

INTRAVITREAL CORTICOSTEROIDS; TYPES, INDICATION AND LIMITATION

Presented by

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29-3-2019

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We still need to use intravitreal steroids

!!!!!!!

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Types of intraocular steroids

- ❑ TRIAMCINOLONE ACETONIDE
- ❑ FLUOCINOLONE
- ❑ DEXAMETHASONE
- ❑ PREDNISOLONE
- ❑ CORTISOL

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Potency of intraocular steroids

STEROID	GLUCOCORTICOID POTENCY
TA	1
FA	0.4
DEX	3
Prednisolone	8
Cortisol	72

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Types of intraocular steroids

STEROID	TRADE NAME	MANUFACTURER
FA	Retisert	Bausch + Lomb
FA	Iluvien	Alimera Sciences
DEX	Ozurdex	Allergan
TA	Kenalog	Bristol-Myers Squibb
TA	Triesence	Alcon
TA	Trivaris	Allergan
TA	I-vation	SurModics

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Intravitreal Steroids

1-TRIAMCINOLONE ACETONIDE (kenacort):

- Water insoluble
- Half-life is 18.7(+/- 5) days for non-vitreotomized eyes and 2.3 days for one vitreotomized eye
- Dose:4mg ,1mg per 0.1 ml.
- Cheap.
- NOT FDA Approved



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Intravitreal Steroids

2-Ozurdex :

- ❑ Biodegradable dexamethasone intravitreal implant designed to deliver 700 μg of preservative-free dexamethasone in a sustained release manner over 3–6months.

- ❑ FDA approved (2014)



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Intravitreal Steroids

3-Fluocinolone Acetonide Intravitreal Implant (Iluvien):

- ❑ Non-erodible cylindrical tube with a central drug-polymer matrix that releases 0.19 mg of fluocinolone acetonide into the vitreous cavity
- ❑ 3 years duration.
- ❑ FDA approved (2014)



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Indication of intravitreal steroids

- Diabetic macular oedema
- Retinal vein occlusion e ME
- Acute and chronic intermediate and post uveitis
- Visualization of vitreous during different intraocular surgery.
- Persistent cystoid macular oedema
- Chronic proliferative vitreoretinopathy
- Prephthisical hypotony
- Sympathetic ophthalmia

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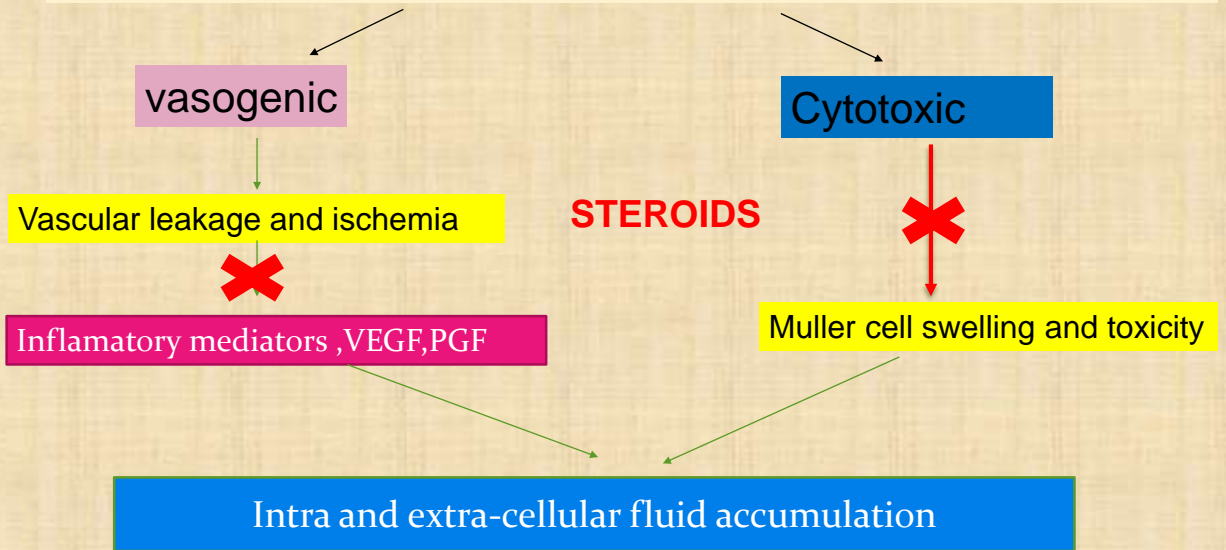
Indication of intravitreal steroids

