

# Abstracts

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## Advanced bloodmanagement in cardiac surgery and beyond. opportunities for the clinical perfusionist?



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Strategies to reduce blood loss and transfusions may aim at a reduction of blood loss per se or may include autologous transfusion techniques. The most important and well known autologous techniques are pre-operative autologous donation, hemodilution, autotransfusion and pharmacologic modulation of the hemostatic process.

Alternatively, new developments in the preparation of pre-operative autologous blood component therapy by whole blood platelet rich (PRP) and platelet poor plasma (PPP) sequestration have evolved. The preparation of PRP is a relative simple procedure. Blood collected from a patient is placed into a centrifugation device for whole blood sequestration of concentrated platelets. The highly concentrated platelets in the PRP are mixed with thrombin to form a gelatinous structure termed platelet gel (PG), which either can be used as a stand alone product, or it can be added to (an)organic bone to create a so called bio-active bone graft. Thrombin will activate the platelets and as a result the platelet granules release their growth factors' content.

The application of PG is a technique which has been proven to reduce the number of allogeneic blood transfusions during open-heart surgery and orthopaedic operations. Moreover, platelet gel and fibrin sealant, respectively derived from PRP and PPP mixed with thrombin can be exogenously applied to tissues. Recently, some papers demonstrated the effectivity of platelet gel in promoting wound healing, bone growth and tissue sealing. However, to our disappointment we could not find adequate and numerous well designed scientific studies in which platelet gel has been used during orthopaedic indications. A lot of anecdotic stories exist while questions remain to be answered.

At present we find ourselves in an interesting situation where blood transfusions are safer than ever before, nonetheless, the amount of donors and thus the availability of blood is decreasing and also patients are more and more aware of the risks of transfusion. Therefore, transfusions should be minimized as much as possible and modern blood management incorporates not only red blood cell salvage but should also include the support of natural healing processes by using patients' own blood components. We therefore decided to study peri-operative blood management in more detail with emphasis on the application and production of autologous platelet gel and touch on the use of fibrin sealant.