**Evaluation and Treatment of Intermittent Exotropia**

*Panelists: Cynthia Alley, MD; James A. Deutsch, MD, Kammi B. Gunton, MD*

**Nelson:** The first case is a 9-month-old child. The parents note that the eye drifted intermittently but aren't sure how often, at least daily. The patient seems to fixate well from each eye and has an intermittent exotropia of 30 prism diopters at both distance and near. Side gaze is difficult to measure but we'll assume that it is comitant. You notice that one eye seems to stay out even through blinking. The cycloplegic refraction is +1.0. Dr. Alley, how would you treat this child?

**Alley:** First I would try to get a better history about how frequently they're seeing the drifting, whether it's only in the morning and evening, how many times a day they're seeing it, and if it's getting better or worse or staying stable. Initially I would monitor this child for a few months and see them a couple of times.

**Nelson:** Let's assume that both parents work and they were not able to provide more details other than they notice the drifting daily. So you would observe that child initially?

**Alley:** Yes.

**Nelson:** Dr. Deutsch, how would you handle this child?

**Deutsch:** If one eye is going out more than the other, that says to me that eye is not seeing as well as the eye that's straight. If I observe it and it's consistent, then I would start patching. I'm not anxious to operate and the first principle is always to optimize the vision. You've told us that it's +1.0 in each eye, so glasses aren't needed. I wouldn't want to do full-time patching because that would probably make the exotropia worse, but I would start a couple of hours a day and then observe.

**Gunton:** I like the idea of patching because if my assessment is that the control is poor, then I believe that the risk for amblyopia is greater and the child is going to spend more time tropic rather than having proper alignment. I haven't had much success with patching if the exotropia truly alternates, but I have done patching in a few young children with predominantly one eye that's drifting and at least delayed surgery.

**Nelson:** What are your criteria for surgery versus observation in a setting in which the history of the family is not that helpful other than the fact that they note the eye going out daily, and the eye goes out 30 prism diopters and appears to not have good binocularity?

**Alley:** When I'm evaluating the child in the office, I watch for how long it takes to realign the eyes after I do my alternate cover tests. If it's 5 to 15 seconds, then I would be more confident recommending surgery at that time. I always do the measurements on more than one occasion.

**Nelson:** So if this patient meets the criteria for surgery that you outlined but the history is very poor, how do you handle that scenario?

**Alley:** During the first visit, I introduce the topic of surgery to the parents. I'll say we might be heading toward surgery and here are the reasons why. There's already some evidence of him favoring one eye over the other. The longer we let that go, the more pronounced that becomes, the harder it becomes to treat. I'll give them time to think about it. Then I schedule a follow-up visit and say that if we're still seeing what we're seeing today, we'll have to have a more serious discussion about surgery.
Deutsch: Going back to the initial 9-month-old patient, that’s pretty young for an intermittent exotropia. I would check that we’re not missing something in the retina, fovea, and optic nerve and recheck the pupil reactions. I have seen children in the first year who have presented with intermittent exotropia without one eye preferred and have actually gotten better on their own, just through observation.

In your second example where you are more concerned about the deviation than the parents are, I think you need to educate the parents. I prefer not to do surgery on a child younger than 1 year with an intermittent exotropia. Studies have indicated that anesthesia risks may be higher with children younger than 3 years, and there are concerns that by operating early you turn an intermittent exotropia into a monofixation syndrome and a little esotropia. I know some people will wait until the child is 2 or 3 years old to even contemplate surgery. I don’t think you necessarily have to wait that long, but there may be benefits if you can delay somewhat.

Gunton: I agree with what the other panelists have said. One of the things I like to do if the child has poor control and the exotropia is present is to ask the parents to look at the eyes and see if they can recognize it, because that lets me know whether I need to focus on the sequela of letting the intermittent exotropia become constant and how good a historian the parents are going to be for me. If the eye is exotropic and they think the eyes look straight, I know that whatever history I’m getting from them is not going to be reliable in my opinion and then I would focus more on the fact that loss of binocularity could lead to amblyopia. If they do see the exotropia, I would ask them to look for it at home and tell me how often they see it when they’re with the child. I also think it’s important not to make them feel guilty if they can’t recognize it.

