

Platelet gel and fibrin sealant reduce allogeneic blood transfusions in total knee arthroplasty

P. A. M. EVERTS¹, R. J. J. DEVILEE², C. BROWN MAHONEY³, M. EEFINCK-SCHATTENKERK², H. A. M. BOX¹, J. T. A. KNAPE⁴ and A. VAN ZUNDERT⁵

Departments of ¹Extra Corporeal Blood Management and ²Orthopaedic Surgery-Traumatology, Catharina Hospital Eindhoven, Eindhoven, the Netherlands, ³Business School and Statistics, Winona State University, Winona, MN, USA, ⁴Department of Anaesthesiology, University Medical Centre Utrecht, Utrecht, the Netherlands and ⁵Department of Anaesthesiology, Catharina Hospital Eindhoven, Eindhoven, the Netherlands

Background: Total knee arthroplasty (TKA) is often associated with a considerable amount of post-operative blood loss, necessitating the transfusion of allogeneic blood, which can add to the complications. Optimization of strategies to reduce the need for blood transfusion is desired. This study was designed to evaluate the efficacy of autologous platelet gel and fibrin sealant in unilateral TKA.

Methods: Consecutive patients were operated on and assigned to the study and control groups. Study group patients ($n = 85$) were operated on according to our standard TKA protocol, with the application of autologous platelet gel and fibrin sealant on the wound tissues at the end of surgery. Eighty patients were operated on according to the same protocol, but without the use of platelet gel and fibrin sealant, and served as the control group. All blood transfusions, occurrence of wound leakage, wound healing disturbances and incidences of post-operative infections were recorded.

Results: Patients in the treatment group had a significantly higher post-operative haemoglobin level (11.3 vs. 8.9 g/dl, respectively) and a decreased need for allogeneic blood products

(0.17 vs. 0.52 units, respectively) than those in the control group ($P < 0.001$). The incidences of wound leakage and wound healing disturbance were significantly less ($P < 0.001$) in patients managed with platelet gel and fibrin sealant. Four patients in the control group, who received blood products, developed wound infection. The hospital stay was decreased by 1.4 ± 1.5 days for patients in the treatment group ($P < 0.001$).

Conclusion: Peri-operatively applied platelet gel and fibrin sealant may reduce the incidence of allogeneic blood transfusions and complications associated with TKA.

Accepted for publication 12 December 2005

Key words: blood transfusions; fibrin sealant; platelet gel; total knee arthroplasty.