Answers to Audience Questions - WSPOS Worldwide Webinar 8:
Paediatric Cataract - The Stuff We Don't Talk About

WWW 8 Panellists


Regitze Bangsgaard


Ramesh Kekunnaya


Boris Malyugin


Ken Nischal


Abhay Vasavada


David Walton

Regitze Bangsgaard (RB), Boris Malyugin (BM), David Walton (DW), Ramesh Kekunnaya (RK), Ken Nischal (KKN)

1. **Do you give systemic steroids post surgery?**

   RB: No

   BM: No

   DW: No

   RK: No except in some cases of JRA related and other Uveitic cataract.

   KKN: very rarely. Only if it is a uveitic cataract. Then the child gets IV dexamethasone on the table and then reducing dose of prednisone 1 mg / kg daily tapering over 6 weeks.

2. **Any one uses topical NSAID instead of steroid?**

   RB: We have to study if that is enough.

   BM: I do currently combine steroids and NSAIDs based on the PREMED study results (although this study is relevant for adult cataracts, I think it has some relevance to pediatric as well).

   KKN: No

   DW: I routinely add NSAIDs with steroid BID

   RK: I prefer only steroid, Prednisolone acetate

3. **Do you not find more inflammation and anterior visual axis opacification with less steroids?**

   RB: No

   DW: No

   RK: Yes, I do see happening sometimes, patients don't instil the eye drops as per prescription. I feel optimum dose of steroid and atropine / Homatropine drops are very essential in reducing inflammation and VAO thereafter.

   KKN: I find the use of intracameral preservative free dexamethasone to be very effective in preventing intraocular inflammation. Please see
   Mataftsi A, Dabbagh A, Moore W, Nischal KK. Evaluation of whether intracameral dexamethasone predisposes to glaucoma after paediatric cataract surgery. J Cataract Refract Surg. 2012 Oct;38(10):1719-23.

4. **Are there any drugs that can reduce the fibrotic process and in turn reduce the incidence of aphakic glaucoma?**

   RB: Not to my knowledge

   DW: Excellent question. I am actively working on this. Please E-mail me for progress

   RK: I am not very certain about this. When I use atropine in infants and if the parents use it as per prescription I see less glaucoma in them (probably due to less inflammation and less LEC proliferation?). This is just an observation. Additionally, polish the capsule up to the equator to clear all the LECs.

   KKN: there are none at present. SO the best thing is to do careful lens capsule polishing so we can reduce the lens epithelial cells remaining

5. **Do you use intracameral triamcinolone as proposed by ventura?**

   RB: No we do not.

   BM: no, only in case of anterior vitrectomy in order to stain the vitreous strands

   RK: No, I do not use it.

   KKN: for me the intracameral preservative free dexamethasone is enough

6. **I had case with rubella cataract, couple of weeks after surgery a fibrotic membrane covering the iris surface was developed. By the time the membrane extended more and more. What would you suggest to do?**

   RB: If high doses of steroids have to be given, then it is just necessary to be aware of the risk of adrenal suppression and preferable make a SYNACTHEN test.

   BM: I think it is a good idea to consider TPA intracameral injection (TPA - tissue plasminogen activator).

   DW: Wait 2 months and consider excision

   RK: Increase steroid and use atropine eye drops which should reduce the inflammation/membrane. If not, best to perform membranectomy if it is dense and approaching visual axis

   KKN: The membrane is coming from very leaky iris blood vessels which are often seen in these cases especially because there is a lot of inflammation. You are going to have to remove the membrane and then use intracameral and also periocular steroids (1 mg / kg of triamcinolone orbital floor)

7. **Any one uses intracameral moxifloxacin in paed. cataract surgery?**

   BM: I do routinely use cefuroxime. However, Moxy is a good option too.

   RK: I use this as a protocol in all cases. Vitreous cavity is opened in all cases. There is evidence that this reduces incidence of endophthalmitis.

   KKN: I do not because I do not have dedicated ophthalmic nurses so I would be afraid that it was mixed incorrectly

8. **Do you recommend bilateral same day paediatric cataract surgery?**

   RB: We do that in our dept.

   BM: I do not do that.

   DW: I do not routinely but may be necessary for some families

RK: Not as a routine, but in few high-risk cases where the second GA within few days is difficult.

