

Duration of Effect of Triamcinolone Intravitreal Injection in Previously Vitrectomized Eyes



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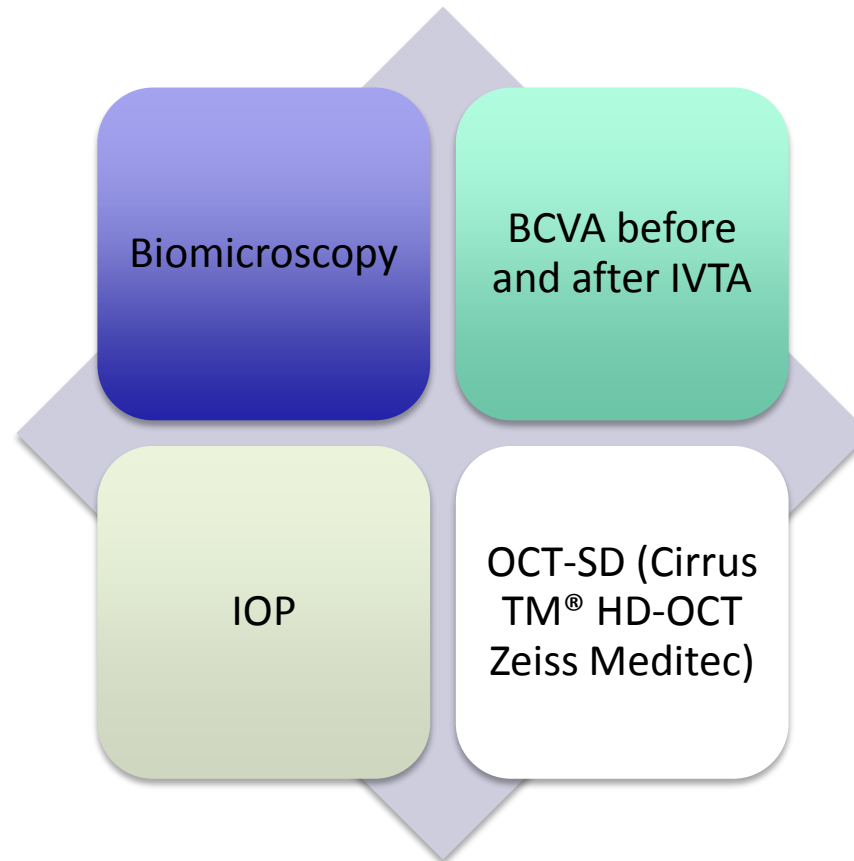
Triamcinolone

- Triamcinolone acetonide is a corticosteroid used in the treatment of macular edema of different etiologies.
- Blood retinal barrier action → ↓ vascular permeability.
- Secondary Effects: ocular hypertension/glaucoma; cataract.

Non-Vitrectomized Eyes	Half-life Time: 18,6 days	Vitreous Detection: 11 weeks
Vitrectomized Eyes	Half-life Time: 3,2 days	Duration of action ?

Material and Methods

- Retrospective study from July 2013 until March 2014.



