Management of Dissociated Vertical Deviation

Participants: Dawn N. Duss, MD; Scott E. Olitsky, MD; Frederick M. Wang, MD

Dawn N. Duss, MD, is from Pediatric Eye Consultants of North Florida, Ponte Vedra Beach, Florida.
Scott E. Olitsky, MD, is from Children’s Mercy Hospitals and Clinics, Kansas City, Missouri.
Frederick M. Wang, MD, is from Albert Einstein College of Medicine, New York, New York.
Moderator: Leonard B. Nelson, MD

Nelson: We’re going to discuss management of dissociated vertical deviation (DVD). Let’s start with a simple question. How do you measure DVD?

Olitsky: I think there are two ways that I tend to do it. One is an arbitrary scale of +1 through +4. I assume that we all have our own way of using that method. The other is to measure prism deviation with a cover test when I want a specific number. So it depends on what I anticipate my treatment is going to be as to which type of data I want to collect.

Wang: I do the same as Dr. Olitsky. I don’t really quantitate it or measure it with prism bars. I will also annotate whether or not it’s manifest or if I have to elicit.

Duss: I actually try to measure almost every DVD by prism bar if the patient is cooperative enough. I like that quantitative number.

Nelson: What are the general criteria you use as to whether you’re going to correct DVD?

Duss: My main reasons for addressing it are complaints of discomfort or it being socially obvious.

Wang: The same. It’s mostly cosmetic.

Olitsky: I agree. Once the inferior sclera shows, I find that most patients are bothered by the appearance.

Nelson: The first case is a patient with a manifest DVD of 18 prism diopters measured at 4 years old, who also has an inferior oblique overaction in the right eye and no inferior oblique overaction in the left eye. Visual acuity is 20/40 in the right eye and 20/30 in the left eye.

Wang: And how much is the esotropia?

Nelson: No esotropia.

Wang: In that case, I would do an anterior transposition of the inferior oblique on the side of the unilateral DVD.

Olitsky: I try to avoid unilateral anterior transposition. If you look hard enough, you can usually find some evidence of DVD on the other side, which would lead me to treat both sides.

Nelson: Even though the visual acuity is different?

Olitsky: With a mild difference in vision, I would treat both eyes.

Duss: I agree with Dr. Olitsky. I was always taught to treat bilaterally and I agree that you will probably unmask the other side if you operate monocularly. I would consider doing asymmetric surgery. I might anteriorize the right eye and only recess the left inferior oblique.

Olitsky: I may anteriorize the right eye a little more. I think there is some debate about how helpful that is.

Nelson: So when you say advance it more, you mean place it more anterior?

Olitsky: A bit more anterior.

Wang: Is this an alternating patient?

Nelson: No, the patient is 20/40 in the right eye and 20/30 in the left eye, so she fixates with the left eye only because the vision is better. Would you do something differently if she had inferior oblique overaction in both eyes and a manifest DVD only in the right eye?

Wang: I would anteriorize both inferior obliques.

Nelson: The same amount?

Wang: Yes, but I would do a fair anteriorization. I would put them either 0 or 1 mm posterior
at the temporal insertion of the inferior rectus.

**Nelson:** The next patient has a DVD of 20 prism diopters with 12 prism diopters in the left eye and mild inferior oblique overaction. Visual acuity is 20/50 in the right eye and 20/30 in the left eye.

**Duss:** I would approach this with a superior rectus recession bilaterally, fairly large and maybe a little asymmetrically, with the right greater than the left.

**Nelson:** Superior rectus?

**Duss:** Yes.

**Nelson:** Instead of doing an anterior transposition?

**Duss:** Correct, if there’s no inferior oblique overaction.

**Wang:** I would also do an asymmetric fairly large recession of the superior rectus.

**Olitsky:** The vision here is more asymmetric and I’m less concerned about inducing the other eye. I would probably just recess the superior rectus on the 20/50 eye.

**Nelson:** The next case is a patient who has 20/30 visual acuity in both eyes, a DVD of 12 prism diopters in both eyes, and significant inferior oblique overaction.

**Wang:** I would anteriorize both inferior obliques in that case.

**Olitsky:** I would do the same.

**Duss:** I agree and I would do them symmetrically.

**Nelson:** Is it always the inferior oblique overaction that determines the procedure?

**Olitsky:** No. In the previous case, I chose the superior rectus recession because I wanted to restrict my surgery to one side because of the vision difference. I wasn’t concerned about switching fixation. I like doing unilateral superior rectus recession. I don’t like doing unilateral anterior transposition.

**Nelson:** Even in a setting in which the visual acuity is different?

**Olitsky:** If she had visual acuity of 20/30 in the right eye and 20/50 in the left eye, I would not worry about her switching fixation.

**Nelson:** The next patient has a significant manifest DVD of 18 prism diopters. There is no inferior oblique overaction and the visual acuity is 20/30 in the right eye and 20/25 in the left eye, which is not much different from the previous case. In other words, a patient who has significant DVD in both eyes, but no inferior oblique overaction.

**Wang:** I would do both superior recti in that case.

**Olitsky:** I would do an anterior transposition. The point I was making before was that I chose the superior rectus, not because the patient did not have inferior oblique overaction, but because I wanted to restrict my surgery only to the worse eye.

**Nelson:** Is your primary procedure for DVD in most cases anterior transposition?

**Olitsky:** When I’m doing bilateral surgery, I would say always.

**Nelson:** But you would never do an anterior transposition in a unilateral case?

**Olitsky:** I might, but I would prefer to do a superior rectus recession.

**Nelson:** Right. Going back to the other case, if the patient has no inferior oblique overaction, you would do an anterior transposition?