- Diabetic macular edema
- Retinal vein occlusion e ME
- Acute and chronic intermediate and post uveitis
- Visualization of vitreous during different intraocular surgery.
- Pseudophakic cystoid macular oedema
- Chronic proliferative vitreoretinopathy
- Prephthisical hypotony
- Sympathetic ophthalmia

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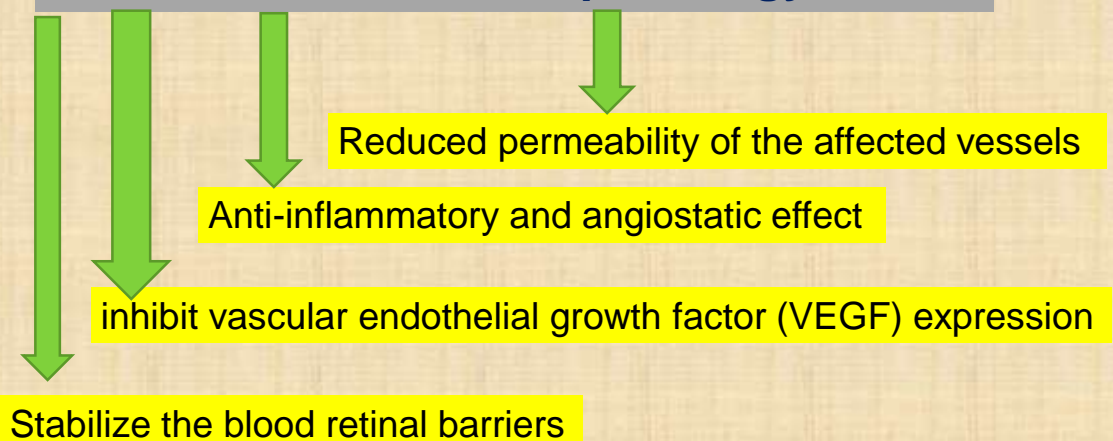
Pathogenesis of Macular oedema



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Role of Intravitreal Steroids in ME with different retinal pathology



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Intravitreal steroids in DME

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Summery of the steroid studies in DME:

- Triaminolone** has the same effect of reduction of central retinal thickness as compared with **lucentis**.
- But the visual gain was tempered by their side effects in phakic patients. (DRCR protocol I;2015)
- Retreatment after 4-6months of first injection*
- The second injection has the same incidence of ocular hypertension.*

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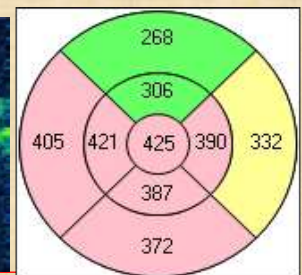
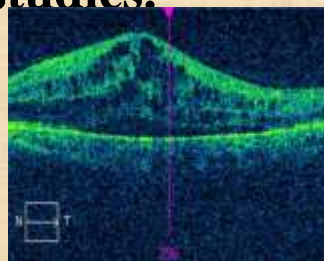
Guidelines for the Management of Diabetic Macular Edema by the European Society of Retina Specialists (EURETINA)

Ursula Schmidt-Erfurth^a Jose Garcia-Arumi^b Francesco Bandello^c
Karina Berg^d Usha Chakravarthy^e Bianca S. Gerendas^a Jost Jonas^f
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I-Indication of intravitreal steroids in DME:

- ❑ Steroids are the **first choice** of treatment in center involving DME in cases with major cardiovascular diseases in which major trials of anti-VEGF excluded them from the studies.