Design

Vitrectomized
Eyes

Macular
Edema:
CMT Measure

4 mg / 0,1mL
IVTA

CMT
Measurement
at 3 weeks

Monthly CMT
Measurement
until recurrence
of edema

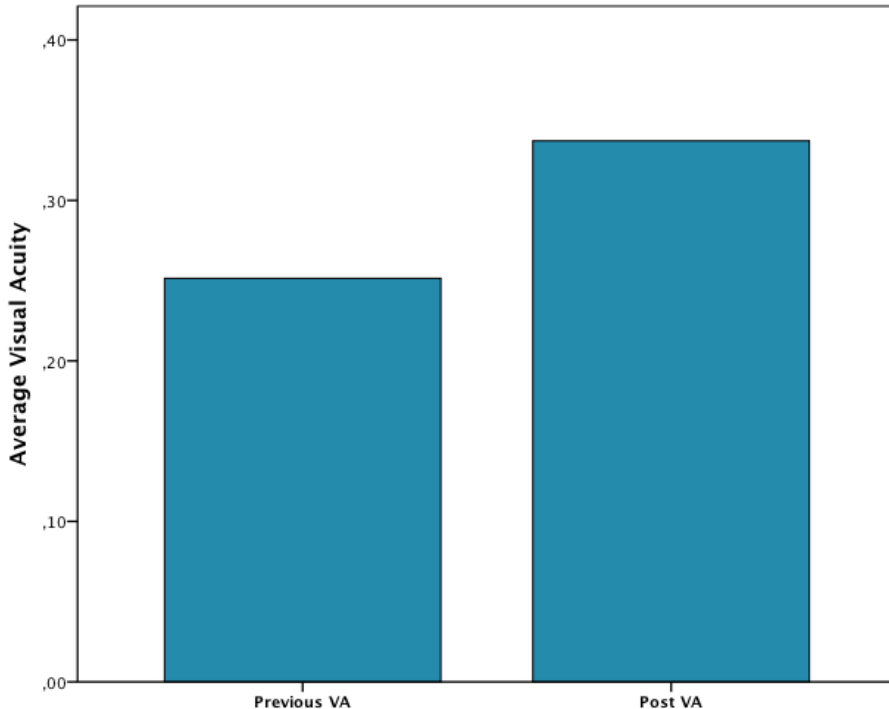
Demographic Results



Hospital
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Sample	<ul style="list-style-type: none"> 20 patients <ul style="list-style-type: none"> 14 Female (70%) 6 Male (30%) 23 Eyes <ul style="list-style-type: none"> 14 Right Eye (60,9%) 9 Left Eye (39,1%)
Age	59,05 \pm 8,63 years
Causes	<ul style="list-style-type: none"> DME 82,6% (19 eyes) RD 8,7% (2) Trauma 4,3% (1) Lamellar Hole and Macular Schisis 4,3% (1)
Pseudophakic	23 Eyes
PPV-IVTA time	13,3 \pm 8,28 months

Visual Acuity and IOP Results



Previous Visual Acuity: 0,41

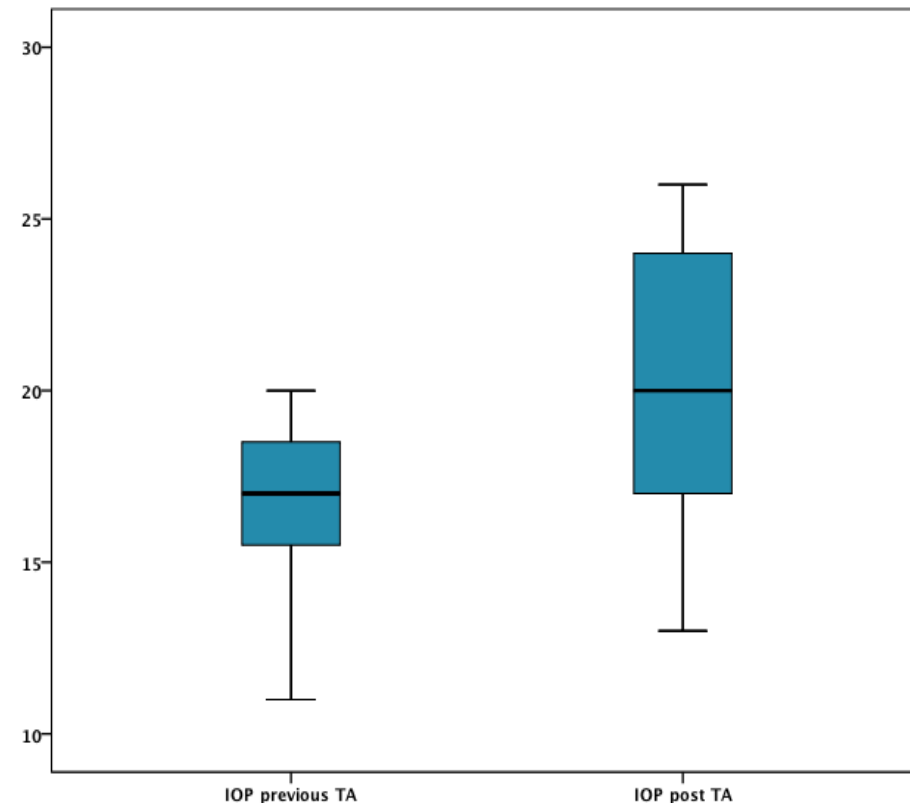
Post Visual Acuity: 0,55

$p \geq 0.05$ (t-paired test)