**Olitsky:** Yes.

**Duss:** I would do superior rectus recessions bilaterally.

**Nelson:** Why not do an anterior transposition?

**Duss:** Although I do find that if you look hard enough you can elicit some inferior oblique overaction, I agree with Dr. Olitsky that it is my primary procedure. I don’t disagree with rectus recessions as often as I do inferior oblique transpositions.

**Nelson:** I guess the reason I’m asking is that if you assume many of the patients have congenital esotropia and the chance of developing inferior oblique overaction is significant, wouldn’t it be a better idea to do an anterior transposition to prevent the onset of it and possibly having to go back and do the inferior obliques? Also, when you’re doing surgery for inferior obliques and you’ve already done the superior rectus, you must be careful about how much you do in terms of the superior rectus because you’re concerned about possibly getting a double elevated palsy.

**Wang:** For many years, unless I have an A-pattern or underaction of the inferior obliques, I have been anteriorizing inferior obliques on all patients I do infantile esotropia surgery on. They don’t have to show any overaction. I’ve noticed that my incidence of DVD has dropped significantly, probably from 30% to 40% to 1% or 2%. You don’t see it anymore after you anteriorize the inferior obliques.

**Nelson:** That’s an interesting thought because Dr. Olitsky and I once submitted an article to the National Institutes of Health on surgery for esotropia and prophylactic anterior transpositions in patients who had congenital esotropia.

**Wang:** What were the results?

**Nelson:** I have been cautious about doing them, but I think that doing prophylactic anterior
transpositions does have a place. It’s not something most surgeons talk about in a patient who has congenital esotropia when you know that the incidence of developing inferior oblique overaction is up to 85%. Although not all patients need surgery, a substantial number of them do. I think that if you offered that to parents, you may find that a lot of them would like to do it to avoid further surgery potentially.

Duss: Regarding your point of also doing the inferior oblique as the primary procedure of choice as opposed to superior recti, has anyone looked at the effect on the torsional component of DVD and whether you anteriorize the oblique versus the superior rectus recessions? We’re talking about DVD, but obviously dissociated strabismus complex has both torsional and horizontal components. So working on an oblique makes sense to address that torsional component.

Wang: I think it would be an important question if these patients showed any significant binocular function, which they don’t. There’s no doubt that you get extorsion when you get a DVD, and we’re worsening extorsion by recession the superior recti. If they were binocular, the anteriorization would be a better procedure.

Nelson: In the patients that you have done prophylactically, what have been your results?

Wang: You don’t see DVD. You certainly don’t see overacting inferior obliques. Occasionally you trade off a little underaction.

Nelson: Underaction is not usually a problem in terms of looking up and looking in the adduction position elevation.

Olitsky: I think some people have trouble conceptionally with operating on the inferior oblique for DVD because there isn’t anything “wrong” with the inferior oblique in those cases. I would argue that there’s nothing wrong with the medial rectus that we recess for congenital esotropia either.

Nelson: Right. I’ve been saying that for a few years.

Duss: Do you transpose the inferior oblique nasally?

Olitsky: No.

Nelson: The next case is a patient with esotropia of 25 prism diopters, minimal hypertropia, manifest DVD in the right eye of 15 prism diopters, and a +3 overacting inferior oblique in the right eye. The visual acuity is 20/40 in the right eye and 20/25 in the left eye.

Duss: I would handle the esotropia and the DVD separately. I would address the esotropia with bilateral medial rectus recessions and anteriorize the inferior oblique on the right. I would also anteriorize on the left, maybe asymmetrically between right and left.

Olitsky: I would do the same.

Nelson: You’re concerned enough that it may develop in the eye that at the time of the surgery does not present itself that you’re going to do both eyes. Do you find that there is any problem with the left eye in terms of underaction of the inferior oblique?

Duss: I have not found that.

Wang: Right. I’ve been saying that for a few years.

Nelson: How would you quantitate how much superior rectus recession you’re going to do?

Wang: I would do between 7 and 10 mm depending on how large the DVD is.

Nelson: Do you feel uncomfortable doing that large of a recession in a patient who’s already had anterior transposition?

Wang: No, I haven’t had problems with double elevated palsy.

Olitsky: I would probably do the same, maybe a little less of the superior rectus. I wonder how effective that anterior transposition was because I agree that you don’t see many of those patients who have had anterior transposition develop significant DVD later. You might be able to make an argument to take a look at the inferior oblique first. I probably wouldn’t. I’d probably go to the superior rectus.

Nelson: If you did the inferior oblique and you went back to the inferior oblique and it was parallel to the insertion of the inferior rectus, would you do anything different?

Olitsky: I might bring it more anterior. It depends on how large the DVD is. If the DVD was manifest large, I’m not sure I would get what I would want to get.

Nelson: Would you also resect the inferior oblique?

Olitsky: I probably wouldn’t.
I have had other cases to do it for other reasons and I haven’t convinced myself that the resection really added much.

**Duss:** I agree with Dr. Olitsky. If it was a small DVD, I would anteriorize further if it was parallel to the inferior rectus. If it was a large DVD, then I would address the superior recti.

**Nelson:** Would you do both sides? In other words, it’s really manifest on one side.

**Duss:** I would do bilateral surgery. I would also be cautious of large recessions of the superior recti after an inferior oblique transposition.

**Nelson:** What would be your limit on how much you would recess the superior rectus?

**Duss:** I would do 6 or 7 mm.

**Nelson:** Would you ever go back and go to the inferior oblique again in a patient who’s had previous DVD surgery by anterior transposition and do further surgery on the inferior oblique? Or would you just automatically go to the superior rectus?

**Wang:** I’d automatically go to the superior rectus.

**Nelson:** Thank you all for participating.

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