



Design Considerations and Results for a Modular Neck in Cemented THA

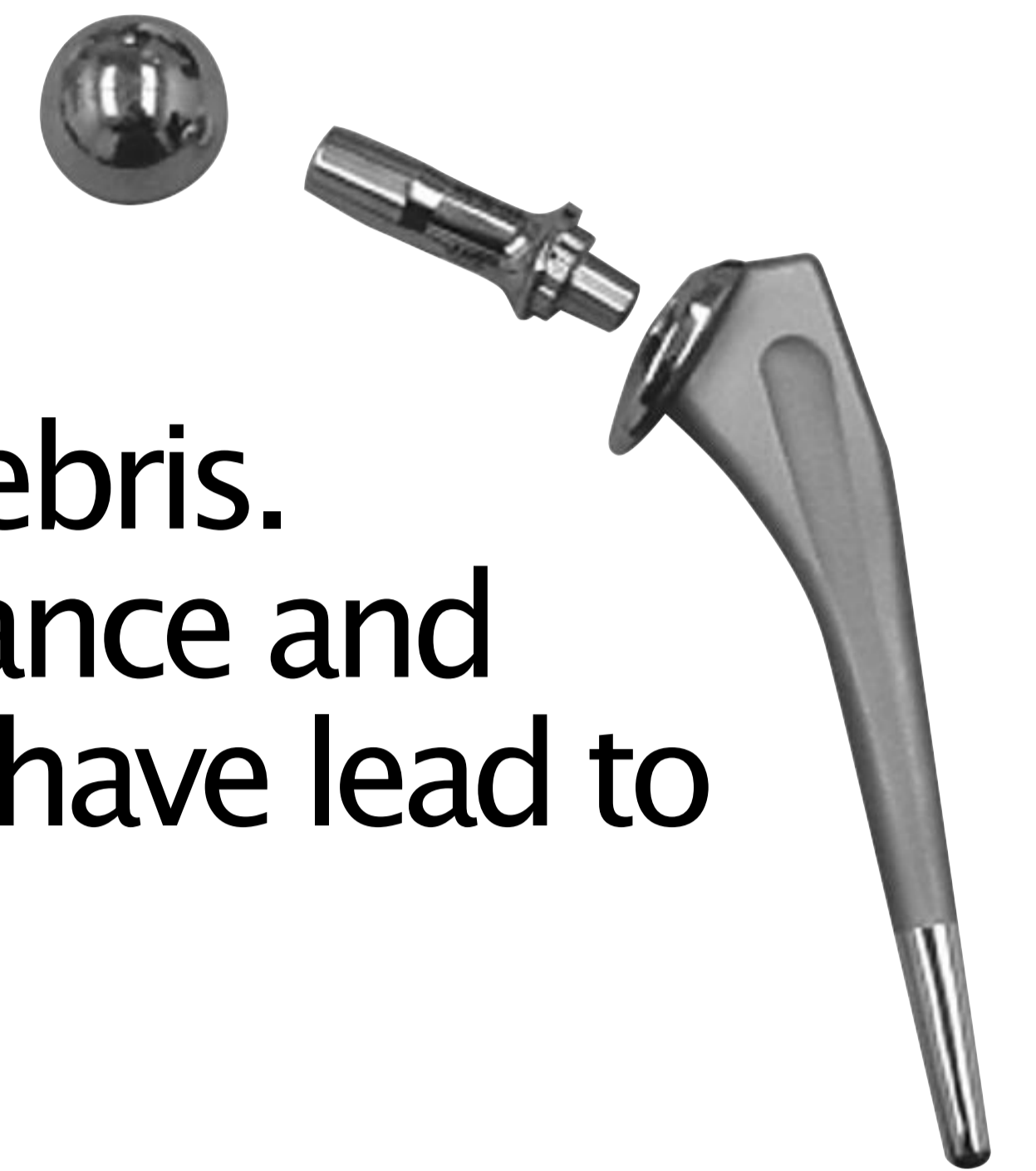


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Objectives:



Cemented stems are still widely used in THA, however, there remains concerns with hip dislocation and wear debris. Restoring joint mechanics is essential for soft tissue balance and reduction of mechanical impingement. These concerns have lead to the development of a modular neck for cemented THA.



