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Rehabilitation**

## **In vivo Evaluation of PMMA Antiglaucoma Shunt's Biocompatibility**

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### **Abstract**

The histocompatibility of traditional trabeculectomy in comparison to PMMA antiglaucoma shunt with valve implant in the rabbit's eyes. The preclinical research included the implantation of the newly designed PMMA antiglaucoma shunt with a silicone valve into 5 New Zealand rabbits (Group A). The shunt was implanted into the anterior chamber under a scleral flap, after steroid-induced ocular hypertension. As a control group serves Group B which undergoes trabeculectomy. The follow-up of the operated eye from each group was observed by a certified ophthalmologist using the biomicroscope. It was evaluated histopathologically following rabbits' euthanasia on days 90 after antiglaucoma surgery. Hematoxylin and eosin staining, and trichrome staining were performed in both groups. In Group A the foreign body reaction consisted of the formation of a fibrotic capsule, with an amount of fibroblasts compared with the control one. The samples were devoid of inflammatory cells, such as macrophages and lymphocytes. The lumen of the antiglaucoma shunt was free of inflammatory exudates or other obstructions in all specimens examined. No adverse reactions were registered in Group A for up to 90 days. The data obtained from the histopathologic examination reveals the good tolerability and safety of the antiglaucoma shunt with valve, with no adverse effects and inflammatory response. The device can be an alternative to trabeculectomy.

*Keywords: antiglaucoma shunt with valve, glaucoma, tissue reaction*



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