

# Appendix VI

## Use of Intraoperative Cell Salvage in Malignant Disease

“The use of intraoperative cell salvage in patients undergoing surgery for malignant disease in the past, has not been recommended by manufacturers of intraoperative cell salvage devices. This is due to concern about the possibility of malignant cells being reinfused and giving rise to metastases. However, there are now a number of published reports in which the use of intraoperative cell salvage in cancer surgery has not been associated with early metastasis or a difference in biochemical recurrence and some hospitals now use intraoperative cell salvage routinely during surgery for malignant disease.”<sup>1</sup>

“Aspiration of blood from around the tumour site should be avoided to minimise contamination of salvaged blood with malignant cells. The salvaged blood should be reinfused through a leucodepletion filter to minimise the reinfusion of any malignant cells which may have been aspirated into the collection reservoir”.<sup>1</sup>

In contrast, there is evidence that allogeneic transfusion may independently be associated with an increased rate of both postoperative infection and disease recurrence.<sup>2-5</sup>

Intraoperative Cell Salvage in urological malignancies has been approved by NICE and is now used routinely.<sup>6</sup>

### Theoretical context

If there is concern that circulating malignant cells may lead to systemic spread then it is inadvisable to reinfuse any malignant cells. If the cancer cells are present in the final intraoperative cell salvage blood for reinfusion, they must have been contaminating the collected blood prior to processing. These cells can only be present in the blood if:

- The tumour margins had been compromised at the time of resection making the whole operation palliative (as the likelihood of local recurrence would be high).
- The cancer cells were already blood borne at the time of surgery as resection of blood vessels distant from the tumour margins led to spillage of cancer cells directly from the circulating systemic blood.
- Cancer cells had already spread to the lymphatic system.<sup>7</sup>

### Practical Issues

The use of a leucodepletion filter, with a significant reduction (up to 99.99%) in the number of nucleated (including malignant) cells present in the intraoperative cell salvage blood for reinfusion is recommended.<sup>7</sup>

The decision to use intraoperative cell salvage in the presence of malignant disease should be made by the surgeon and anaesthetist, in consultation with the patient whenever possible.

## Safety Evidence

Leucodepletion filters has been shown in small non-randomized clinical studies to be an effective method for removal of malignant cells from intraoperative cell salvage blood.<sup>8</sup>

The likely low risk of metastatic spread from intraoperative cell salvage outweighs the risk of infection and immune suppression and consequent tumour cell survival associated with allogeneic red cell transfusion.<sup>2,3,5,9</sup>

In a retrospective database study by Nieder et. al. on a total of 1038 patients between 1992 and 2003, it was found that the use of intra-operative cell salvage during radical prostatectomy was not associated with a greater biochemical recurrence rate of malignancy.<sup>10</sup>

A retrospective study by Nieder et. al published in Urology in 2007 showed no increased risk of metastatic disease or death for those who receive cell-salvaged blood during radical cystectomy.<sup>11</sup>

When the impact of intraoperative blood salvage on neoplastic recurrence was studied during liver transplant for hepatocellular carcinoma it was shown not to modify the risk of neoplastic recurrence by Muscari et al. who published these findings in the International Transplant Journal in 2005.<sup>4</sup>

The NICE guidelines on this matter currently state: "The Committee noted concern about the theoretical risk of infusing viable cancer cells that might cause metastases. However, there was no evidence in reported series that this occurred, and any such theoretical risk needs to be balanced against the potential risks of allogeneic blood transfusion. The Committee did not consider it likely that further long-term research would identify metastases that might have been caused by re-infused malignant cells."<sup>6</sup>

## References

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