

Journal of Extracorporeal Technology 2004 Sep;36(3):250-4.

Database review of possible factors influencing point-of-care platelet gel manufacture.

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The application of autologous platelet gel (APG) to surgical wounds has been advocated during the last 10 years to speed bone and wound healing, minimize infection, and modify postoperative pain. There are few data available to confirm these claims. Prior to organized study, consistency and agreement in manufacture of the APG is needed.

In this study, an attempt is made to isolate factors that are important in developing a consistent gel. A database review was performed to determine factors that affect PG quality and function. Quality was assessed by platelet count and fibrinogen concentration, whereas function was assessed by an arbitrary scale of gelling, in which a "1" was equal to a soup texture, "3" equal to a "Jell-O" consistency, whereas a grade of "2" was somewhere in between.

Data specific to the blood draw and platelet-rich plasma sequestration were collected. Two hundred and sixty cases of APG production were reviewed. The volume of blood drawn was dependent on the machine used. Gelling of the APG was independent of platelet count and fibrinogen concentration. Gels that were rated soupy had an average platelet count of 540 K/microL+/-327 K/microL and a fibrinogen concentration of 225 mg/dL+/-76 mg/dL whereas a firm gel had an average platelet count of 486 K/microL+/-264 K/microL and a fibrinogen concentration of 229 mg/dL+/-78 mg/dL. The manner in which the blood was drawn along with the site from which the blood was drawn influenced the platelet concentration of the platelet-rich plasma.

Optimal platelet counts were obtained when blood was drawn from a peripheral vein and sequestration was performed with the automatic program centrifuges. Ultimate gelling of PG is independent of fibrinogen and platelet concentrations. This work suggests a need for further research into the manufacture of APG.

PMID: 15559743 [PubMed]