

WWW 15 Panellists



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Peng Khaw (PK), Nicola Freeman (NF), Ken K. Nischal (KKN)

1. Could we do a limited anterior vitrectomy in an attempt to deepen the AC?

AS: It's a possibility, in selected cases

RC: In case of phakic eyes, I would not do it

SK: We do not do it in our centre. I feel it's too invasive and in a tiny eye would be more dangerous.

PK: Need to establish why a/c is shallow. If structural, e.g. microphthalmos, then can be done to enable lens surgery/tube surgery

NF: I agree with Dr. Kaushik's (SK) response, as above

KKN: the role of vitrectomy in some cases of aphakic glaucoma is clearly to avoid the tube being blocked. Even then it is not often needed in every case. In the case discussed the anatomical or developmental cause of the glaucoma makes it very unlikely that vitrectomy in this phakic child would deepen the anterior chamber

2. Some parts of the world can't get mitomycin - what to use / do in such cases?

AS: Maybe steroids? Very careful dissection with cauterization of bleeding

RC: Lidocaine and corticosteroid or Avastin

SK: Maybe try single suture Trab. or Combined trab. with trab. Dr. Anil Mandal shows very good results with this technique without MMC

PK: Use 5-Fu 50 mg / ml on sponges for 3 minutes, strontium 90 beta radiation 10 Gy if available +/- Avastin 1.25 mg.

NF: Albeit not as effective, Five fluorouracil (5-FU) is an acceptable alternative. We have used 5-FU 50 mg / ml x 5 min when MMC was not available.

KKN: If MMC is not available, then try to use 5FU- ( 25mg/ml unless an infant or African American origin in which case 50mg/ml for 3 mins). IF 5FU is not available then use releasable sutures which you can release at 1 week after surgery if needed to increase flow .This is especially helpful in infants .In infants the sclera maybe very elastic so you

may need to leave some viscoelastic in the anterior chamber . For details please see Low S, Hamada S, Nischal KK. Antimetabolite and releasable suture augmented filtration surgery in refractory pediatric glaucomas. *J AAPOS*. 2008;12(2):166-172.

### **3. Do you place the tube in sulcus in phakic children?**

AS: Never

RC: Never

SK: Only if there is complete closure of the angle and there is no space to put it safely in the AC. We snip away a little part of the iris at the root using a vitrector and place it just away from the lens equator over the zonules

PK: Rarely, as risk of lens damage

NF: Have never needed to do this, but if the situation arises, we will follow Dr. Kaushik's (SK) advice as above.

KKN: I have only done this in pseudophakia eyes to protect the cornea

### **4. Is massage possible in eyes with GDD?**

AS: Yes. When I observe hypertensive phase with IOP over 18-20 in the postop, I start beta-blockers + dorzolamide drops, increase steroids and massage performed over the inferior sclera, twice a day. I find it to be very effective, in one-two weeks I start progressive reduction of steroids (1 drop a day every 2 weeks) and if IOP decreases below 12-14, I try to stop antihypertensive drops

RC: I think it is possible, but probably not too useful

SK: Usually massage is not required. Theoretically it could be possible to push aqueous into the tube using ocular massage.

PK: Yes, but no long-term proof of efficacy.

SK: I'd be reluctant to rely on a child performing this technique. Have massaged paediatric blebs that seem to be undergoing early encapsulation and have had some success.

KKN: Yes I do ask parents to massage; yes it does work but I don't know if the long-term outcome is better compared to not doing it

### **5. Is there any cutting age to start using MMC? Do you use it even in early ages?**

AS: I don't do trabeculectomy below 18 months of age and I use MMC in almost every case. Exception: very thin conjunctiva with very thin sclera

RC: Yes, in pigmented eyes and second surgery

SK: We use it whenever we do a trabeculectomy because of the very high chance of sub-tenon's fibrosis. Yes, we use it in neonates also.

PK: Can be used at any age BUT surgery has been extremely well controlled, particularly flow to prevent hypotony.

NF: The younger the patient, the higher the risk for medium and long-term failure. We use MMC when placing glaucoma tubes in neonates

KKN : I use MMC at any age. ( 0.4mg/ml for 2 mins in under 1 yr , 0.2mg/ml for 4 mins in >1 yr )

**6. Dr. Sushmita Kaushik: Do you do a peep hole routinely for all cases or only when you suspect risk of iris incarceration?**

SK: No. I use a peep hole only when I cannot see any angle structures on gonioscopy and there is no space in the AC to implant the tube safely.

**7. Could the panel please let us know how Avastin works and how to use it?**

AS: I don't use it in paediatric glaucoma surgery

SK: Avastin is anti-VEGF. It is believed to act by inhibiting scar formation and fibrosis through the inhibition of angiogenesis information, since vascularization of conjunctiva is an important reason of bleb filtration failure. VEGF is also postulated to have a direct effect on fibroblasts, which if inhibited by bevacizumab, scar formation, and fibrosis would be modulated. However, there is no evidence to show that Avastin is better than MMC for bleb survival.

