Blood loss reduction in cementless total hip replacement with fibrin spray or bipolar sealer: a randomised controlled trial on ninety five patients.

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Abstract:

PURPOSE: Several studies have investigated effectiveness of fibrin spray or bipolar sealer to control peri-operative bleeding and reduce the need for blood transfusion, but a direct comparison between the two methods has not been previously performed. We conducted a prospective randomised trial, with standard electrocautery as a control group.

METHODS: In our investigation, 95 patients were randomised to one of three parallel groups receiving (1) 10 mL of topical fibrin spray before closure, (2) haemostasis with radiofrequency energy using a bipolar sealer, and (3) standard electrocautery. All patients and staff apart from the surgeons were blinded until data analysis was complete. Peri-operative blood loss has been calculated using a formula described by Ward and Gross (considering estimated patient blood volume, pre- and post-operative haemoglobin and haematocrit levels), with mention of eventual blood re-infusion or transfusion, at given intervals from surgery (6, 24, 48, 72 hours).

RESULTS: Mean blood loss was lower for both methods investigated, compared to the control group at every time interval considered, although differences were stronger for fibrin spray [Quixil]. Mean blood saving at the given intervals from surgery (6-24-48-72 hours) was respectively 96 ml, 129 ml, 296 ml, and 121 ml for bipolar sealer [Aquamantys] and 235 ml, 368 ml, 642 ml, and 490 ml for fibrin spray. These results are statistically significant (p=0.05) for fibrin spray at every interval

compared to control values, while a significance is detectable for bipolar sealer only at 48 hours after surgery.

CONCLUSIONS: The fibrin spray group had the best performance in terms of blood loss, significantly reduced in comparison with the control group and bipolar sealer group. Blood loss reduction for the bipolar sealer was remarkable only at 48 hours, compared with the control group. Blood loss reduction for fibrin spray was significant at every time interval considered. Differences between the two treatments investigated and the control group narrowed slightly at 72 hours, as an expression of spontaneous homeostasis. Notable is the fact that blood volume saved with fibrin spray at 24 and 48 hours is comparable to the volume of at least one blood unit. A cost-effectiveness analysis should be considered in term of expense, biological risks (related to blood transfusion or human-derived products use) and bleeding-related complications.