

A VARIATION on the Use of **Binasal Occlusion** — A CASE STUDY



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Abstract

Binasal occlusion is a useful treatment modality for people with a wide variety of visual complaints. It is simple and safe, and can be effective as an isolated treatment or in conjunction with active visual training and/or therapeutic lenses. A case bearing this out will be presented along with the author's variation on this approach that has been in use for almost a century.

Key Words

binasal occlusion, homeopathic

Binasal occlusion is a simple, and often surprisingly effective tool for treating all manner of functional vision problems.¹ I had almost no exposure to this treatment option until I had been in practice for several years. Since that time I have utilized this technique in conjunction with active visual training and other dynamic lens therapies to help people with esotropia, exotropia, vertical deviations, amblyopia, and post-surgical strabismic sequelae. Over the course of this time I have also witnessed immediate positive changes with binasal occlusion in patients who were diagnosed with pervasive developmental delays, cerebral palsy, and those with a variety of brain injuries.

Perhaps none was more dramatic than a case involving a 38-year-old woman with cerebral palsy. Gina was confined to a wheelchair, and functioned at a very high cognitive level; indeed she was taking college courses at the time of our initial meeting. We met under atypical circumstances. I was invited to conduct an in-service program for the Occupational Therapy, Physical Therapy, and Driving Rehabilitation Departments at a large medical center in Pennsylvania. The presentation was to focus on the role of optometric visual therapy in helping those with head injuries or other neurological impairments to obtain driving privileges. Upon my arrival I was presented with a surprise. I was informed that there was a person waiting for a vision screening, who was told by the driving program director that it would be better to

wait until the optometrist arrived for his presentation. I decided to demonstrate some screening techniques on this patient. This would at least make it possible to present some testing in front of the audience, while providing them with insight into the rationale of the evaluation. I hoped it would also provide a better context for the issues I would later present.

Based on Gina's history, I didn't think she would be the most interesting subject for this presentation. However, I was grateful for the opportunity to demonstrate some of the concepts of behavioral vision care to an interested audience with the aid of an engaging subject. She did not really have any significant complaints. She was doing considerable reading for her college course and felt that she was accomplishing it comfortably. When we met she had a pair of single vision reading glasses and single vision glasses for distance use. She navigated the environment effectively in a motorized wheel chair. Gina had bifocals which she was unable to use; her head was rarely straight, and was in almost constant motion, typically falling onto her right shoulder. In fact, as her head dropped, her whole body crumpled forward into a ball. She stated that people were always reminding her to straighten up, but that she had difficulty in precisely determining her head posture. While testing Gina, I had to ask her to straighten her head every 10-20 seconds.

Obviously, my evaluation of Gina was not as thorough as I would have liked. All

procedures were done through her near prescription. My testing was limited mainly to an assessment of monocular and binocular visual-motor skills, and some binocular skills testing. Monocular pursuits revealed accurate following of the target and no restrictions. Gina did complain of mild discomfort in temporal gaze with either eye, and there was some tendency to move her head to maintain contact with the target. Binocular pursuits showed similar findings with a greater tendency to move her head. Her eyes were also less steady, showing an intermittent, almost nystagmoid movement. While performing pursuits I asked Gina to spell her last name and then to add two single digit numbers. When this was done her level of performance decreased noticeably, and there was considerably more head movement. Near point of convergence (NPC) testing with an accommodative target elicited a report of a single target to the nose although, at about four inches, her left eye turned outward. She regained motor fusion at about eight inches. Repeating this test with a penlight provided the same response, both subjectively and objectively. Further testing using the penlight with a red lens over one eye, revealed constant diplopia for the area closer than twenty-four inches to her. The unilateral cover test revealed a vertical deviation of about three prism diopters and a basically constant, alternating exotropia, greater at near.