KKN: only if the anaesthetists are worried about a repeat anaesthetic within 2-3 weeks of the first eye. Then I would do bilateral

9. **Dr. Bangsgaard: Could methylprednisolone injection have confounded your results. Do you still see similar frequency now without subconjunctival injection of methylprednisolone?**

   RB: No doubt that subconjunctival injections play an important role (has a high dexamethasone equivalence), and it's not possible to taper it, so drops are better, and in as low dose as possible.

   KKN: Since I started using intracameral dexamethasone (2 mg) and orbital floor triamcinolone (1 mg / kg) and topical steroid 4 x daily tapering to stop over 4 weeks for infant and toddler paediatric cataracts, I have not seen any cases suspected of having adrenal suppression.

10. **Do you recommend bilateral simultaneous same day paediatric surgery?**

    RB: We have done that for some years now in our department.

    RK: Please see Q 9. Rare scenario, where a child high risk for anaesthesia. I use two separate set of instruments for each eye.

    KKN: only if indicated by anaesthesia risk

11. **How would you proceed if adrenal suppression is found as steroids are needed to prevent inflammation after cataract surgery?**

    RB: You can give the steroids needed for the eyes, but it is important to be aware of the risk of adrenal suppression. Involve the paediatricians and consider a synacthen test and if pathological, then supplement the child.

    KKN: child must be referred to endocrinology who will give parents instructions as to how much exogenous steroid to give if child suffering from physiological stress seg. undergoing GA for an operation

12. **Big problem in my practice is to reducing inflammation after paediatric cataract surgery. How to manage it?**

    RB: You can give the steroids needed for the eyes, but it is important to be aware of the risk of adrenal suppression. Involve the paediatricians and consider a synacthen test and if pathological, then supplement the child

    RK: Probably these tips will help (a) Minimal or no iris touch during surgery, (b) gentle tissue handling, (c) Optimal dose of post op steroids, (d) Atropine / Homatropine eye drops for 2-3 weeks

    KKN: Please see my regimen above of intracameral dexamethasone (2 mg), orbital floor triamcinolone (1 mg / kg, max 40 mg) & topical steroids as described before.

13. **What concentration and dose atropine and for how long do you use postoperatively?**

    DW: The conc. Is 1%, used 1 X / day. Not necessary with removal of all lens tissue.

    RK: Atropine 1% once a day for 2-3 weeks. Some children develop fever and fascial flush; please caution the parents.

    KKN: Atropine 1 % (>12 months; 0.5% if under 12 months) once daily

14. **Using prednisolone has a greater effect than dexamethasone, right?**

    RB: in many countries dexamethasone is the only eye drop available. We can only get prednisolone as an ointment; but maybe you are right.

RK: Not sure about it

KKN: I'm not sure that it does

15. **Advantage of prednisone over dexamethasone as post op steroids?**

RB: in many countries dexamethasone is the only eye drop available. We can only get prednisolone as an ointment. But maybe you are right.

RK: I am not sure about this. I have been using Prednisolone acetate for years now with good result

KKN: I use prednisone orally in cases of uveitic cataract

16. **Shouldn't the postoperative steroid regimen be adjusted based on the child's weight?**

RB: that might be a good idea also.

RK: No, for topical steroid. It depends on the severity of inflammation.

KKN: The systemic should, but not the topical drop regimen

17. **Is the adrenal suppression related to subconjuctival methyl prednisolone or topical steroids?**

RB: Both, because we no longer use subconj. and we still have 1/3 suppressed.

RK: Yes, it can happen in both situations.

KKN: could be both

18. **We give much less steroid drops!**

RB: But you still can't be sure that you haven't got a problem

RK: OK. Always one need to weigh the risk-benefit on a case to case basis.

KKN: excellent

19. **What is your postoperative regimen of steroids in infants?**

RB: Now it is Tobradex*6 for 3 days and *3 for 18 days and then stop.

DW: Pred. Acetate 1 % BID

RK: Prednisolone Acetate 6-10 times per day depending on case to basis.

