FIGURE 1. Left heart bypass with roller pump (yellow) to reinfuse cell salvage without washing.

Performing a randomized trial of washing salvaged blood is also unlikely, given the need for rapid reinfusion of shed blood during thoracoabdominal operations. Therefore, the cause of complications observed with increased cell salvage is likely to remain enigmatic. Nonetheless, we commend the investigation of our colleagues into cell salvage, and our inclination

is to agree that excessive cell salvage cannot be salutary. And while advertising is always cheap, we continue to recommend reinfusing whole blood through a system similar to ours and that of our colleagues.

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Commentary: Extensive cell salvage during thoracoabdominal and descending aortic repair: Actual risk factor for postoperative complications or just an associated indicator of difficult surgery?

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CENTRAL MESSAGE

Despite a fine statistical comparative analysis, it seems still difficult to prove whether extensive cell salvage is a cause of complicated outcomes or only an indicator of the difficulty of surgery.

Kiser and colleagues¹ tend to establish a correlation between the rate of postoperative complications and the amount of cell salvage used during 2 important surgical procedures: thoracoabdominal and descending aortic repair.

Through fine statistical analysis of a large cohort of patients operated on during a long period of time (26 years), they come to the conclusion that, despite the use of a sophisticated and well-designed technique and circuit of extensive cell salvage, this technique could appear as a significant risk factor of postoperative complications, including respiratory failure, acute cardiac disorders, spinal cord injury, and re-exploration for bleeding as well as renal failure and increased mortality rate, as demonstrated in the multivariate analysis.

This well organized, clearly written study seems indeed convincing and could induce some perplexity in the surgical community concerning the large use of cell salvage. However, when reading this report carefully, one cannot help thinking that, perhaps, once again statistics and their implied drawn conclusions might be somewhat misleading.

It might be that the most important statement of this article is in the Limitations: “We were unable to establish a clear causal relationship between cell salvage and postoperative outcomes, only an association. Based on the data examined, we were unable to determine whether use of the cell salvage system leads to increased bleeding and, thus, causes adverse outcomes—or if massive cell salvage is secondary to excessive bleeding.”

It is indeed quite interesting to observe that in the group of high cell salvage (High CS) the preoperative condition of the patients was systematically more severe, that the extent of the aortic replacement was more important, and that the number of reimplanted arteries and performed anastomoses was larger, the duration of the cardiopulmonary bypass longer, and the ischemic time of the distal organs (and in particular the kidneys) increased. Cell salvage or not,

common sense and daily practice show that those features are obvious and unquestionable risk factors of intra- or postoperative complications.

And this is illustrated by the fact that, for the whole 26-year experience, the cutting edge between the low and the High CS groups was 40 units of 225 mL blood; that is, about 10 L and that the Low cell salvage group received a mean of 21 units of 225 mL blood (about 4.5 L) but the High CS group, a mean quantity of 60 units (about 13 L), quantities that certainly demonstrate the importance of bleeding and the frequent difficulty of the surgical procedures.

In addition, as acknowledged by the authors, during the past 2 or 3 decades the surgical techniques and the various adjuncts used during those important aortic replacements have significantly evolved and made the procedures much safer and their outcomes much more satisfactory. The authors indicate that, at the same time, parallel to those improvements the importance of the extensive cell salvage has been regularly reduced. Could this be an indication that the cell salvage technique is not a risk factor but just an associated indicator of the severity of the patient’s condition and the difficulty of the technical management of the anatomical lesions and disorders?

Anyway, although we may admit the possible drawbacks of the cell salvage technique, as interestingly and accurately described and discussed in this article, it seems evident that this technique represents enormous progress and advantage in the management of important risky aortic and/or cardiac surgery and, as long as conventional procedures will be performed, it will represent a quite indispensable adjunct with many more advantages than drawbacks.

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