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<http://dx.doi.org/10.1016/j.jtcvs.2014.07.022>

FIBRINOGEN CONCENTRATE AS FIRST-LINE THERAPY IN CHILDREN UNDERGOING CARDIAC SURGERY: PROMISING PERSPECTIVES **To the Editor:**

Several questions remain unresolved regarding fibrinogen supplementation in bleeding situations, especially in children undergoing cardiac surgery. These questions include the component that should be used for fibrinogen supplementation; the safe and effective fibrinogen level to be targeted; and the test that should be used to guide fibrinogen administration.

In a recent issue of the Journal, Galas and colleagues¹ first compared fibrinogen concentrate with cryoprecipitate as a first-line therapy for postbypass bleeding children. Although their study was not sufficiently powered to detect any significant difference in the incidence of postoperative bleeding and blood product transfusion requirements, relevant information should be highlighted from their study.

First, cryoprecipitate is no longer available in most European countries; thus, fresh frozen plasma (FFP) is still usually used as the first step in the transfusion algorithms. Despite the huge variability reported among cryoprecipitate units (3.0 to 9.0 g/L),² this variability within the infraphysiologic ranges is also observed among FFP bags (0.9 to 3.2 g/L),³ which would explain why ≥ 20 to 30 mL/kg of

FFP should be administered in bleeding patients to significantly increase the fibrinogen levels. The results that would have been obtained in a similar study comparing FFP with fibrinogen concentrate would probably have reported a significant decrease in blood loss and blood transfusion requirements in children treated with fibrinogen concentrate.

Second, about 40% of children included in both groups received additional doses of cryoprecipitate, which could argue that the initial dose of both cryoprecipitate (10 mL/kg) and fibrinogen concentrate (60 mg/kg) was not adequate to significantly increase the fibrinogen concentration

within the first hour after administration. In addition, these results could be explained by the relatively low fibrinogen trigger used by the investigators (<1.0 g/L) and the increased fibrinogen consumption observed in bleeding situations. Although no dose-response relationship has been studied, Rahe-Meyer and colleagues⁴ observed that fibrinogen concentrate, used at a dose of 90 to 100 mg/kg, significantly decreased blood loss and the transfusion requirements in adults undergoing major aortic replacement surgery. In a recent animal trauma model, Martini and colleagues⁵ confirmed that >100 mg/kg fibrinogen concentrate should be used to reach

FIGURE 1. Proposed algorithm for the management of postbypass bleeding in children undergoing cardiac surgery. Blue boxes correspond to propositions that should be confirmed in future studies. *Hct*, Hematocrit; *ACT*, activated clotting time; *MCF*, maximal clot firmness; *FIBTEM*, a ROTEM assay (Tem International); *aPTT*, activated partial thromboplastin time; *CT*, clotting time; *EXTEM*, a ROTEM assay (Tem International); *FFP*, fresh frozen plasma.

the baseline fibrinogen concentration and decrease blood loss.

Finally, the relationship between the plasma fibrinogen concentrations, measured using either the Clauss method or maximal clot firmness measured using FIBTEM (a ROTEM assay; Tem International, Munich, Germany), and early postoperative blood loss was recently studied in the pediatric population.⁶ Plasma fibrinogen concentrations <1.5 g/L and maximal clot firmness on fib-tem <3 mm predicted postoperative blood loss with good sensitivity and specificity. Because the test is available rapidly at the bedside, the maximal clot firmness on fib-tem should be preferred to guide fibrinogen replacement. I would have been interested to read what fibrinogen level measured immediately after bypass predicted for a second administration of cryoprecipitate. Knowing this could have improved the transfusion algorithm in children undergoing cardiac surgery as suggested in Figure 1.

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<http://dx.doi.org/10.1016/j.jtcvs.2014.07.022>

CLOSING THE STABLE DOOR BEFORE THE HORSE LEAVES To the Editor:

In response to the excellent article, "Povidine iodine: The new solution for mesothelioma?" by Valerie W. Rusch,¹ indicating favorable outcomes with addition of hyperthermic povidone iodine to the multimodality approach to malignant pleural mesothelioma, it might also be considered that there are no recorded cases of mesothelioma in the medical literature after earlier pleurodesis by introduction of pleural sclerosants, including povidone iodine, to prevent recurrent pneumothorax in young men.² In view of the very large number of such individuals worldwide who have undergone this procedure during the last 70 years and universal awareness of a potential risk of inducing malignancy, it would seem reasonable to suspect that the changes these sclerosants produce in the parietal pleura may in fact prevent development of mesothelioma. If this is correct, a younger individual with evidence of asbestos-related pleural plaques might choose simple pleurodeses to remove the long-term slight but real threat of development of mesothelioma.

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COMPUTED TOMOGRAPHY OR CHEST RADIOGRAPH SURVEILLANCE FOLLOWING STAGE I NON-SMALL CELL LUNG CANCER RESECTION? To the Editor:

We read with interest the article by Crabtree and colleagues¹ about appropriate radiologic surveillance following lung resection for stage I non-small cell lung cancer (NSCLC). This issue is strictly linked with another topic: lung cancer screening. In fact, postoperative surveillance should focus not only on early detection of lung recurrences but also on new primary lung cancers.

The authors' most significant results are that in the computed tomography (CT) group, time to diagnosis of new malignancy was shorter and that 49% of patients affected by new malignancy were asymptomatic (vs 19% in the chest radiograph group). In fact, early diagnosis and symptoms absence should be correlated with more possibilities of an effective therapeutic strategy. Surprisingly, the authors found that the proportions of patients referred to curative therapy for new malignancy were the same in the 2 groups. Moreover, overall survival in patients developing successive malignancy were not associated with radiologic surveillance. These data could suggest that CT, although associated with some advantages, has the same outcomes as chest radiograph in surveillance of patients submitted to lung resection for stage I NSCLC. Moreover, these results are inconsistent with the National Lung Screening Trial, which showed in a larger population