KKN: See above

20. **Is there any evidence that pars plana approach is superior to the clear cornea approach or is it a surgeon preference?**

DW: Surgeon preference, but posterior approach is very effective

RK: I prefer clear cornea approach in almost all cases except in few cases of PFV

KKN: I prefer clear cornea approach for the majority of cases

21. **How old should the child be for you to implant an IOL in aphakic children?**

RK: Generally, 4-5 years with few exceptions where there is poor compliance with glass / CL wear, unilateral cataract or dense amblyopia etc. please see: *Shenoy BH, Mittal V, Gupta A, Sachdeva V, Kekunnaya R. Complications and visual outcomes after secondary intraocular lens implantation in children. Am J Ophthalmol. 2015;159(4):720-726.*

KKN: great question; for me it is when I cannot improve the child's vision who is aphakic.

22. **Do you believe that bag-in-the-lens can reduce the risk of post-op. glaucoma significantly, given that lens epithelial cells are not free to move around in the anterior chamber?**

BM: it might be the case; however, I am not aware of any study related to that.

DW: No evidence of this. Cells are released at surgery

RK: Interesting question. I think so. There is no hard evidence for the same

KKN: I believe it can reduce glaucoma in the way you describe

23. **Dr. David: How often we should operate if there is lens epithelial cell proliferation to prevent glaucoma?**

DW: Usually only one procedure is necessary and done after one month.

RK: Better to remove if there is threat to involve the visual axis and in cases of dense clump of LECs

KKN: you should operate to remove as many of the lens epithelial cells as possible

24. **Do you recommend goniosurgery with cataract surgery if you see an abnormal angle at the time of surgery?**

DW: If done early the iris reinsertion forward is only over the CBB. Late cases can remove the TM attachments before the incision, but may not be as successful

KKN: No

25. **Re "excessive steroid use"; what is the steroid use of the panel? Sub tenons celestone on closure? Drops regime post-op?**

RB: Now no subconj. but Tobradex*6 for 3 days and *3 for 18 days and then stop.

RK: Please see Q 21

KKN: see answers above

26. **What lens do you recommend for doing gonioscopy in children?**

DW: In the OR the Koeppe lens works very well

KKN: Barkan-Hoskins lens

27. **Dr. Ken: How do you check gonio angle in clinic for 14 months old under sleep? By retcam?**

KKN: no for these; I use Zeiss 4 mirror gonio lens

28. **How to proceed if angle anomaly is present with cataract?**

KKN: do cataract surgery and watch pressure post op. If pressure rises, then do goniotomy

29. **Do you have reasons to believe that sulcus IOL fixation increases postoperative inflammation and postoperative risk of glaucoma?**

    RK: I think yes. It can be a constant source of subtle inflammation, hence IOL in the bag is most suitable.

    KKN: anecdotally in young patients …YES

30. **What is your preferred surgical goniolens for gonioscopy in paediatric eyes?**

    DW: There are many good ones. May have to be small. I use the original Barkan lens

    KKN: Barkan-Hoskins lens

31. **The retcam is also very good for assessment of angle pre-op. large blob of coupling gel and focus anterior segment.**

    RK: Yes, it can provide useful information

    KKN: agree

32. **What is your preferred goniolens in paediatric cases?**

    KKN: Barkan-Hoskins lens

33. **In cases of monocular cataract (developmental cataract) in children of 6 to 8 years old, would you indicate a multifocal intraocular lens?**

    BM: I do not use multifocal IOLs in children earlier than 18 y/o.

    RK: No

    KKN: no

34. **How useful is to use adrenaline in the irrigating solution?**

    BM: adding phenylephrine or adrenaline to the irrigation solution helps you to maintain the pupil in dilated state, but in my hands, does not make it much bigger. As opposed to it, direct intracameral injection makes the pupil wider within seconds.

    RK: I have been using it for years now. When the pupil constricts after induction of GA I use this fluid intracamerally to dilate the pupil. It works in majority!

    KKN: I always have used it

35. **Is there a limit in the size of eye for using the malyugin ring?**

    BM: as far as the smallest ring is 6.25 mm, it is a good idea not to use it if the cornea is less than 9 mm in diameter.

    RK: I am not sure.

    KKN: not sure

36. **We noticed that Boris made the vitrectomy after implantation!**

    BM: yes, I always do vitrectomy after the IOL is positioned in the bag (for uncomplicated cases). For that I usually introduce the 25 G vitrectomy probe through the corneal paracenthesis (anterior approach).

    KKN: yes, some people do this while others do the whole procedure through a corneal incision anteriorly

37. Do you use bag in the lens in early childhood?

BM: no.

RK: Not routinely. I have used in some with good results. At this point of time cost is prohibitive.

