

Respiratory Support

With the advent of long term perfusion stresses on perfusion components can result in technical problems. The pump tube will in future be changed to latex rubber. It is not known whether latex rubber under these conditions will perform better than silicone rubber and the following procedure is to be adopted.

The pump tube will be made three times longer than necessary. The redundant two thirds will be placed on the distal side of the pump that is between the pump and heat exchanger, an area of high pressure. Each 48 hours the pump would be stopped and one third of the tube will be drawn through the pump from the distal to the proximal side.

This should not cause cessation of perfusion for more than 15 seconds and by moving tubing in this direction, if that which has been in the pump is now weakened it will be on the low pressure side. This technique will also prevent the possibility of air embolus which could by tubing replacement with other techniques be a hazard.

As this patient required large transfusion volumes and with the increased accumulated evidence of micro-emboli from whole blood transfusions a filter will be placed in the transfusion line and introduced into the circuit via the venous line prior to oxygenation. It would be appropriate to use a filter that would not remove functional platelets and the filter of choice at the time would be the Barrier 40 filter. The membrane oxygenator used in this case exhibits good filtering properties and therefore by introducing the blood and priming solutions prior to the membranes will make use of this property.

A mechanism of reservoir level sensing with feed back to the pump speed control would be an advantage. It would allow the perfusionist more mobility to perform associated tasks more safely. The mechanism could be sensed either by levels in the reservoir bag or perhaps the weight of the reservoir contents.

The merit of any procedure of this nature is the patient's survival. With the described circuit no major problems were encountered and prolonged support of the patient was achieved without difficulty. Two 3M² membrane oxygenators provided satisfactory oxygen and carbon dioxide levels in the patient with minimal blood trauma. The suggested modifications to the circuit seem to us to warrant further application and study.

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