PK: Neutralises vascular endothelial growth factor. VEGF causes massive leakage of proteins which stimulate wound healing.

NF: We have been using in paediatric uveitic glaucoma up until now, but following the discussions from this meeting, we will be using intracameral Avastin (in addition to MMC) in all paediatric glaucoma tube implants. Avastin dose: 1.25 mg and adult dose (2.5 mg in 0.1 ml) in teens.

KKN : I have not used it . I look forward to some published outcomes.

**8. Can you use intracameral Avastin in goniotomy and trabeculotomy to limit fibrosis?**

AS: No

RC: Never used

SK: We do not use it routinely. We had tried earlier as intracameral injection at the end of surgery. But could not demonstrate any obvious benefits. However, we use it routinely one week prior to planned surgery for Neovascular glaucoma. On table the surgery is cleaner with virtually no bleeding form possible NVA.

PK: Yes, although not yet proven in randomised trial.

NF: Have not used Avastin in angle surgery.

KKN : I have not used it

**9. How often do you observe hypertensive phase after Ahmed valve implant in infants?**

AS: Don't know exactly, maybe 15-20% of cases?

RC: I use Baerveldt

SK: Very often in all young patients. We use the Aurolab AQUEOUS Drainage implant (AADI) which is the same design as the Baerveldt and find it much better. Aqueous suppressants given from soon after surgery and continued for long appear to reduce the high bleb phase to some extent

PK: I don't use Ahmed routinely. Less common with Baerveldt.

NF: We predominantly use the AADI (a non-flow restricted glaucoma drainage device that requires tube ligated with an absorbable suture to control flow initially and an intraluminal Supramid suture to further control flow in the subsequent months). We tend to use the Ahmed in uveitic eyes, because of the risk of hypotony. The hypertensive phase is possibly not that apparent in these scenarios.

KKN: The types of eyes I deal with have anterior segment developmental anomalies including conditions like brittle cornea syndrome, Arterial tortuosity syndrome, keratoglobus and so I use a ligating vicryl suture EVEN with Ahmed tubes and under these circumstances I have a hypertensive phase in upto 50% of these type of cases

**10. Dr. Ken Nischal: I missed the tip to identify schlemm's canal during trabeculotomy. Could you kindly repeat it?**

NF: Dr Ken's tip - occlude the jugular vein on the same side.

KKN : please see Medsingh A, Nischal KK. Technique for identifying Schlemm's canal in paediatric glaucoma surgery. *Br J Ophthalmol.* 2015;99(5):715-716

**11. At which stage of your trab. do you inject Avastin?**

SK: If used then intracamerally at the end of surgery

PK: At the end, into the a/c, 1.25 mg.

NF: Intracamerally at the end of surgery, 1.25 mg in 0.1 ml.

KKN : I do not use

**12. Does the panel prescribe cycloplegia or pilocarpine after a goniotomy?**

AS: Not as a protocol. I prescribe cycloplegia only if hyphaema the day after surgery. I prescribe pilocarpine only if at the end of surgery there is mydriasis - low concentration, few doses

RC: Pilocarpine for few days

SK: We routinely prescribe pilocarpine, 2% TID for 4 weeks. We noticed increased PAS if it was continued beyond that

PK: Pilocarpine 1-2% tid, 1/12, bd 1/12, od 1/12. Often both eyes to prevent amblyopia, improve flow and development in the other eye.

KKN Pilocarpine 2 % tid for 4 weeks

**13. What is the reason for glaucoma secondary to steroids?**

AS: Increase of the aqueous outflow resistance produced by changes in the trabecular meshwork microstructure or by deposition of extracellular matrix material in the TM, or by other proposed mechanisms

SK: In steroid-induced glaucoma, there is increased production and decreased destruction of the extracellular matrix of the trabecular meshwork. There is increased deposition of glycosaminoglycans, fibronectin, elastin, and Type IV

collagen and reduced activity of matrix metalloproteinases. Trabecular meshwork cells have glucocorticoid receptors, and steroids may act on them to alter cell migration and phagocytosis, thus increasing aqueous outflow resistance and a rise in IOP.

PK: Probably production of new proteins, which obstruct meshwork and bleb flow sometimes.

NF: You could watch a recording of 'WWW 8: Paediatric Cataract - The Stuff We Don't Talk About' on the WSPOS [YouTube channel](#). Steroid response has been discussed extensively there.

KKN : likely induction of proteins that block meshwork.

#### **14. How many goniotomies does everyone do in their respective practices (before moving on to another procedure)?**

AS: Usually one or two, but depending on the angle appearance, I can do up to 4

RC: At least 2

SK: We do 2 before going on to a trab.

PK: Maximum usually 180° x 2.

