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Summary
A prospective cohort study was performed including 155 patients undergoing minimally invasive THA surgery. The three cohorts were freehand cup placement using a mechanical guide, initial navigation series and secondary navigation series. Measured were the anteversion and abduction angles related to Lewinnek’s safe zone. The hypothesis was that navigation will improve the reliability and accuracy of component positioning.

Conclusion
Beside an apparent learning curve navigation provides reproducible acetabular alignment.
“Navigation provided controlled, reproducible acetabular alignment; but a learning curve existed in terms of accuracy, estimated blood loss, and operating room time.”

Manual cup placement results in up to twice as much outlier as navigational cup placement.
“In terms of the general accuracy […], manual methods had a total of 11 (20.8%) outliers in anteversion and 7 (13.2%) in abduction. Navigation methods results are as follows: in group 1, a total of 7 (14.3%) outliers in anteversion and 2 (4.1%) in abduction; in group 2, a total of 4 (8.5%) outliers in anteversion and 2 (4.3%) outliers in abduction.”

“These [results] represented a decrease in the number of outliers when moving from manual to navigation methods. Within navigation methods, results improved as experience in the system evolved.”