

TUNNEL WOUND FASHIONING

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Aim: To fashion an incision in non-Phaco small incision cataract surgery (SICS) that has the following capabilities:

- 1) Allows removal of the nucleus in toto (without splitting).
- 2) Has better approachability into the AC
- 3) Has lesser corneal complications.
- 4) Has minimal effect on astigmatism (as incision is in the astigmatism free zone).

Method: All patients were dilated with tropicamide eyedrops. Lastly one drop of atropine was instilled to prevent pupillary constriction during nucleus delivery. Surgery was done in the following steps.

- 1) SR bridle stitch.
- 2) Adequate fornix based conjunctival flap.
- 3) Incision with a No. 11 blade. A straight incision of 5 - 5.5mm with radial 1 mm backcuts OR a frown incision with straight 1 mm backcuts on either side of the incision was made. (Fig 1). Side pockets were formed. The tunnel was made in a routine fashion.
- 4) Continuous curvilinear capsulorhexis.
- 5) Hydrodissection and hydrodelineation.
- 6) Nucleus rotated and mobilized in the anterior chamber with a modified dialler (stouter and blunter tip).
- 7) Nucleus delivered in toto with modified vectis (vectis of length 5.5 mm, breadth 5 mm and serrated on the upper side).
- 8) Irrigation aspiration to remove residual cortex. No side port was required as 12 o'clock cortex was removed easily due to increased maneuverability.
- 9) PC IOL insertion.
- 10) Subconjunctival injection of gentamycin and dexamethasone (0.25 cc each).
- 11) Cauterization of conjunctival flap.
- 12) Instillation of chloramphenicol applicap and pad.

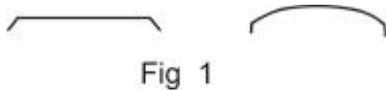


Fig 1

Results:

Of the 82 cases studied, the post-operative astigmatism found was as follows:

- 19.51% had no astigmatic error.
- 8.46 % had minimum astigmatic correction i.e. below -1 cyl axis 90.
- 63.4 % had astigmatic error in the range of -1 to -1.5 axis 90.

4.86 % had astigmatism above -1.5 cyl 90.
One patient had with the rule astigmatism
No corneal complications were reported in any patients.

DISCUSSION:

In the routine method of tunnel incision (i.e. without the backcuts) a non compressible tunnel is created. Hence the nucleus has to be "dragged" towards the incision for engagement. Also the force vectors that act on engagement of the nucleus are directed towards the dome of the cornea. i.e. towards the endothelium causing endothelial cell loss. We have termed this as the "dragging effect". (Fig 2).

In our method of incision fashioning, due to the backcuts a fully compressible posterior wall of tunnel is created. Hence not only is engagement of nucleus easier (by just depressing the posterior wall) but the nucleus slides very quickly out of the anterior chamber (Fig 3-1). The force vectors that now act are not concentrated towards the dome but go peripherally towards the angles. Hence endothelial cell loss and damage is lesser. We have termed this as the "sliding effect" (Fig 3-2).

Note that: Our incision differs from the Blumenthal incision in the making of side pockets, as in the Blumenthal incision the side pockets are made

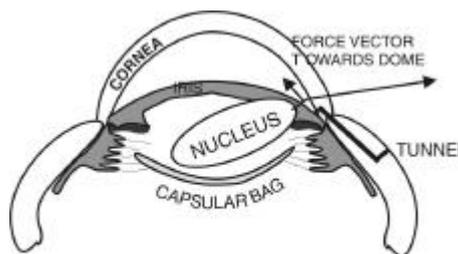


Fig 2
DRAGGING EFFECT

inside the tunnel which merely extends the horizontal wound on either side. The wound hence acts as one unit. So the force vectors do not change direction. As opposed to this, separate incisions given as per our method, leads the wound to act as a triple unit (1 main and 2 backcuts) therefore diverting the force vectors to our advantage.

ADVANTAGES:

- 1) Creating of a longer actual incision (7-7.5mm) in astigmatic free zone.
- 2) Force vectors acting are along the periphery and

not towards the dome. Hence lesser corneal complications.

3) No side ports required as 12 o'clock cortex efficiently removed with our incision.

4) More space for maneuvers of the nucleus.

5) "Sliding effect" as against "dragging effect" of nucleus.

6) Easier nuclear engagement.

7) Nucleus can be delivered in toto. Hence soft as well as hard cataracts can be easily managed.

8) Cost effective, as only additional investment is a

serrated vectis which does not cost more than Rs 150/-.

9) No necessity of drip in anterior chamber.

10) Easy to learn.

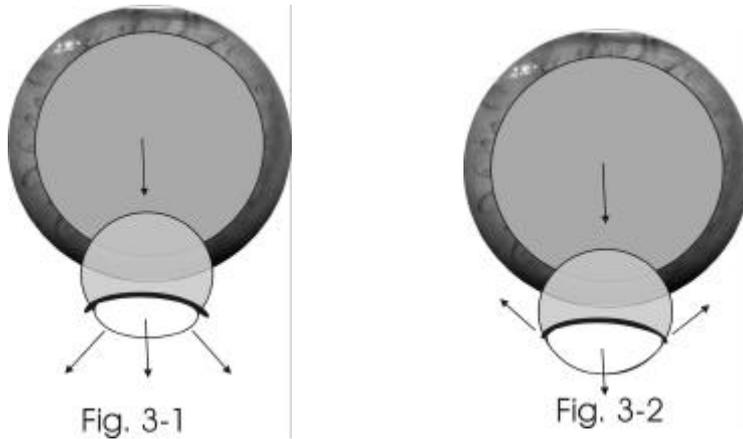
DISADVANTAGES:

1) longer than 1 mm backcuts can cause sagging of the posterior wall of the tunnel.

2) trauma to the ciliary body to be watched for.

3) Chances of iris trauma and dialysis, especially at the 6 o'clock position by the vectis if the anterior chamber remains shallow during nucleus delivery.

SLIDING EFFECT



I have gathered a posie of other men's flowers, and nothing but the thread that binds them is mine own.

John Bartlett

The thief steals from himself. The swindler swindles himself. For the real price is knowledge and virtue, whereof wealth and credit are signs. These signs, like paper money, may be counterfeited or stolen, but that which they represent, namely, knowledge and virtue, cannot be counterfeited or stolen.

Ralph Waldo Emerson (1803–1882), U.S. essayist, poet, philosopher