NF: We first do nasal, then a temporal goniotomy if needed. 360 degrees goniotomy at one sitting is seldom possible, due to the loss of view secondary to the small bleed in the operated angle. Following two prior goniotomy procedures, an EUA of the angle may show that there are still significant areas of angle that were not operated. Usually this is in the inferior and superior angle if the initial surgeries were nasal and temporal. If the initial goniotomies did have some effect and some un-operated angle remains, then a third and even fourth goniotomy in the unoperated angle may have an additional effect. This approach is certainly useful when you require only a little more IOP control or you are particularly reticent to perform a filtration procedure in that specific patient.

KKN : Usually 2 -nasal and temporal. Unless one was done by a fellow in which case I might go back and re-do that one as well

#### **15. Is Paul GDD better for infants?**

AS: I don't have any experience with Paul GDD

SK: It is not marketed in India

PK: No evidence to suggest this to date.

NF: Not available in South Africa

KKN : have not used

#### **16. When you do trabeculectomy, do you use mitomycin C in every child? If so, at what concentration?**

AS: I use MMC in almost all the cases. Concentration is always 0.2 mg/ml, which varies is the time of application: usually 2 minutes, but in very pigmented patients or in cases with very thick tenon, 3-4 minutes

RC: In pigmented eyes, second surgery or uveitis: 0,2-0,4 for 2-3 minutes

SK: Yes; 0.2 mg / ml for 2 minutes. May increase time to 3 minutes in very refractory glaucoma. We do not alter the concentration.

PK: Yes, mostly 0.5 mg/ml but secure closure (using Moorfields Safer Surgery System in my case) is critical to prevent hypotony etc.

NF: 0.2 mg / ml to 0.4 mg / ml x 2 min - higher concentrations in cases with higher risk for failure e.g. darkly pigmented, multiple previous procedures, many years of topical medications. Alternatively, if the MMC is already pre-mixed at 0.2 mg / ml, then x 3 – 4 min is used for high risk cases.

KKN \_yes : see my previous response on MMC for answers to concentration etc

**17. Dr. Peng Khaw: Do you have a video of infusing the eye?**

PK: Yes. [www.ucl.ac.uk/iio/research/khaw-videos](http://www.ucl.ac.uk/iio/research/khaw-videos)

**18. Does anyone on the panel do trabeculotomy in two different places at the same time?**

AS: No

RC: No

SK: No, at one quadrant at a time.

PK: With the itrack, we do 360°. If you use trabeculotomy probes, then it is about 60° right and left.

NF: When doing trabeculotomy we do the first procedure sitting temporally (i.e. temporal angle) and the second procedure, if required, sitting nasally. This way the superior 180 degrees of conjunctiva is left virgin - for the possibility of needing filtration surgery later.

KKN : I only do trabeculotomy with trabeculectomy as a combined procedure

**19. Does anyone on the panel do trabeculotomy inferiorly?**

AS: No

RC: No

SK: No; we may put a GDD inferiorly, especially in glaucoma following PPV and silicon oil injection

PK: Yes, I changed 20+ years ago to spare the superior conjunctiva.

NF: If only the inferior angle had not yet had angle surgery and a goniotomy was not possible, then we would do an inferior trabeculotomy. If there was an adequate view for goniotomy then sitting superiorly and operating on the inferior angle would be much easier.

KKN No

**20. What's the Dose for Avastin?**

PK: 1.25 mg. Use the same dose as per macula degeneration.

KKN In infants if I were to use I might consider halving the adult dose to 0.625mg but I have not used it. This is the dose I use when injecting subconjunctivally for corneal neovascularization in children under 8 yrs of age

**21. Is it possible to cut Tenon's capsule if MMC isn't available? As in, if the Tenon's capsule is very thick & Mitomycin isn't available, would you consider cutting the Tenon's capsule?**

AS: No, if MMC is not available I would recommend very careful some dissection of the space between tenon and sclera, with cautious cauterization of bleeding. I think resection of Tenon is dangerous in a small child & would leave the bleb unprotected in case there is any trauma, etc.

RC: No

SK: We only cut Tenon's if it is very exuberant and comes in the way of suturing the conjunctiva. Otherwise we let it be.

PK: Not routinely. No good evidence that this works in the long term; if the Tenon's is getting in the way, I will thin it.

NF: We do not remove Tenon's, but we make sure it is pulled well away from the rim of conjunctiva that needs to adhere to the limbus

KKN I routinely cut the anterior Tenon's about 1-2 mm to allow good adherence of conjunctiva to the limbus

**22. Will Avastin cause problems in aphakic glaucoma, where it may go in vitreous cavity?**

AS: Maybe

SK: Am not sure of the answer; but thinking aloud, why should it cause harm even if it goes into the vitreous?

PK: Not as far as we know. Avastin is routinely delivered to the vitreous cavity.

KKN -I don't use it but would use half adult dose in children under 8 yrs of age

