



Blood loss following total knee replacement in the morbidly obese: Effects of computer navigation.

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ABSTRACT

Computer navigated total knee arthroplasty (TKA) has several proposed benefits including reduced post operative blood loss. We compared the total blood volume loss in a cohort of morbidly obese (BMIN40) patients undergoing computer navigated (n=30) or standard intramedullary techniques (n=30) with a cohort of matched patients with a BMI<30 also undergoing navigated (n=31) or standard TKA (n=31). Total body blood loss was calculated from body weight, height and haemotocrit change, using a model which accurately assesses true blood loss as was maximum allowable blood loss which represents the volume of blood that can be lost until a transfusion trigger is required. The groups were matched for age, gender, diagnosis and operative technique.

The mean true blood volume loss across all BMI's was significantly (pb0.001) less in the computer assisted group (1014±312 ml) compared to the conventional group (1287±330 ml). Patients with a BMIN40 and a computer navigated procedure (1105±321 ml) had a significantly lower (pb0.001) blood volume loss compared to those who underwent a conventional TKA (1399±330 ml).

There was no significant difference in the transfusion rate or those reaching the maximum allowable blood loss between groups. This study confirms a significant reduction in total body blood loss between computer assisted and conventional TKA in morbidly obese patients.

However computer navigation did not affect the transfusion rate or those reaching the transfusion trigger in the morbidly obese group. Therefore computer navigation may reduce blood loss in the morbidly obese patient but this may not be clinically relevant to transfusion requirements as previously suggested.

SUMMARY

Prospective matched cohort study including 122 patients comparing standard and navigated TKA in patients with BMI>40 and BMI<30. The primary research question was to determine how surgical technique affected the total blood loss in the morbidly obese patient and whether this was clinically relevant.

CONCLUSION

Blood loss reduction of 21% across all BMI's

“[...] mean true blood volume loss across all BMI's was significantly less in the computer assisted group (1014+/-312ml) compared to the conventional group (1287+/-330ml)”

(continued...)

Morbidly obese patients benefit of navigation

“Our results show that computer navigation results in a significantly reduced total blood volume loss and haemoglobin loss compared to non-navigated total knee arthroplasty in the morbidly obese patients.”

“[...] computer navigation caused no increased incidence of post-operative superficial infection in the morbidly obese and actually reduced the rate in the non-obese patient [...]”