



AUTOLOGOUS TISSUE ADHESIVE IN OPHTHALMOLOGICAL SURGERY

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Background and Importance

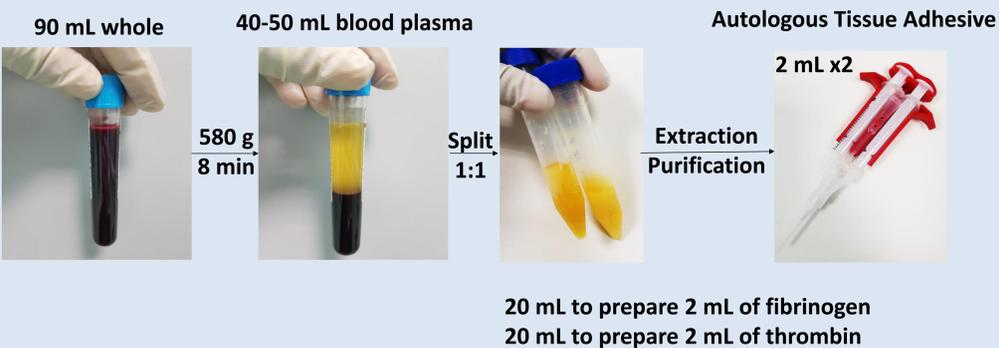
The replacement of suture by tissue adhesives has gained importance in the last few years. However, commercialized sealants are allogenic, synthetic and expensive, increasing surgery costs.

Aim and Objectives

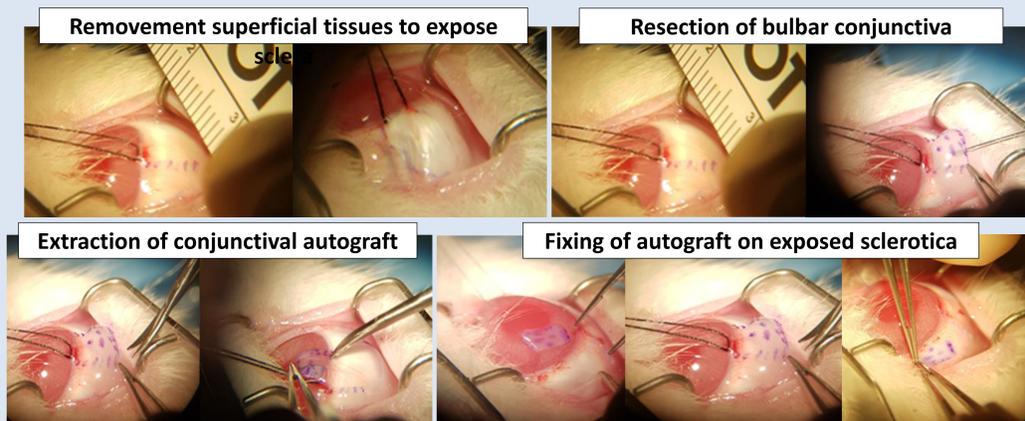
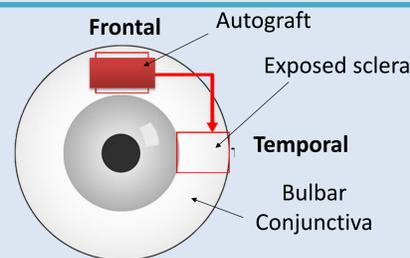
- To produce an Autologous Tissue Adhesive (ATA) easily compounded for ophthalmic surgeries.
- To show evidence about the safety and the efficacy of the ATA through preclinical studies.

Materials and Methods

1. Compounding ATA: fibrinogen and thrombin were prepared from blood plasma by precipitation, purification and concentration in the buffer solutions.



3. Study of in vivo adhesion: ATA was used to glue a conjunctival autograft on sclerotic performing a Pterigium surgery in White New Zealand rabbits (4 males, 12 weeks).



2. Evaluation of cytotoxicity ATA in vitro: cell viability of a 3D corneal model was studied after exposition to the ATA, according to the method of Qobur¹.