Nelson: The next case is similar to the first case, except the child is 3 years old. Both parents work full time and notice that one eye seems to drift out occasionally. The visual acuity is 20/30 in each eye. He has an intermittent exotropia of 20 prism diopters at distance and near and there’s no incomitance. During your examination, you notice that one eye is out all the time when the child is focusing at distance. This does not appear to be amblyopia. The exotropia is not constant, but it’s out a good part of the time when the child is focusing at a distance and it remains out for a while after blinking. The cycloplegic refraction is a mild hyperopic correction +1.25.

Alley: For this case I would again approach the parents and at least try to get a sense of whether this has been going on for 6 months or 2 years. They may not know how frequently it’s happening, but if they brought the child to me at 3 years of age, I’m assuming that it’s become noticeable enough to seek treatment. I would discuss the risk factors of letting it continue to progress for a period of time, such as loss of potential for binocularity and possible amblyopia. If I’m seeing it spontaneously out in the office a good deal of the time, I would start the conversation about potential surgery and schedule a follow-up visit.

Nelson: When would you follow-up?

Alley: Probably 1 to 3 months. If the parents had not even considered surgery and I’m just mentioning it for the first time, they might need to process it and I may give them a little more time.

Nelson: Let’s say they came back in 3 months and they still can’t tell you how often it happens. Your examination shows the visual acuity is 20/30 in each eye and the eye is out on a regular basis with poor control. Would you continue to observe or would you modify your treatment plan?

Alley: If the parents were really uncomfortable with the concept of surgery, I would continue to observe him, but I would explain to the parents that if we let this go to the point that it becomes constant, we run a much higher risk of these secondary problems and treatment may become more difficult. I would explain to them that we’re following very closely because we want to make sure amblyopia doesn’t develop. I would also make sure I was getting stereo tests so I can have an objective way to monitor whether it’s breaking down or progressing and becoming worse. I probably wouldn’t go more than 3 months at a time without checking in with this family.

Deutsch: I would handle this a little differently. A 3 year old who’s 20/30 in each eye doesn’t necessarily not have amblyopia. When you test a 3 year old, most likely you’re testing the picture charts and that more or less goes to 20/30 in most of our projectors. So you could have one eye that’s 20/30 and one eye that’s 20/15. If I see just one eye going out, to me that says amblyopia and I would start patching. I would have the discussion that
surgery may be necessary but we’ll try some things first and this way you get the parents involved. You have some time and, on occasion, I have seen young children really improve. As Dr. Gunton said, patching can improve the ability of the eye that is going out to see more clearly. I also agree with Dr. Gunton that I have not been happy with alternate-day patching when it’s either eye going out, but for just one eye going out, I definitely would do that.

**Nelson:** Let’s assume the patient comes back several months later and the visual acuity is still 20/30 in each eye and maybe either eye will go out. At this point, the right eye could be the left eye and, again, the parents don’t seem to notice that much but it’s clear that the eye is out a lot.

**Deutsch:** I would ask if they notice that one eye is closing when he’s out in the sun and if they say yes, I’ll say that must mean that he’s not enjoying the experience, that the bright light is bringing out perhaps some double vision that’s annoying to him. I would then argue that he’s losing his ability to use his eyes together when it does go out. We do have an operation that can help to keep his eyes straight and I would discuss the pros and the cons. At 3 years old I’m more inclined to proceed with surgery.

**Nelson:** Dr. Gunton, how would you approach this patient?

**Gunton:** I agree with the other panelists. An intermittent exotropia at near can lead to functional difficulties for children when they are learning to read. Sometimes I will put a base-out prism in front of the parents to simulate an intermittent exotropia and ask them to try to read so they can see it’s uncomfortable and help them understand the symptoms the child may be having that he or she may not be able to articulate. I think when you can link it to something that they have experience with, they understand better and they don’t want their child to have difficulty with these functional activities.

**Nelson:** The next case is a 5-year-old child with intermittent exotropia noted frequently by the parents. The visual acuity is 20/30 in each eye. There is an intermittent exotropia of 20 prism diopters at distance and near. Again, one eye seems to close often at distance. The cycloplegic refraction is +4.50. Dr. Alley, how would you handle this case?