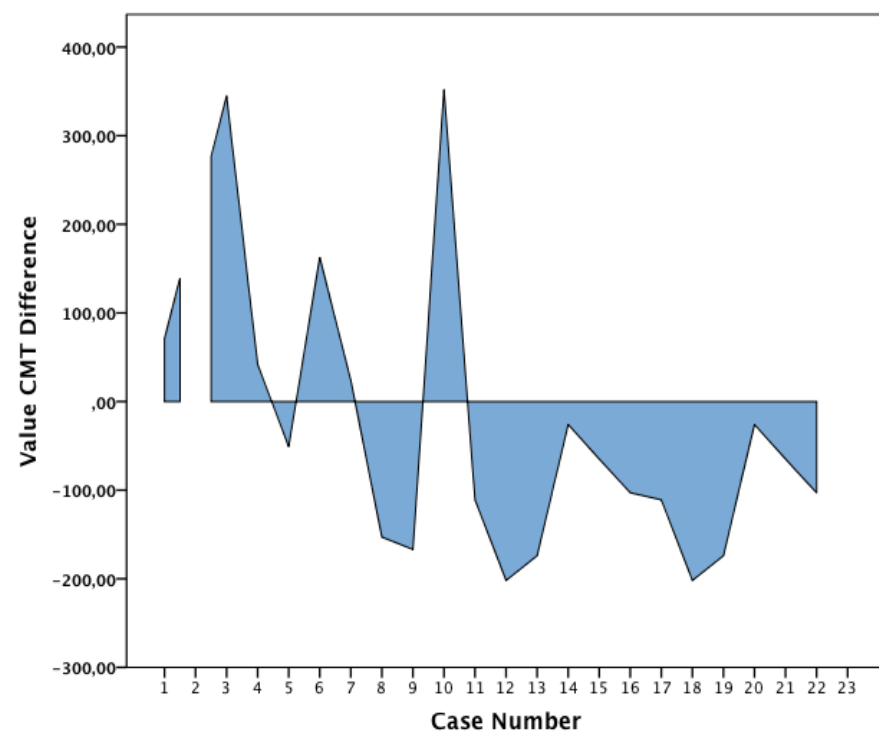
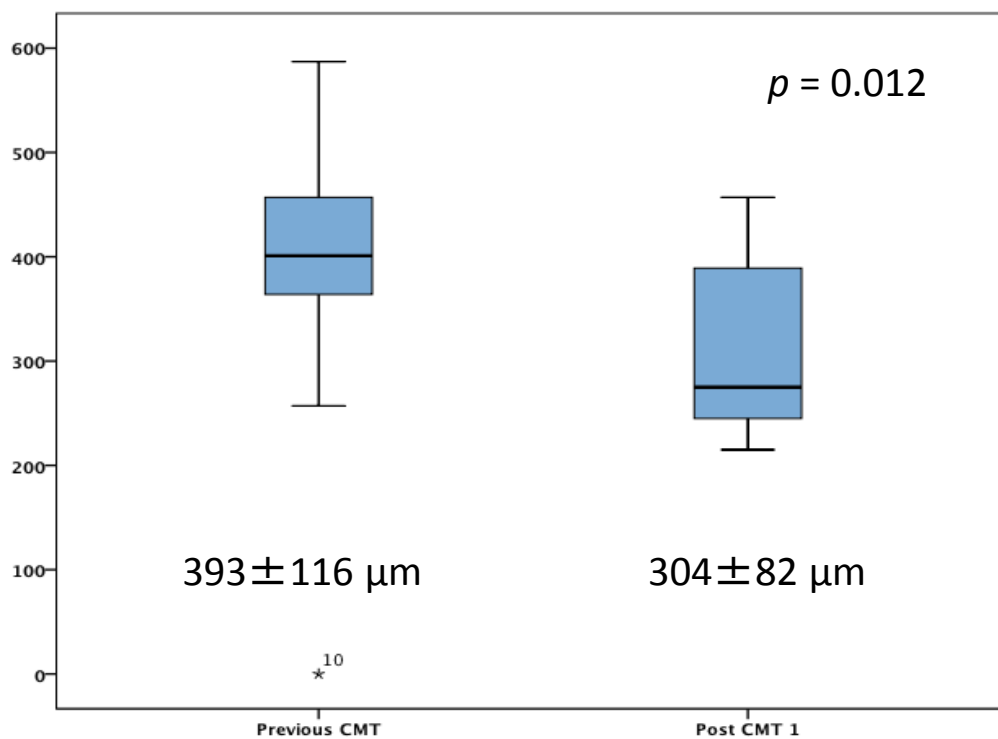
Previous IOP: $16,9 \pm 2,0$ mmHg

