triathlon Revision Knee, Stryker) and traditional porous tantalum cones (gold standard) (Trabecular Metal Revision Knee system, Zimmer) was performed
- Micromotion of the baseplate/cone construct with respect to the tibia was measured in 10 test models during a stair descent loading profile of 10,000 cycles
- This number of cycles represents 6-8 weeks of stair descent activity¹, which is the approximate length of time for initiation of bone ingrowth to occur (according to published literature)²

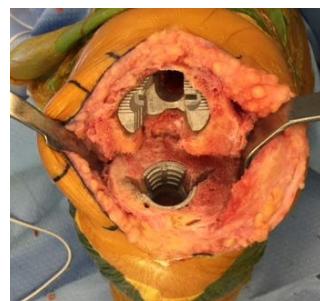
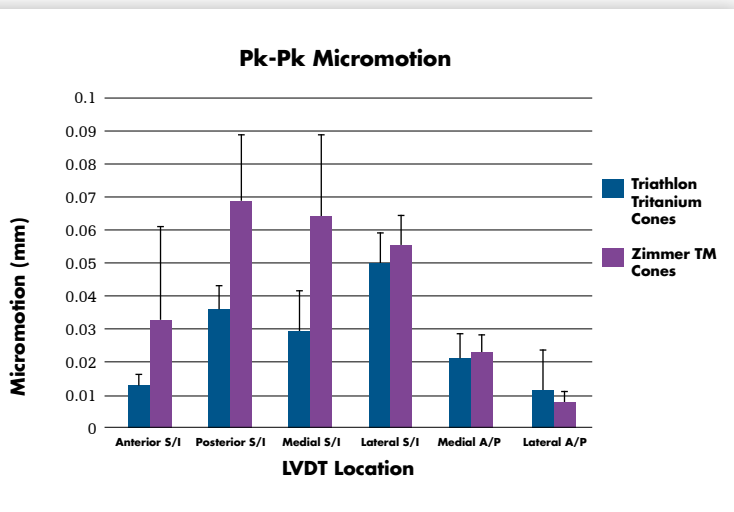
- Six linear variable displacement transducers were placed on anterior, posterior, medial and lateral aspects of the construct to measure varus/ valgus displacement, internal/ external rotation, compression and lift off
- Unpaired t-tests and one sided t-tests were used to evaluate statistical comparison of peak (pk-pk) to peak (pk-pk) micromotion, compression and lift off

Results:

- The new cone system (Triathlon) demonstrated similar micromotion values under loading compared to gold standard cone system (Zimmer)
- Less micromotion was observed in the new cones system in medial varus/ valgus (p=0.004) and posterior compressive micromotion (p=0.002) compared to gold standard cone system

Conclusion:

- The novel porous metal tibial cone system designed for surgical efficiency demonstrated optimized or non-inferior stability and minimized micromotion compared to a gold standard porous tantalum metaphyseal cone.



References

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2. Jasty M, Bragdon C, Burke D, et al, In vivo skeletal responses to porous-surfaced implants subjected to small induced motions, *J. Bone Joint Surg. Am.* 79:707-714, 1997.

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