

Efficacy and safety of fibrin glue and tranexamic acid to prevent postoperative blood loss in total knee arthroplasty: a randomized controlled clinical trial.

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Publication Date: 2013

Abstract:

BACKGROUND: Postoperative blood loss in patients after total knee arthroplasty may cause local and systemic complications and influence clinical outcome. The aim of this study was to assess whether fibrin glue or tranexamic acid reduced blood loss compared with routine hemostasis in patients undergoing total knee arthroplasty.

METHODS: A randomized, single-center, parallel, open clinical trial was performed in adult patients undergoing primary total knee arthroplasty. Patients were divided into four groups. Group 1 received fibrin glue manufactured by the Blood and Tissue Bank of Catalonia, Group 2 received Tissucol (fibrinogen and thrombin), Group 3 received intravenous tranexamic acid, and Group 4 (control) had no treatment other than routine hemostasis. The primary outcome was total blood loss collected in drains after surgery. Secondary outcomes were the calculated hidden blood loss, transfusion rate, preoperative and postoperative hemoglobin, number of blood units transfused, adverse events, and mortality.

RESULTS: One hundred and seventy-two patients were included. The mean total blood loss (and standard deviation) collected in drains was 553.9 +/- 321.5 mL for Group 1, 567.8 +/- 299.3 mL for Group 2, 244.1 +/- 223.4 mL for Group 3, and 563.5 +/- 269.7 mL for Group 4. In comparison with

the control group, Group 3 had significantly lower total blood loss ($p < 0.001$), but it was not significantly lower in Groups 1 and 2. The overall rate of patients who had a blood transfusion was 21.1% (thirty-five of 166 patients analyzed per protocol). Two patients required transfusion in Group 3 compared with twelve patients in Group 4 ($p = 0.015$). No significant difference was observed between the two fibrin glue groups and the control group with regard to the need for transfusion. There was no difference between groups with regard to the percentage of adverse events.

CONCLUSIONS: Neither type of fibrin glue was more effective than routine hemostasis in reducing postoperative bleeding and transfusion requirements, and we no longer use them. However, this trial supports findings from previous studies showing that intravenous tranexamic acid can decrease postoperative blood loss.