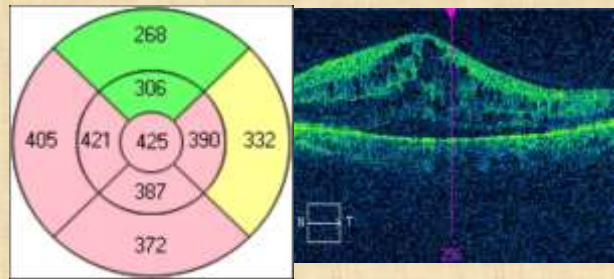
Guidelines for the Management of Diabetic Macular Edema by EURETINA 2017

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Indication of intravitreal steroids in DME:

- ❑ Patients who are not willing to come for monthly anti VEGF injections (and/or monitoring) in the first 6 months of therapy.



Guidelines for the Management of Diabetic Macular Edema by EURETINA 2017

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Indication of intravitreal steroids in DME:

- ❑ *Psuedophakic patients.*(1)
- ❑ *Chronic(>3years)and refractory DME* in which resistant to anti-VEGF therapy :*

Targeting VEGF does not suppress all the inflammatory cytokines and chemokines involved in chronic DME.(2)

**Refractory ME=central retinal thickness <10% after 12 weeks or after 2 consecutive injection with no improvement in BCVA or CRT AT 12 W.*

1-Guidelines for the Management of Diabetic Macular Edema by EURETINA 2017.

2-Hussain RM, Ciulla TA. Treatment strategies for refractory diabetic macular edema: switching anti-VEGF treatments, adopting corticosteroid-based treatments, and combination therapy. *Expert Opinion on Biological Therapy* 2016;**16**(3): 365–74.

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2-STEROIDS IN RV OCCLUSION WITH MACULAR OEDEMA

1-TRIVIAS (TA Preservative Free)

SCORE STUDY (standard of care vs corticosteroids for RVO)

Compare macular laser with 1mg and 4mg TA regarding BCVA and CRT .



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2-STEROIDS IN RV OCCLUSION WITH MACULAR OEDEMA

- The results from the **SCORE-CRVO trial** demonstrate a strong treatment effect of intravitreal triamcinolone relative to observation.
- Injection of **1mg** TA is safer than **4mg** TA



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2-STEROIDS IN RV OCCLUSION WITH MACULAR OEDEMA

- A favourable visual acuity response after intravitreal TA is more likely in patients with **perfused** rather than **nonperfused** macular edema.
- Retreatment may also be performed in some patients due to recurrent macular edema



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2-STEROIDS IN RV OCCLUSION WITH MACULAR OEDEMA

1-TRIVIAS (TA Preservative Free)

The **SCORE-BRVO trial**, it is unlikely that the triamcinolone groups **fared no better than** the standard care group because of a masking of treatment effect by **cataract**

As there is no reason to suspect that participants with BRVO are more susceptible to cataract than participants with CRVO) but rather as a result of triamcinolone being compared with an equally efficacious therapy—grid photocoagulation

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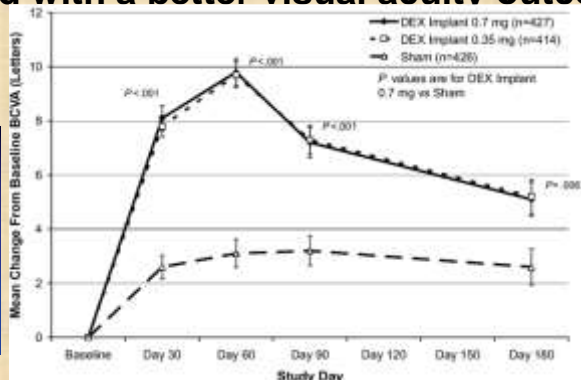
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2-STERIODS implants IN RV OCCLUSION WITH MACULAR OEDEMA

2-Ozurdez (Dex implants)

GENEVA STUDY(Global evaluation of implantable dexamethasone in RVO with macular edema)

