

The Royal College of Ophthalmologists



Guidelines for Intravitreal Injections Procedure 2009

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The purpose of these guidelines is to ensure that any substance introduced into the eye is sterile, and remains sterile when it enters the vitreous cavity. The substance must be sterile, and the loading needle, as well as the injection needle must be sterile. No part of the injection needle (including the tip or shaft that is introduced into the eye) shall come into contact with anything else or structure before introduction into the eye. The document is designed to be concise for easy reference. Related guidelines are available on the College website (www.rcophth.ac.uk/publications/guidelines).

1. Appropriate diagnosis must be reached and a treatment plan made.

- Patients should always have a visual acuity measurement (preferably Log MAR) and clinical evaluation for each visit, in order to identify complications from previous injections and review the appropriateness of the subsequent treatment recommended.

2. Intravitreal (IVT) injections should be provided by an ophthalmic surgeon experienced with this procedure and with the management of IVT related complications or by a trainee under supervision of such an ophthalmologist.

3.1. Explain the procedure and reassure the patient.

Include:

- The importance of treatment
- The treatment options
- Why the IVT procedure is appropriate for the patient
- What the treatment involves/what to expect/what the risks are^{1,2}
- The importance of probable repeated injections, and the frequency at which these will be required, and for how long
- Obtain signed consent from patient prior to first procedure; this will normally suffice for the course of treatment when the drug is licensed for IVT. However, it is recommended that local hospital treatment policies are consulted. This is insufficient, however, when the drug is not licensed for intravitreal usage e.g. Triamcinolone which has no long term efficacy and safety information available.

3.2. Clinical Setting of care

Procedure may be carried out in theatre or a dedicated room in outpatients.³

- For outpatient delivery, an enclosed, dedicated clean room (as defined by the local Infection Control Team) which only deals with clean (non-infected) cases, and is free from interruptions
- Room must have good illumination and washable floor⁴ (as confirmed by local Health & Safety regulations); facilities for indirect ophthalmoscopy are advantageous but not mandatory
- Ceiling of room should be non-particulate in nature (i.e. no dust or debris should be able to fall on to operative field during procedure)⁴
- Resuscitation facilities available nearby

- Surgeon's hands should undergo a surgical disinfection and sterile gloves worn.⁵
- Masks may be worn as the surgeon's face is quite proximal to the operating field but are not mandatory.
 - Adequate nursing support is vital to both help with the injection procedure and to provide patient support

3.3. Minimum requirements

- Application of single use mydriatic to achieve adequate pupillary dilation (dilatation is preferred for adequate visualisation before and/or after the injection is given, unless otherwise contraindicated)⁵
- Equipment : sterile eyelid speculum, surgical gloves, sterile toothed microforceps, sterile cotton buds, sterile ophthalmic drape (sufficient to cover lid margin and eyelashes), sterile mm gauge (callipers or rule), povidone solution/ iodine wash and syringe and 1% lignocaine (without adrenaline) if 27 gauge or wider bore needle is to be used. Small bore injection needles are preferable eg 30 gauge for non-colloidal clear solutions and 27 gauge for particulate preparations eg triamcinolone. Special needles may be provided specifically for particular products. The injection needle length should be 12 to 15mm ($\frac{1}{2}$ to $\frac{5}{8}$ inch).⁵
- Adequate sterilisation may be achieved with Povidone 5% eye drops applied into the conjunctival sac at least 3 minutes pre-injection.⁵⁻⁷ Povidone eye drops should be applied prior to eyelid cleaning to allow enough time for its effect without introducing unnecessary delays.

4. Preparation and administration of IVT treatment

- Measure the patient's intraocular pressure (IOP) prior to injection (this measurement does not have to be immediately before the injection)
- Check pupillary dilation
- A biomicroscopic examination may be undertaken prior to injection (optional as indicated)
- Apply single use topical anaesthetic to the eye
- Use a surgical hand disinfection technique and wear sterile gloves
- Instill 5% povidone iodide on to the ocular surface and allow adequate time (3 minutes) prior to injection^{5,6} If allergic to iodine then alternatives such as chlorhexidine should be used.
- Clean periocular skin and eyelid margins and eye lashes, with 5-10% povidone iodine^{5,8}
- Dry the skin and apply the drape⁸
- Insert eyelid speculum, ensuring that it is well positioned underneath the eyelids to direct the eyelashes away from the field^{5,8}
- Supplemental subconjunctival anaesthetic (1ml of 1% Lignocaine [without adrenaline]) in the area of planned IVT may be considered if using a 27 gauge or wider bore needle.^{5,8} In a severely inflamed eye a full subtenon's anaesthetic may be necessary
- Instruct the patient to direct gaze away from the site of injection
- Mark the scleral injection site using the mm gauge (the entry site of the needle should be 3.0-3.5 mm from the limbus in aphakic/pseudophakic patients, and 3.5-4.0 mm in phakic patients). Avoid the horizontal meridians of