KKN: no

38. New-born (~3-weeks-old now) diagnosed with aniridia and WAGR syndrome. He has small cataracts in the centre of the eye. Not a threat at the moment, but when do we need to operate? Will it be possible to also apply the techniques for the implant of artificial iris to reduce the amount of light? I was wondering if at all possible in babies or toddlers.

BM: we completely stopped using artificial irises in congenital aniridia cases (after doing a number of these procedures in the past, although the kids were usually much older than 3 weeks-old – usually 15+).

DW: Please, observe only. The anterior polar cataracts will not change. Not visually a problem

RK: I would not do any cataract surgery for this baby. Even if you do cataract surgery artificial iris is not required as capsule edges can fuse and prevent excessive light.

KKN: I do not think that artificial iris is helpful or necessary. The capsule will fibrose and act like a new pupil- blocking out light

39. Iris hooks must work best for these small eyes with shallow ac, right?

BM: If you can deepen the shallow chamber by injecting the highly viscous OVD, then the decision is to be made in favour of the pupil expansion ring. If not – consider using iris hooks.

RK: Yes, it works

KKN: yes

40. Do you recommend anterior vitrectomy in any case posterior capsulorhexis in infant and children?

BM: I do use posterior capsulotomy plus partial vitrectomy with anterior approach in these cases. The idea is to break the anterior hyaloid membrane that can work as a scaffold to LEC growth and to prevent PCO / secondary visual axis opacification.

RK: Yes, always. This is important in terms of long-term clarity of visual axis. I do vitrectomy until 8 years of age.

KKN: yes, for all children 4 years and under

41. Is there a best formula for IOL calculation?

RK: No formula is perfect in terms of prediction errors. In our hands SRK 11 / T works very well. Please see: (a) *Sachdeva V, Katukuri S, Kekunnaya R, Fernandes M, Ali MH. Validation of Guidelines for Undercorrection of Intraocular Lens Power in Children. Am J Ophthalmol. 2017;174:17-22.* & (b) *Kekunnaya R, Gupta A, Sachdeva V, Rao HL, Vaddavalli PK, Om Prakash V. Accuracy of intraocular lens power calculation formulae in children less than two years. Am J Ophthalmol. 2012;154(1):13-19.*e2.

KKN: Hoffer Q for under 20 mm axial length (remember to estimate the anterior chamber depth) SRK-T for older children

42. We assess angle using UBM and compare it with actual goinioscope on the table.

KKN: excellent

43. What is your view on cataract surgery in young children with aniridia?

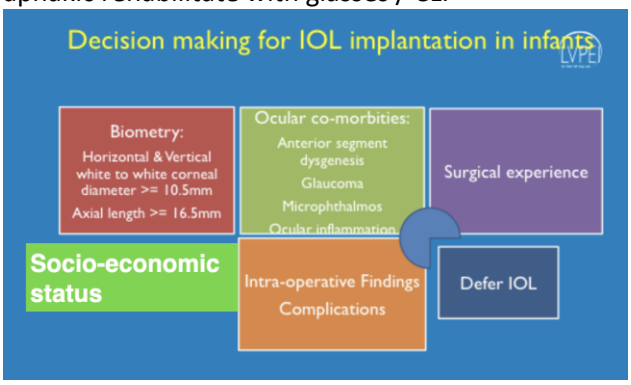
DW: Surgery is rarely indicated

RK: Do it only if the cataract is significant enough to cause visual deprivation.

KKN: I do it regularly if the cataract is significant in size

44. In less than one year of age, should we leave aphakic or implant IOL?

RK: Please assess the below points and then decide about IOL or not. If all fits in, implant IOL, otherwise leave them aphakic rehabilitate with glasses / CL.



KKN: if bilateral and normal shaped eyes – yes I would operate by 8-10 weeks

45. Which is the least traumatic pupil expansion device in children?

BM: I do prefer to inject phenylephrine intracamerally. If that is insufficient – my preference will be the Malyugin Ring (better to use the 2nd generation of the device - Malyugin Ring 2.0 which is thinner and softer, with the size 6.25 mm)

RK: Irrigating fluid >HMW viscoelastic>Iris hooks; in that order

KKN: heavy viscoelastic

46. What is dosage of intracameral epinephrine in children?

BM: 1.5% epinephrine or 1% phenylephrine

RK: I don't use it, but it must be 0.001%

KKN: not sure as I don't use it

47. If we don't have a malyugin ring, can we perform pupilectomy?

BM: if no Malyugin ring, use hooks. Pupilectomy of the pupil is to be avoided at all costs. While pupillotomy with the scissors can be done to cut membranes and or synechiae.

