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Service (sector) Retina and Vitreous Nº CEP

In Vivo Intravitreal Drug Delivery Device: Surgical Implantation and 6 Months Follow-up

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Purpose: To investigate the feasibility and safety of a surgical method for implanting a intravitreal sustained-released drug delivery device to the posterior segment of the eye. **Methods**: Sustained-released drug delivery devices were designed and coated with triamcinolone acetonide impregnated polymer in two different elution rates. The devices were surgically implanted into the vitreous cavity of 40 rabbits under sterile conditions. The animals were clinically followed for up to 6 months after the surgery with complete ophthalmologic examinations. Retinal physiology was assessed by scotopic and photopic electroretinograms (ERG). Light microscopy evaluated tissue histology after sacrifice. **Results**: The device was successfully implanted in all 40 eyes. The procedure took an average time of ten minutes. The eye examinations revealed minor surgical complications, such as mild and focal cataract and mild vitreous hemorrhage. No significant changes were observed either in the mean amplitudes of the scotopic and photopic b-waves, neither in the mean implicit times after the surgery. No significant changes were observed in the tissue histology. **Conclusion**: The intravitreal drug delivery device implantation was developed and performed in 40 rabbits. Implantation of this helical intravitreal device in rabbit eyes was technically safe and short in duration. Long term follow-up revealed excellent biocompatibility and lack of surgical complications.

Key Words: vitreoretinal surgery • biocompatibility • sustained released • triamciolone • corticosteroids • retina • drug delivery