Materials and Methods:

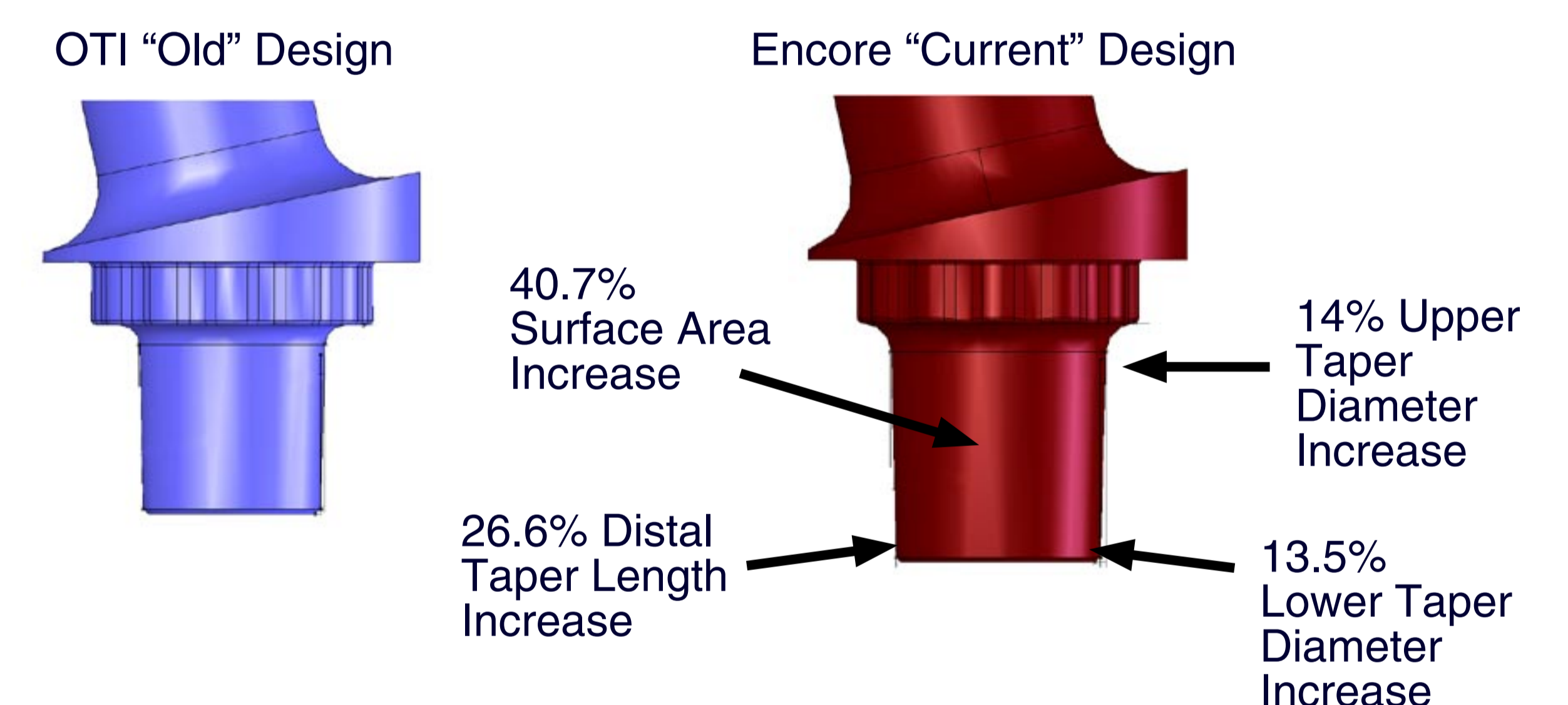
200 R-120™ cemented stems were implanted in 190 patients since 2001. The shape of the stem is trapezoidal with a large collar that provides for impaction and compression of the cement. The stem collar is made with a cavity where a self-locking taper and a positive indexing mechanism provide 12 different positions to ensure proper restoration of joint mechanics.



One to five years follow up with a mean of 2.8 years. Two-thirds were female and one-third male. Age ranged from 39 to 87 with a mean of 73. Majority were treated for OA. A c.c. 28 mm or 32 mm head and poly bearing were used for all patients. Selection of neck position was recorded for all patients.

Results:

63% of all head-neck positions were other than neutral. There were 0 dislocations, no significant leg length discrepancies (± 5 mm), and 0 infections. There was one stem removed due to a post-op peri-prosthetic fracture at 3 years that was treated with a long cementless stem. 1 death due to a PE ten days post-op. 1 intra-operative calcar fracture wired and healed uneventfully. 1 intra-op greater trochanter fracture that was treated with screws. 2 neck fractures revised to cementless stems.



Fatigue Testing Results

Fatigue Strength @ 5,000,000 cycles

OTI Design 520-700 lbs.

Encore Medical Design > 1200 lbs.

Conclusions:

Modular neck design aids in fine tuning joint mechanics after stem insertion, and allows for ease and access in case of revisions. This modular neck design has eliminated (to date) hip dislocations and we remain optimistic about its long-term potential to improve clinical outcomes. Fatigue properties have been significantly improved and no additional neck fractures have occurred.