RK: Yes

KKN: of course

48. Is malyugin ring easily removed through the wound?

BM: Malyugin Ring 2.0 goes in and out through the unenlarged 1.8 mm incision. While the Malyugin Ring 1.0 – can be implanted through 2.2 mm incision. The size of the incision for the regular implant is 2.2 mm and more (for higher diopters). I do like to remove the ring utilizing the same insertion device, in that case there is no chance to catch the inner lip of the corneal tunnel with one of the scrolls of the device.

RK: Yes

KKN Yes

49. Can Malyugin ring be used in microcornea patients?

BM: I do suggest not using the MR for the corneas less than 9.0 mm in diameter as the smallest ring size is 6.25 mm.

KKN: not sure; Dr. Malyugin will need to answer

50. What is the incidence of synechiae post op after using these pupil expanding devices in children?

BM: in my hands very rare, however no published data on that currently.

RK: I don't use it, but I don't see any increase when I use iris expanders.

KKN: do not use it

51. Can we use epitrate intra-cameral prep? Do we need to dilate it?

BM: Most probably yes, but that drug is not available in Russia.

RK: Yes, it can be. Please see Q 49

KKN: I'm sorry, I don't use this

52. Do you use 10-0 vicryl or nylon ones in infantile cases?

BM: I do like 10-0 vicryl for corneal wounds

RK: 10/0 Nylon

KKN: for all pediatric cases 10/0 vicryl

53. What about viscoplugging of the incisions instead of sutures?

BM: cannot recommend it, as well as the hydration of the incisions. Both are not very safe and secure. Suturing is the way to go.

RK: I think it's not a good idea. I do not have experience with it. Better to suture the wound.

KKN: not adequate enough – must suture all wounds

54. What is the role of a thick cornea in risk of glaucoma?

DW: Corneal thickness should be measured. Effect of epithelial oedema on pressure measurements also must be considered

KKN: chicken and egg situation; Is the cornea thick because of the aphakia which causes glaucoma? or does a thick cornea compromise the angle. I think it is the former.

55. Can pars plan approach decrease glaucoma risk in these patients?

DW: I suspect if done safely re the retina and the lens anterior capsule and cells are removed more successfully the risk of glaucoma will be less

RK: I don't think so

KKN: not in my opinion

56. From what age do you prefer cataract surgery by pars plana?

RK: Anterior and clear corneal approach for all ages except few PFV cases.

KKN: I always do anterior approach

57. Anyone else see adrenal suppression?

RB: we retrospectively can see on pictures of previous children that we have had this problem for many, many years. What you don't look for you don't see.

RK: Yes, I have seen cushingoid features in 3 cases esp. in infants. One needs to be careful to reduce the dose in these cases and be cautious while taking up for second surgery, as they may have anesthetic complications.

KKN: I have seen it in 4 cases

58. When counselling ped. cataract patients, do any one of you specifically talk about adrenal suppression?

RB: We do and we test and the parents understand it and are happy that we care.

RK: Treating surgeons. Explain about closing the puncta while instilling steroid and atropine eye drops.

KKN: I talk about it after surgery when I ask parents to block the puncta when giving the eye drops

59. Does any particular steroid cause a strong adrenal suppression?

RB: There are most reports in the literature on Dexamethasone, but I don't know if it is because it is the most used steroid.

RK: Any steroid can cause this.

KKN: any type can

60. What do you think about the use of triamcinolone for inflammation? it woks really well and we can use less topical drops post-operative.

RB: It is irreversible. You can't get it out if you get glaucoma. You can't adjust it

RK: Yes, but at the risk of glaucoma needs to be kept in mind with any depot steroids!

KKN: please see my answers about this above

61. Is it better to use atropine eye drops or ointment?

RK: Both are OK. In post op patients, I prefer drops.