Post IOP: $20,2 \pm 4,44$ mmHg

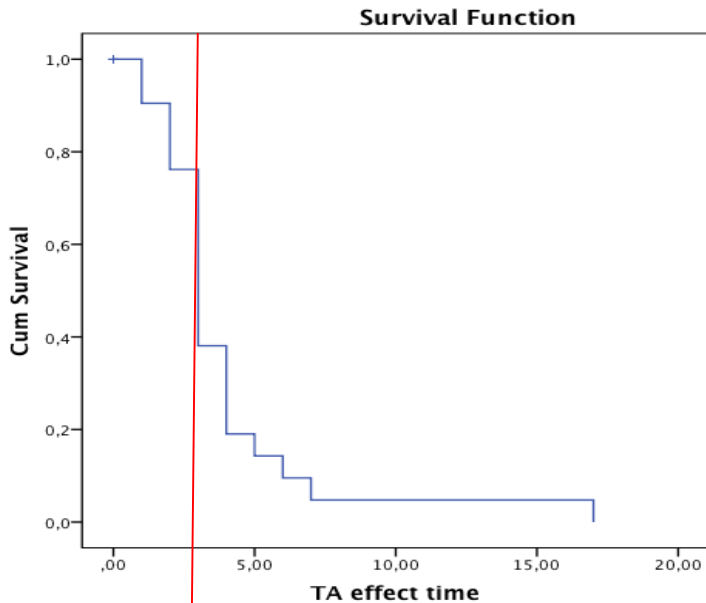
$p = 0.019$ (t-paired test)



