

Injections in the Eye

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Our eyes are very sensitive and delicate. It is hard to imagine anyone recommending, let alone consenting, to receiving periodic injections into the eye. Yet, injections are the most effective treatment for several retinal diseases and the only treatment available for other diseases. Injections were rarely given before 1998, but have increased in popularity over the past few years with the availability of effective medications.

Why Injections in the Eye? There are three reasons for injecting a medication directly into the eye, as opposed to giving it by eye drops, intravenously or by mouth. First, some of the medications are proteins and are digested by our stomach if given by mouth. Second, a very high dose has to be given that if taken by mouth or intravenously would cause serious side effects in the body if given for a long time. Third, penetration of the drug into the retina after eye drops, or intravenous or oral administration is very poor. Injections get the medication fast where it is needed.

Is There Pain? Injections are given in the office. We use betadine to clean the surface of the eye. Anesthetic drops are used to make the procedure painless. Slight pressure is felt by the patient as the medication enters the eye, but usually there is no pain either during or after the procedure. There may be slight redness or discomfort in the eye for about 24 hours. Most patients notice improvement in vision within one week.

What Diseases are Treated With Injections? The most important diseases that are treated with periodic injections into the eye are wet age-related macular degeneration (AMD), diabetic retinopathy, central and branch retinal vein occlusion, and infection and inflammations inside the eye. Macular degeneration is of two types: dry and wet. There is no effective treatment for the dry type, but the wet type can be successfully treated in most patients, and vision can be stabilized in over 90% of patients.

What Kind of Medications? The most important class of medications that are given by injection are proteins that block another protein called vascular endothelial growth factor (VEGF). Any retinal disease has over-production of VEGF that leads to formation of abnormal blood vessels, which can cause bleeding or scarring inside, under, or over the retina. When excess VEGF is removed by blocking it with another protein (medication), abnormal blood vessels shrink or stop bleeding that result in improvement or stabilization of vision. Excess VEGF also causes macular swelling; that leads to a decrease or distortion of reading or "fine" vision, as in diabetic retinopathy, wet AMD, and retinal vein occlusions. By removing excess VEGF, macular swelling can be treated and leads to improvement or stabilization of vision. Other medications that are commonly given by injections into the eye include steroids and antibiotics.

Why Do I Need Frequent Injections? Most retinal diseases that require injections are long-term or "chronic", similar to high blood pressure or high cholesterol. Long-term treatment for months to years is needed for most retinal diseases. An injection is effective only for about 1-3 months, depending on the medication used. Most patients will require multiple injections to treat their retinal disease.

When Do We Stop Injections? When the disease is completely inactive, injections may be stopped. Diabetic retinopathy and retinal vein occlusions may take 1-3 years to become inactive. Our practice is equipped with highly sensitive scanners to detect any swelling in the macula. The interval between injections is gradually increased after

swelling in the macula has been brought under control. We try to stop injections if the interval between injections can be extended to three or more months without any recurrence of swelling in the macula.

What is New? A recent study showed that both Avastin and Eylea are almost equally effective for wet macular degeneration. Eylea is about 100 times more expensive than Avastin. Therefore, most patients in our practice are treated with Avastin. Unlike Avastin though, which is needed to be given once a month, Eylea can be given once every two months.

Our Experience and Research We have performed thousands of injections over the past 12 years of practice. More than 3000 injections were given last year alone. Our research involving injections for wet macular degeneration and bleeding due to AMD was presented at international meetings of retina specialists last year and two years ago.