**Alley:** For this child, the intermittent exotropia is clearly increasing in frequency. Theoretically, putting a hyperopic correction in front of the child could potentially make the exotropia worse. However, +4.50 for a 5 year old learning to read could be problematic. I may try to give a partial hyperopic correction, maybe +2.0 or +2.5 diopters off, and reevaluate in a couple of months to see if there is improvement in the visual function.

**Deutsch:** There are studies that show approximately +2.50 hyperopic correction does help, which is sort of paradoxical because you’re taking away their accommodative relating to conversion. But I agree that giving the better vision can sometimes increase the control. I had a patient just like this several weeks ago who came back wearing the glasses and in fact it was hard to even get her to break at this point.

**Nelson:** Let’s assume in this case that the visual acuity is normal at 20/30 with isolated letters and that +4.50 was the cycloplegic refraction in the setting of an intermittent exotropia.

**Deutsch:** I agree that it may be helpful to give some hyperopic correction but I would not give the full correction. If someone is focusing through +4.50 diopters at age 5 years, they’re working hard and maybe they’re not working on keeping the eyes together because they’re working so hard just to see.

**Gunton:** I think that a +4.50 refractive error is affecting visual development and I would give the full cycloplegic refraction. It’s already almost significant enough without the refractive error that you’re considering surgery anyway. I think it’s affecting the vision so I’m going to maximize the vision and then deal with the exotropia as the secondary issue. I will be happy if we get improvement in vision that helps with the fusion, but I think vision is the most important aspect.

**Nelson:** I think everyone agrees that they would give some hyperopic correction. So the patient comes back and the visual acuity is still 20/30 and the intermittent exotropia is exactly the same, possibly a little more. How would you handle this child now?

**Gunton:** I think that what you have unearthed is that the refractive component is not contributing in any way.

**Nelson:** Not significantly.

**Gunton:** That makes me happy because then if I address the entire exotropia, I’m not going to end up with a consecutive esotropia. This patient has such poor control that I would talk to the parents about doing eye muscle surgery to try to control the exotropia.
Nelson: And you would operate on this child for the amount of deviation that he presents with his glasses on?
Gunton: Yes.
Alley: I would definitely approach the subject of surgery with the parents.
Deutsch: I concur.
Nelson: The last case is a 4-year-old child with intermittent exotropia noted intermittently. The visual acuity is 20/40 in each eye with pictures. There is an intermittent exotropia of 25 prism diopters, 20 prism diopters at near, and the cycloplegic refraction is -1.50. Dr. Alley, how would you handle this?
Alley: The first thing I would do in this case is correct the myopia. I would give a full -1.50 correction and recommend that the child wear it full time until I see him again in 4 to 6 weeks.
Nelson: Dr. Deutsch, how would you handle this?
Deutsch: By correcting myopia in these intermittent exotropes, you give them good enough control to straighten their eyes maybe one-third to one-half of the time. I might even err on giving a little extra minus and give a -2.0 prescription because this might encourage additional accommodation and a little bit of convergence.
Nelson: Dr. Gunton?
Gunton: I agree with giving the refraction. I would not over minus him because I’m hopeful that the myopic correction alone may be sufficient and if I’m going to over minus, I want to do it because I have to or because I’m doing it consciously. My experience with over minusing children has been that they come back and they need more and more.
Nelson: What is the least amount of myopia that you would give before you decided whether to operate, assuming the child had all of the other criteria to operate?
Alley: For anything more than 1.0 diopter, especially in a 4 year old, I would try the glasses first. If it was really 1.0 diopter, even -1.5 diopters, I would tell the parents that the chances of this fully correcting the exotropia, especially in terms of control, are not guaranteed.
Deutsch: The whole principle is that the vision comes first. I will tell the parents that giving the very mild myopic glasses is not going to be a panacea and that we’re probably going to need to proceed with surgery, but I would like to see what happens when the child is seeing as well as possible. If the visual acuity was 20/40 in each eye and I flash -0.75, I might think about giving that, or I might even think about it for -0.5 just to see what happens.
Gunton: I agree. Vision is the most important thing. I think it’s difficult to get a 4-year-old child to wear a very low myopic prescription for visual purposes only, but I would give approximately -1.0.

This Eye to Eye session was conducted on Thursday, April 3, 2013, during the annual meeting of the American Association for Pediatric Ophthalmology & Strabismus.
The authors have no financial or proprietary interests in the materials presented herein.
doi: 10.3928/01913913-20130708-01