the globe; although the infero-temporal quadrant is often used, any quadrant can be used and may be changed in rotation.

- Opening of needle/syringe pouch should be done immediately prior to the injection.
- If the medication is pre-loaded, carefully remove the protective cap from the pre-prepared syringe without twisting or turning and eject the air bubble at the top of the syringe. Take care not to expel any medication. Do not draw back the plunger.
- If not pre-loaded then the medication should be prepared aseptically immediately before single usage; withdrawal is according to manufacturer's instructions. Excess medication in the syringe should be expelled through the injection needle. (This ensures that the injection needle hub is fully primed with no air therein).
- The conjunctiva may be displaced anteriorly using either forceps or cotton-tipped applicator so that no direct route between vitreous and ocular surface remains.

- Using forceps to steady the eye (if necessary), the needle is inserted perpendicular through sclera with the tip aimed towards the centre of the globe (to avoid any contact with the posterior lens). For wide bore injections a stepped entry into the pars plana may be recommended in order to avoid leakage.

- Inject appropriate volume (maximum 0.1 ml) of therapeutic agent slowly and carefully. Direct visualisation with indirect ophthalmoscopy is not mandatory. Be careful to avoid contact between needle shaft and lid margin

- Remove needle carefully. A sterile cotton-tipped applicator may be used to prevent reflux and to steady the eye. Discard syringe and needle appropriately.

- Apply 1-2 drops of single use antibiotic into treated eye. Alternatively, open bottle of multidose antibiotic drops, apply 1-2 drops to the eye aseptically, and give the same bottle for patient to take home. It should be noted that for ranibizumab, the current abbreviated UK prescribing information states that the patient should be instructed to self-administer antimicrobial drops four times daily for 3 days before and following each injection. However, such preoperative drops are considered unnecessary in this guidance.

- Excess iodine may be irrigated away at end of procedure

- Check that the patient is able to see objects immediately after injection to ensure that the retinal artery is perfused.⁵

- If bilateral injections are planned at the same session, each eye should be prepared separately. A different set of instruments must be used for each eye. Similarly, a separate vial of medication is advised for each eye.

- If intravitreal injections are given alongside other procedures, including cataract surgery, extra care needs to be taken to ensure that the correct medication is given intravitreally. This would avoid unnecessary retinal toxicity.

5. Post-injection management

- IOP measurement post-injection is not mandatory. While small volume injections (0.05ml) are unlikely to cause IOP rise, it should be considered in patients with ocular hypertension or glaucoma, injection volumes greater than 0.05ml and in all cases where patients are symptomatic for pain or reduced vision immediately following injection.⁵
- Should a high intraocular pressure resulting in non-perfusion of the central retinal artery occur, indicated by no perception of light (NPL) in the treated eye, an anterior chamber paracentesis is indicated. Such decompression needs to be achieved within 3-5 minutes.⁵ Particular care needs to be taken if the patient is phakic.
- If sitting up when NPL is detected, lying the patient horizontal immediately can help maintain retinal artery perfusion.
- It is not necessary to check injection wound site at slit lamp for the rare occurrence of vitreous wick
- Discharge: advise patient to administer antibiotic drops qds for a minimum of 3 days postinjection⁸
- A 24 hour Emergency contact details should be provided to patient upon discharge.
- Patients should be instructed to report any symptoms regarding eye pain or discomfort, increased redness of the eye, or additional blurring of vision (which may indicate endophthalmitis) to the eye department without delay.⁵⁻⁸ This is particularly important in the 2 weeks following injection. Patients should be informed that some blurring of vision is common immediately post-injection; this is often described as 'seeing spots floating in the eye'. The floaters usually resolve after a few days to a week.

References

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