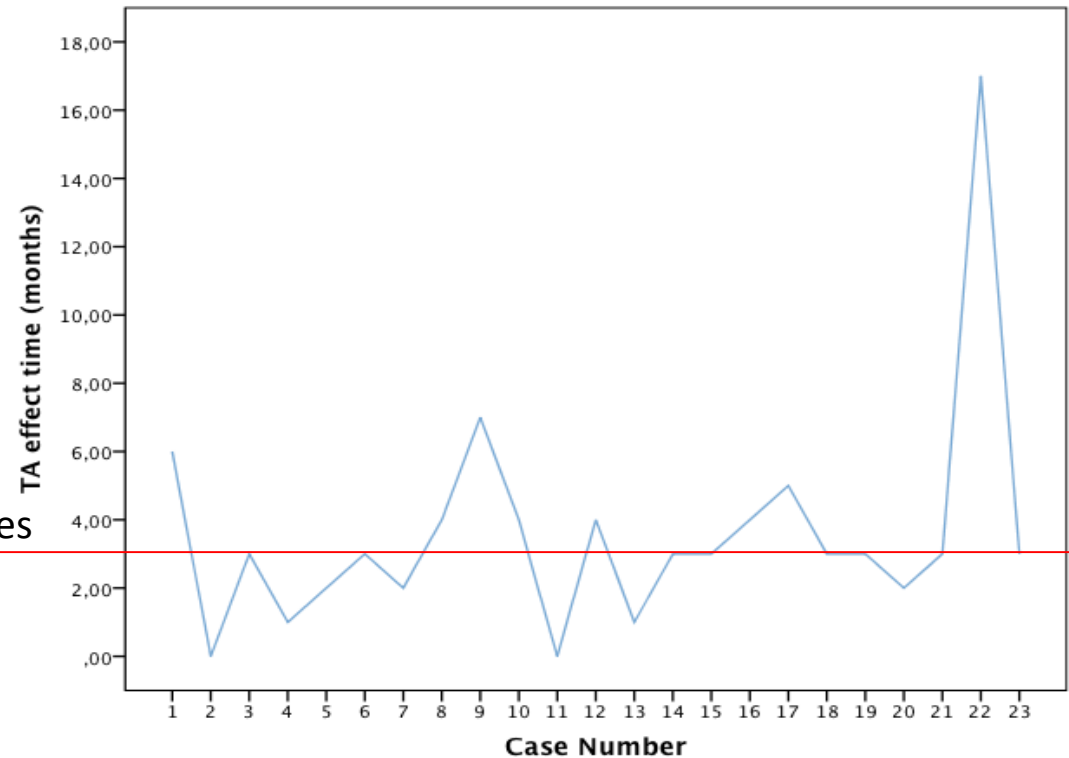
CMT variation



Triamcinolone effect duration



11 weeks in non-vitreotomized eyes



TA effect time: 0-17 months
Average: $3,61 \pm 3,34$ months

Conclusion

Macular edema is an important cause of visual loss.

Triamcinolone is a therapeutic option acting by decreasing vascular permeability and anti-inflammatory action.

Vitrectomized Eyes should have a shorter duration of effect than non-vitrectomized eyes.

Macular edema is highly responsive to triamcinolone.

IOP increase is an important side-effect.

Average TA effect is $3,61 \pm 3,34$ months → similar results than in non-vitrectomized eyes.

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Why do you think you can get such a long duration of effect in these patients?

- **Vitreous** as a pathway of drug delivery and clearance in eye.
- There are **few studies** comparing TA concentration in vitrectomized and nonvitrectomized eyes.
- **No studies** in human eyes.
- Logarithmical plotting shows that triamcinolone (**0.3 mg**) was eliminated **1.84 times quickly in vitrectomized + lensectomy** rabbit eyes (China and Kim et al. Investigative Ophthalmology & Visual Science 2004. ARVO).

Why do you think you can get such a long duration of effect in these patients?

- Anti-VEGF
 - ✓ **No significant** differences between pharmacokinetics properties of **ranibizumab** in vitrectomized and nonvitrectomized rabbit eyes. (Ahn S., Ahn J. et al. in IOVS 2014 Jan)
 - ✓ **No BVCZ significant difference** between pharmacokinetics properties in vitrectomized and nonvitrectomized eyes. (Ahn J. Kim H. et al. un Journal of Ocular Pharmacology and Therapeutics, 2013 Jan)
 - ✓ **No lensectomy** was performed which is more similar than regular PPV procedure.
 - ✓ **Centrifuge** Concentrated Triamcinolone in nonvitrectomized eyes: 8.3 ± 4.0 months (Ober et al. in Retina, 2013)
 - ✓ **Phase 1 DRAW study**: compares **aflibercept** in wet-AMD vitrectomized and non-vitrectomized eyes.
- What about the RPE function?

Do you feel there is a difference in the incidence of side-effects such as intraocular pressure?

- **Steroid-induced glaucoma** is a well-known side-effect of steroid administration.
- **Vitrectomy surgery itself** has been related with open-angle glaucoma, particularly in nonphakic eyes.
- Vitrectomized eyes: dispersion of triamcinolone crystals into the **anterior chamber** (pseudohypopion) blocking trabecular spaces.
- Ocular hypertension after TA with vitrectomy and phacoemulsification is **reported** in Parke and Sisk et al. in Clinical Ophthalmology 2012.

Do you feel there is a difference in the incidence of side-effects such as intraocular pressure?

- Management:
 - ✓ Drug discontinuation
 - ✓ Topical IOP-lowering agents
 - ✓ Oral carbonic-anhydrase inhibitor
 - ✓ Filtering surgery
- Reported rates of IOP elevation: 20-80%.
- We had to stop our treatment in 4/23 eyes (17,4%) and 5/23 (21,7%) eyes were controlled with one eye drop.
- IOP elevation in 39,1% of our cases.