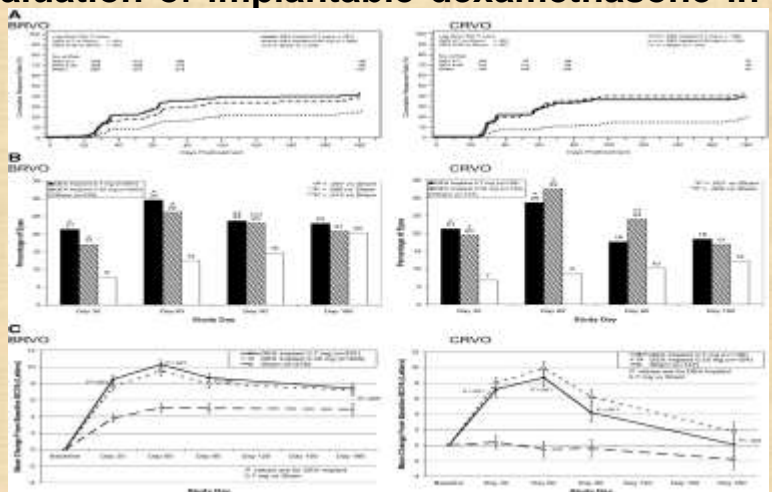
Earlier treatment was associated with a better visual acuity outcome across subgroups



2-STERIODS implants IN RV OCCLUSION WITH MACULAR OEDEMA

Ozurdez (Dex implants)

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2-STEROIDS IN RV OCCLUSION WITH MACULAR OEDEMA

Conclusion:

Steroids should be combined with **ANTI-VEGF** at the beginning of treatment or in refractory cases in perfused ME.

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2-STEROIDS IN RV OCCLUSION WITH MACULAR OEDEMA

conclusion

Patients with partial or no changes in baseline visual acuity, central retinal thickness, and macular morphology on OCT despite monthly anti-VEGF injections for 3 consecutive months should be considered for **combination treatment with the DEX implant** (on-label) or **intravitreal triamcinolone** (off-label).

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3-Intraoperative vitreous visualization with triamcinolone

Suspended crystals of triamcinolone adhere to fibrils of gel vitreous and give it a white contrast.

- During VITREORETINAL SURGERY
- In complicated cataract surgery .

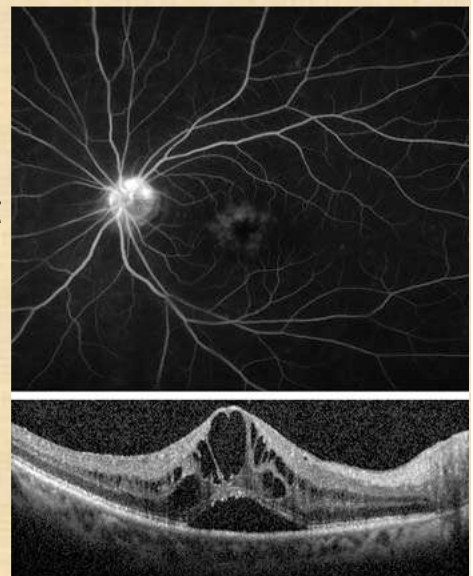


4-IV Steroids in PSEUDOPHAKIC ME

IRVINE GASS SYNDROME

❑ Non resolving (Topical NSAID and systemic CAI) postoperative cystoid macular edema is an eminent indication.

❑ Immediate improvement of visual acuity and generally the effect is permanent except in cases with significant vitreous traction.



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5-IV Steroids in intermediate and post uveitis

- ❑ Effect as periocular injection
- ❑ Implantable long-acting(Ozurdex and Resiort) are common in use
- ✓ Effective in up to 60% in cases.
- ✓ Improvement occurs after 1month of injection
- Repeated injections are needed.

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Side effects of steroids

- ❑ **Ocular hypertension (25-45%):**
 - Maximum IOP within 2 weeks and returning to baseline values within 4 to 9 months after the injection.
 - Only 1% of cases with glaucoma needed filtration surgery
- ❑ **Cataract (30%to 40%).mainly Posterior subcapsular**
 - ❑ Retinal tear and macular holes.
 - ❑ Bacterial endophthalmitis.

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Safety of high-dose intravitreal triamcinolone acetonide as low-cost alternative to anti-vascular endothelial growth factor agents in lower-middle-income countries

This article was published in the following Dove Press journal:
Clinical Ophthalmology

Conclusion: High-dose IVTA is a safe and cost-effective alternative to anti-VEGF agents. Cataract formation and intraocular pressure rise do not pose major adverse effects when weighed against the risk of vision loss due to inability to afford anti-VEGF treatment.



Thank you

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