

“Neck Sparing Stem Design Early Experience”

by

***Prof. Ian Woodgate, MD.,**

Allen Turnbull, MD^a., John Harrison, MD^a., Peter Hanaford, MD., Steve Banks[~], **Timothy McTighe, Dr. H.S. (hc)

[~]St. Vincent's Hospital, Sydney, Au

^a Orthopaedic Surgeons, NSW, AU

[~]Global Orthopaedic Technology, NSW, AU

** Joint Implant Surgery & Research Foundation, Chagrin Falls, Ohio



Introduction:

Neck sparing stems have been around since 1948 with the Thompson stem. However it was Freeman in the 60's and 70's that began to popularize this concept for routine use. Following in his footsteps was Whiteside who developed both modular and monoblock neck sparing stems built off the Freeman design. Townley followed with a straight stem with a broad flat collar but Pipino has advocated the design concept of tissue-sparing. There is significant mechanical advantage in retaining the femoral neck, which results in a reduction of torsional forces placed on the implant-bone interface the challenge comes in loading and maintaining the neck.

Methods:

Review of previous published work was evaluated along with surgical approaches in creating a new neck-sparing stem for primary THA. A new stem design along with a new surgical approach that would be simple, reproducible and provide for fine-tuning joint mechanics without disruption of implant-bone-interface was utilized. Five patients were selected for use of a custom neck sparing stem to prove the viability of this concept. Patients were three females and two males. Ages were youngest 22 - 55. All patients' lead active lives both professionally and privately. The senior surgeon using a small conventional posterior approach performed all cases.

Results:

Operative time was reduced in every case from 115 minutes to 105 minutes. No blood transfusions were needed, no infections, DVT or dislocations. One case of over correction of leg length was encountered. Case number one was lengthened 5 mm (not clinically significant) the other four cases were all corrected to pre-operative measurement. HHS scores improved for all patients.

Discussion and Conclusion:

These early cases clearly demonstrated that neck sparing THA provides for bone and tissue conservation, restores joint mechanics, minimal bone loss, and simple reproducible surgical technique. Provides for modular options for bearing surface and selection of head diameter. Standard surgical approaches to the hip can be used without compromising exposure. We are encouraged and believe there are significant advantages in this concept of neck sparing stems. Clinical / surgical evaluations are now underway and will be reported on in the future.