



The Effect of Computer Navigation on Blood Loss and Transfusion Rate in TKA

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ABSTRACT

The blood loss that accompanies total knee arthroplasty (TKA) can be substantial. Many patients need perioperative blood transfusions. To avoid anemia and transfusion-related complications, the amount of blood loss and need for blood transfusions must be reduced. If standard jig instruments are used, an opening of the femoral medullary canal is required. This operative step has been recognized as a reason for elevated blood loss; it is not required if computer navigation is used. Hence, the purpose of this study was to investigate the effect of computer navigation on blood loss and transfusion rate in TKA.

The data of 500 consecutive patients undergoing TKA were analyzed, and patient- and operation-related data and blood loss and transfusion rates were recorded. The total blood loss was calculated by use of the Orthopedic Surgery Transfusion Hemoglobin European Overview (OSTHEO) formula.

The average blood loss in the drainages (standard procedures, 880 mL; navigated procedures, 761 mL; $P=.001$) and the calculated total blood loss (standard procedures, 1375 mL; navigated procedures, 1242 mL; $P=.036$) were significantly reduced in the navigation group.

The transfusion rate of navigated procedures was almost halved (standard procedures, 0.23 transfusions/patient; navigated procedures, 0.12 transfusions/patient; $P=.035$).

Our study demonstrated a reduced blood loss if TKAs were implanted by use of computer navigation. The diminished blood loss resulted in a 50% reduction of allogenic blood transfusions. Hence, computer navigation may be attractive for patients with a high risk of transfusions or uncommon blood groups.

Prospective studies are required to verify this potential benefit of computer navigation.

SUMMARY

Retrospective analysis of a cohort of 500 patients who underwent either standard TKA or navigated (Brainlab system used) TKA. Using standard jig instruments, an opening of the femoral medullary canal is required. This operative step is not required if navigation is used. The purpose of this study was to investigate the effect of navigation on blood loss and transfusion rate in TKA.

CONCLUSION

With CAS there is no need for opening of the femoral medullary canal. This leads to 14% decreased average blood loss.

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(continued...)

Fewer amounts of blood transfusions required.

“The diminished blood loss resulted in a 50% reduction of allogenic blood transfusions. Hence, computer navigation may be attractive for patients with a high risk of transfusions or uncommon blood groups.