

PURPOSE

Develop and characterize a PRGF-Endoret fibrin membrane suitable for surgical application in ophthalmology.

METHODS

Membrane obtaining: Blood was collected into 9 mL tubes containing anticoagulant. Blood centrifuged; plasma column was drawn off avoiding the buffy coat, activated with CaCl₂ and incubated at 37 °C until membrane coagulation. Once the gel was formed, membranes were flattened using a 100µm former.

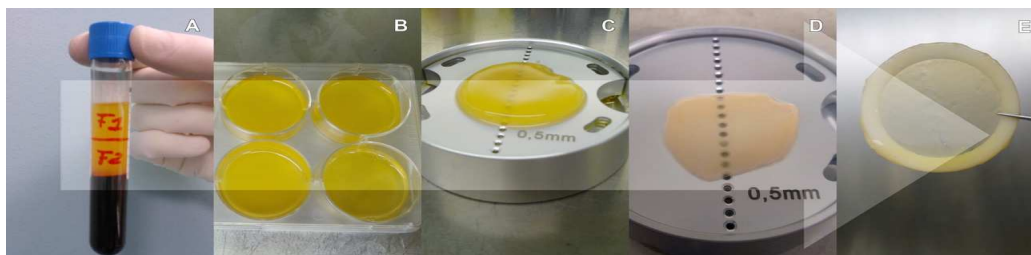


Image 1: Obtention of PRGF fibrine membranes.

The **mechanical tensile strength** of 5 PRGF-Endoret membranes was evaluated using Instron5848. The **ultrastructure** was observed under Scanning Electron Microscopy (SEM). The membranes obtained were applied to 17 patients for the treatment of different ocular surface pathologies.

RESULTS

The PRGF membranes obtained were **manageable**, the maximum load that can withstand was $0,1\pm 0,03N$, the maximum deformation $1,1\pm 0,38$ and Young's modulus was $0,085\pm 0,055$.

SEM images showed that the membrane has a complex three-dimensional fibrillar structure.

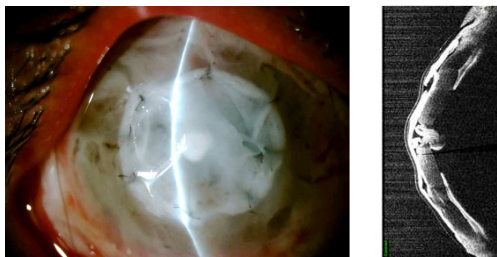


Image 2: Corneal perforation treated with PRGF membrane.

All the surgeries were successfully performed for the treatment of neurotropic keratitis, persistent epithelial defects and corneal ulcers and all the patients evolved satisfactorily.

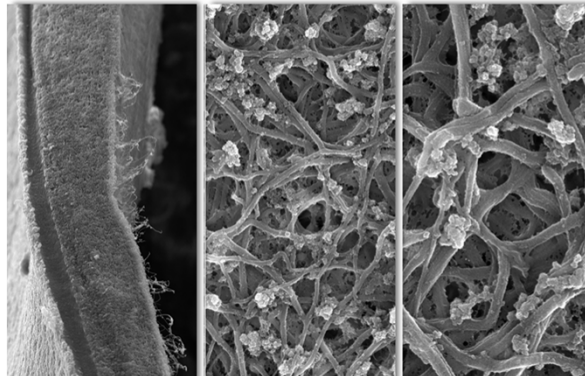


Image 3: Corneal perforation treated with PRGF membrane.

DISCUSSION

Plasma rich in growth factors (PRGF-Endoret) technology is an autologous platelet-enriched plasma obtained from patient's own blood, that allows the release of a pool of biologically active proteins that influence and promote a range of biological process involved in tissue regeneration including cell recruitment, growth and differentiation.

In ocular surgery the amniotic membrane has been used with regenerative purposes for many years. But it has some *disadvantages* including its allogeneic origin and high cost. Having an autologous membrane, obtained from patient's blood, suppose a breakthrough in **availability, patient safety and cost efficiency**.

CONCLUSIONS

It is possible to obtain a **PRGF-Endoret membrane** useful in ophthalmic surgery from patient's own blood.

PRGF-Endoret membrane developed presents **adequate mechanical characteristics and manageability** for its surgical use in the treatment of ocular surface pathologies.