Basic phacoemulsification

Incisions

Nic J. Reus, MD, PhD
Cataract Center, The Rotterdam Eye Hospital, the Netherlands

Comparison of various types of incision

<table>
<thead>
<tr>
<th></th>
<th>Corneal incision</th>
<th>Scleral incision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>Fast</td>
<td>Slower</td>
</tr>
<tr>
<td>Strength</td>
<td>Strong if constructed well</td>
<td>Strong</td>
</tr>
<tr>
<td>Risk of endophthalmitis</td>
<td>Somewhat higher?</td>
<td>-</td>
</tr>
<tr>
<td>Effect on astigmatism</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Creating a scleral incision

- Make a fornix-based conjunctival peritomy,
- Make a shallow groove-incision in the sclera (preferably frown), slightly larger than the width of your keratome,
- Create a tunnel in the sclera by moving your keratome to both sides,
- Advance the keratome in the cornea, going slightly up-hill,
- Having advanced up to clear cornea, lift the keratome so that the keratome’s tip points to the macula and cut through Descemet’s membrane,
- Once through Descemet’s membrane, advance the knife parallel to the iris-plane until the shoulders of the keratome have passed the internal edge of the incision.

Creating a clear corneal incision

- Make a shallow straight groove-incision in the clear cornea, as large as the width of your keratome,
- Place the tip of your keratome in the groove and advance the keratome through the corneal stroma, going slightly up-hill,
- Having advanced a 2 mm in the cornea, lift the keratome so that the keratome’s tip points to the macula and cut through Descemet’s membrane,
- Once through Descemet’s membrane, advance the knife parallel to the iris-plane until the shoulders of the keratome have passed the internal edge of the incision.
Tips for creating incisions

- Maintain appropriate pressure in anterior chamber (with OVD),
- Underpressure will lead to a tunnel that is too long and wound’s edges that are not straight
- Overpressure will lead to a tunnel that is too short
- When in doubt, perform a Seidel test with a fluorescein strip to test for leakage,
- Fixate the eye by grasping the conjunctiva at the limbus with forceps (e.g., Hoskin 22)