KKN: drops are easier to put in but ointment is safer e.g. if a young sibling or the patient were to drink the atropine they would be very ill; this is not the same with eye ointment

62. **How to proceed if angle anomaly is present with cataract?**

    DW: Do the cataract surgery

    RK: Cataract surgery first

    KKN: please see response above

63. **To Ken: Which lens do you use while doing gonioscopy in examination under anaesthesia**

    KKN: Barkan Hoskins lens

64. **Has Anyone tried the Nidek automated gonioscope?**

    RK: No

    KKN: no

65. **What do you mean by minimal steroids postop?**

    RB: always try to reduce and use as little as possible, more is not better. Try slowly over time to reduce your regimen. We thought we were giving what was necessary, but it turned out, that we could do with much less.

    DW: Pred. AC 1%, 2 - 3 X / day for 7 - 10 days with NSAIDs for one month.

    KKN: 4 x d daily tapering to stop over 3 - 4 weeks

66. **Do you have experience with goniosurgery at same time surgery cataract?**

    DW: No. Not a good plan

    RK: No

    KKN: I don't do it simultaneously

67. **Using prednisolone has a greater effect than dexamethasone?**

    RB: in many countries dexamethasone is the only eye drop available. We can only get prednisolone as an ointment. But maybe you are right.

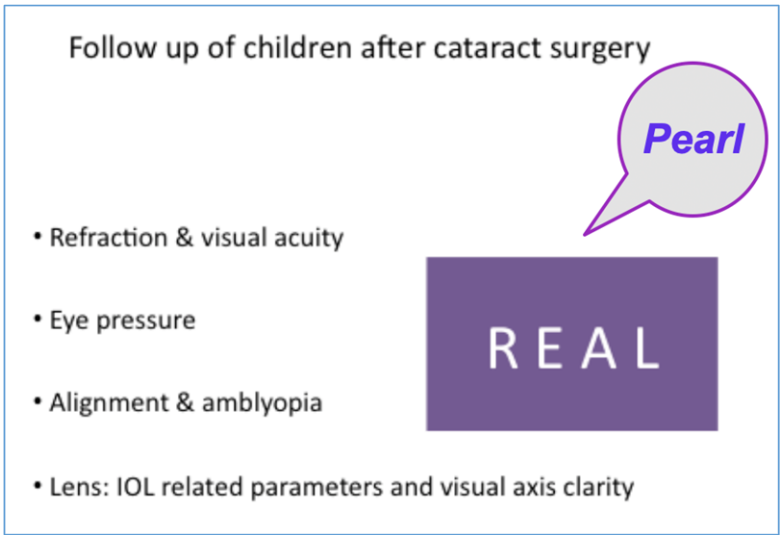
    RK: I don't think so

    KKN: both are equally strong steroids

68. **When do you see symptoms of Infantile Aphakic Glaucoma post lensectomy?**

    DW: Very early…Light sensitivity, corneal oedema, corneal enlargement, fussy child. Can occur within 4-6 weeks after surgery

    RK: Seen few cases as early as 5-6 weeks and as late as many years after surgery. Hence one must do REAL follow up of these patients thorough out their life. Please see pneumonic "REAL"



KKN: can be in first 3-4 months or as long as several years

69. **Does systemic steroid have a role in the management of inflammation post cataract surgery? Especially in pigmented eyes?**

RB: our population is generally light pigmented, but I would not be happy to use systemic steroid.

RK: No, please see Q 1

KKN: Not in my experience

70. **What age does everyone else aim for unilateral cataract?**

RK: Around 6 weeks

KKN: 6 weeks

71. **Can bag-in-the-lens prevent / minimise these changes in the angle postoperatively?**

RK: Conceptually, yes

KKN: not sure, but theoretically, yes

72. **What is the steroid regimen that everyone uses?**

RB: Now it is Tobradex*6 for 3 days and *3 for 18 days and then stop.

RK: Please see Q 21

KKN: please see above

73. **How do you calculate age for surgery in premature children with cataract? Calculating after they reach the 40 weeks or from the date of birth?**

RB: we do date of birth, but we extremely rarely see prematures with cataract.

RK: I consider corrected age

KKN: corrected age

74. **At what age do IOLs implant in children?**

RK: Please see Q 47

KKN: the million-dollar question. You have to build up your confidence and start with older children. Once you are comfortable then I would suggest considering children between 1-2 yrs. Then once you are comfortable with this age group, I would go down to 4 months of age but only if BILATERAL cases. Unilateral cases are usually due to persistent fetal vasculature and these eyes may not do very well.