



e-Network Forum

CALIFORNIA BLOOD BANK SOCIETY

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Preparation of "Fibrin Glue" from Autologous Blood

An e-Network Forum member who works at a community hospital in Los Angeles inquired about the use of fibrin glue during operative procedures. He is aware of fibrin glue available commercially as a kit, but because of the high cost, he is not enthusiastic about using it.

- Baxter Hyland Immuno (Tisseal and kit) (*link not available, as of 4-4-02*)
- Related FDA Talk Paper (5-1-98)

The following replies were submitted in response to the above question:

1. The **Editor** provided the following references:

- Gibble JW & Ness PM. Fibrin glue: the perfect operative sealant? *Transfusion*, 1990
- Silver FW et al. Preparation and use of fibrin glue in surgery. *Biomaterials*, 1995
- Quigley RL et al. Intraoperative procurement of autologous fibrin glue. *Ann Thoracic Surg.*, 1993
- Radosevich M et al. Fibrin sealant: scientific rationale, production methods, properties, and current clinical use. *Vox Sang* 1997
- Oz MC et al. Autologous fibrin glue from intraoperatively collected platelet-rich plasma. *Ann Thoracic Surg.*, 1992
- Kjaegard HK et al. A simple method of preparation of autologous fibrin glue by means of ethanol. *Surg Gynecol Obstet.*, 1992
- Martinowitz U, Saltz R. Fibrin Sealant. *Curr Opin Hematol.*, 1996

2. A **blood banker in the Northwestern United States** commented that the commercially available fibrin glues have higher fibrinogen concentrations and, at least some use thrombin purified to remove traces of plasmin. In his opinion, **results obtained using commercially purchased fibrin glue should generally more reproducible**. Autologous cryoprecipitate and topical thrombin certainly could be used, and these materials have been used by many institutions to make homemade fibrin glue for many years. The responding blood banker also commented that the success of using fibrin glue depends to some extent on the surgeon's experience and skill with it.

3. **Another blood banker** stated that "In my former life at American Blood Institute, we prepared autologous cryoprecipitate. We provided this product to various plastic surgeons. We found out that this was used as fibrin glue by mixing with thrombin using a double-syringe technique **during the surgical procedure**".

ADDENDUM Oct. 4, 2001

4. A **representative of ThermoGenesis** wrote the following: "There are various methods to produce autologous fibrin glue and various approaches to this have been widely published. The Tissue Adhesive Center at University of Virginia, as you have noted, has done a lot of work in this area. One significant drawback to all the current methods is their reliance on **bovine-derived thrombin** as the activating agent for the resultant glue product. There are numerous published reports as to adverse effects when using this protein. In addition to general allergic responses there is a big concern about bovine thrombin-induced antibodies to clotting factor V. One article describing this appeared in *Blood* 1990 Nov 5;76(10):2001-6 "Development of antibodies to thrombin and factor V with recurrent bleeding in a patient exposed to topical bovine thrombin". There are many more reporting similar results. ThermoGenesis has developed a novel method to produce **an entirely human autologous fibrin sealant where both components, fibrinogen and thrombin are manufactured in a single use closed sterile system in about one hour**. The system is called **CryoSeal®** and you can view additional information on this device at the [ThermoGenesis web site](#). This product is currently being marketed in Europe and Canada. We are awaiting approval from the FDA to begin human clinicals here in the US. We will have some demonstration equipment available for viewing at the forthcoming AABB meeting."

He wants to know if e-network forum members have **experience with preparing fibrin glue from**

autologous blood. If so, he asks whether this experience been with 'manufacturing' fibrin glue in the **laboratory** or in the **operating rooms** of their hospitals.

Please submit comments to the [e-Network Forum](#).



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