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FIBRIN GLUE PREPARED FROM SINGLE DONOR ALLOGENOUS PLASMA

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Background: Fibrin Glue prepared from human plasma with the CryoSeal-1 device (CS-1, Thermogenesis), consists of two syringes in a sterile overwrap. One syringe contains thrombin and the other syringe contains cryoprecipitate. When thrombin and cryoprecipitate are sprayed together over a wound, the thrombin converts fibrinogen into fibrin. This will facilitate clot formation and can reduce postoperative bleeding. Until now, mainly autologous plasma has been used for this purpose. Our aim was to validate this method using single donor allogenous quarantain plasma.

Methods: Fibrin Glue was produced from quarantain plasma using the CS-1. The plasma that had been stored frozen for at least six months, was thawed in a 37°C water bath until 4-8°C and was kept refrigerated (4-8°C) until processing. The fibrin glue was characterized by yield (ml fibrin glue), clotting time (seconds) and clot stability (qualitative factor XIII test). Reproducibility was tested by pooling and splitting two thawed plasma units in equal portions before processing, with 9 paired procedures.

Results: Of the 44 procedures, 39 were successful. From one unit of plasma (281 ± 15 ml, n=39) we obtained 12.4 ± 3.2 ml (range 5.0-19.2) fibrin glue in about ninety minutes (67 ± 5 min on CS-1 plus about 20 min hands-on time). Only three procedures resulted in less than 8.0 ml fibrin glue. The average clotting time was 2.9 ± 0.9 s and the clots did not resolve within 24 hours, indicating enough factor XIII. Reproducibility of paired fibrin glue products resulted in a difference between the two products of 1.8 ± 1.2 ml (range 0.1-4.0) in yield and of 0.8 ± 0.7 s (range 0-2) in the clotting test. The unsuccessful procedures were due to a clot in the plasma (1x), cryopoor plasma that was not removed from the cryoprecipitate (2x), and a batch defect (2x).

Conclusion: Fibrin glue can be easily obtained from single donor allogenous quarantain plasma with in general high yields (> 8.0 ml), sufficient short clotting times (< 10 s), stable clots and good reproducibility.