4. Grafting follow-up in vivo (for 14-28 days).

5. Grafting study ex vivo: by hematoxylin-eosin staining.

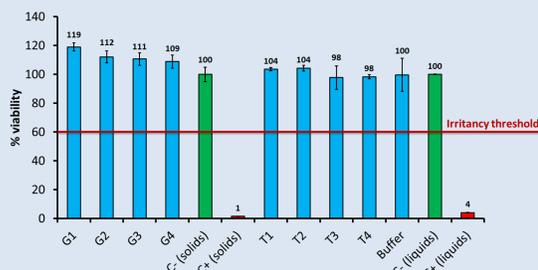
Results

1. ATA compounded:

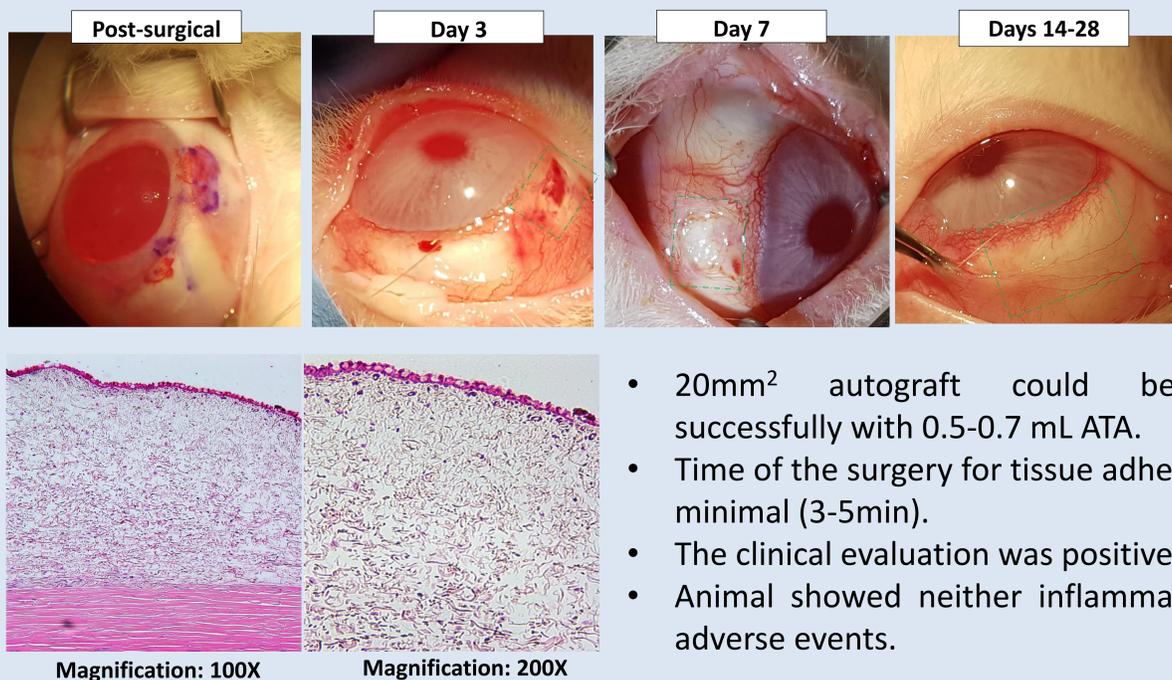
- 18.0 g/L of fibrinogen
- 1,500 IU/mL of thrombin
- Preparation in 45 min.
- Neutral pH (7.0)
- Plasma osmolarity (280-300 mOsm).

2. Absence of cytotoxicity:

- G1, G2, G3 y G4: Autologous Tissue Adhesive
- T1, T2, T3 y T4: Thrombin concentrate
- Buffer: Buffer for thrombin extraction



3. Clinical evolution and histology



- 20mm² autograft could be fixed successfully with 0.5-0.7 mL ATA.
- Time of the surgery for tissue adhesion was minimal (3-5min).
- The clinical evaluation was positive.
- Animal showed neither inflammation nor adverse events.

Conclusion and Relevance

- Since in ophthalmic surgery the volume of ATA needed is very low, it can be easily compounded in a hospital pharmacy from a small sample of blood from the patient.
- This ATA is safe and efficacy, supported by our preclinical results. This ATA could be an excellent low-cost substitute for the sutures and commercial sealants in ophthalmic surgeries.