

Contemporary blood salvage devices (e.g. Cell Saver) anticoagulate blood as it is suctioned from the operative field, separate the red blood cells from the rest of the suctioned fluid, other cells, and debris, wash the cells with saline, then return it to the patient in concentrated volumes with a hematocrit between 45% and 65%. It can be used in almost any high blood loss procedure including open heart surgery, liver transplantation, spinal fusions, and arteriovenous malformation resections. Procedures where the fluid obtained might contain malignant cells, urine, bowel contents, or amniotic fluid are contraindications to the use of blood salvage. Additionally, it should be noted that only about 50% of cells are recovered, so allogenic blood may still be necessary if large volumes of blood are lost.

Potential complications of blood salvage are primarily related to the re-infusion of cellular debris, bacteria, fat, and other microaggregates that are removed from the surgical field along with the blood. Contamination with bacteria from the skin is relatively common. Leukocyte filters, however, prevent most bacteria from being infused back to the patient. Dilutional coagulopathy is a potential complication if large volumes of salvaged blood is returned as all platelets and clotting factors are removed during the washing process. These coagulopathies are known as 'salvaged-blood syndrome'. Air embolus is also a potential complication.



The washing process does not adequately separate some substances from the blood. If thrombin, microfibrillar, or cellulose products are used in the surgical field to promote coagulation, the suction of blood into the blood salvage system should be halted until those products are irrigated away.

*Morgan GE, Mikhail MS, Murray MJ. Clinical Anesthesiology. 4th ed. New York, NY: McGraw-Hill; 2006: 703.*

*Lee CY. Manual of Anesthesiology. Singapore: McGraw-Hill; 2006: 698.*

*Barash PG, Cullen BF, Stoelting RK. Clinical Anesthesia. 6th ed. Philadelphia, PA: Lippincott Williams and Wilkins; 2010: 382-383.*