I then decided to use binasal occlusion. I placed strips of occlusive material on both lenses, each 8mm in width. At this point Gina was beginning to have second thoughts about her decision to agree to this little performance. However, she permitted me to try my experiment and showed great decorum as I placed the scotch tape on her glasses. As I replaced her glasses, the changes were immediate and dramatic. Her face lit up and her head and body straightened. We redid some of the probes and Gina reported that everything felt much more comfortable. Her performance on each probe showed noticeable improvement objectively as well. Her demeanor changed as if a huge weight had been lifted from her. Her face and body relaxed, her posture remained much more stable. Gina's somewhat deadpan expression turned to a satisfied grin. It was clear to everyone in the room, some of whom had known Gina for years, that something

had changed dramatically.

As I accompanied Gina out of the meeting room, and through the hospital, I asked her what she thought was different. Her first comment was that she now was able to determine the position of her head. She said everything just seemed easier to look at and that it was much easier to make her way through the busy hospital corridors as well. I asked how that was different, and she said she felt that she could tell "where things were for the first time." She immediately asked if I could put some tapes on her other glasses as well. I placed the tapes on her distance glasses, and suggested full-time use of the binasal occlusion.

I soon set the wheels in motion for Gina to be brought to my office for a thorough evaluation, and hopefully, some visual training. This was complicated by the fact that Gina would need transportation, and would have to travel nearly two hours to my office. Unfortunately, we were unable to arrange an appointment until three months after our initial meeting. This meant that my formal findings would be made only after Gina had been wearing the binasal occluders extensively for this time.

Her posture was noticeably straighter and more stable. Findings at that time included improved pursuits, still with some head movement. There was no change in the NPC. Some stereo acuity was present; she could determine the location, but not the shapes, of the gross figures and obtained 100" of arc on the Randot animals. There was a slight reduction in the vertical deviation with frequent, alternating, central suppression.

More important however, was the document Gina brought with her. It was a kind of diary she had kept since first getting the binasal tapes on her glasses. It read as follows:

Vision Record

3/15/96

I can't believe how two pieces of tape can make such a difference. It's so much easier to see as well as reading signs. My body is less tense. I seem to be able to read faster, i.e. I can read the credits on the TV screen and actually finish before the screen changes

I have always had problems knowing when my head was tilted or straight because there was no change either way in

my visual perception. The tape seems to help me notice my head tilt as well as the ability to straighten it.

My head tilt only bothered me when I saw myself in pictures because others also saw me as less intelligent. Friends commented that I seemed more happy and relaxed.

3/16/96

Friend noticed I kept my head a lot straighter today. While riding in the car I seem to be able to focus on the road signs quicker and easier. I still tilt my head when I'm tired but at least I know it was tilted.

3/17/96

Today I was reading my Bible which has smaller print. Reading still seems to go quicker and easier even without a hookmark. The only time the tape is irritating is when I'm tired and tilt my head. I seem to have less eye strain, headaches, and muscle spasms. I hope this continues.

3/18/96

My work related responsibilities are going quicker and easier. However, I am becoming concerned about what happens when it rains; will the tape come off? When it comes off how will I know where to place it. Guess I'll try to figure it out from the second pair where the tape is hopefully not damaged.

4/18/96

Life in general is less stressful. I am still less spastic. I am able to get more reading as well as studying done in less time. I got a B on my midterm.

I also know people see me as more intelligent as well as more confident. Maybe I am more confident because things are going easier and I am happier. I changed the tape several times, tracing it off the good tape on the glasses seems to do the best job. I seem to have leveled out as far as my work speed and accuracy. Clients who come into the office seem to relate to me in more of a positive manner. Is it me, is it the tape, or a combination of the two? I really don't care. I'm just glad it's more positive. There are always questions concerning the tape, but it's not any different than explaining about my physical handicap or my assistance dog. What is one more difference, especially if it helps?

4/19/96

Tried to leave the tape off and see if I could tell the difference in my head tilt etc. without the tape; no such luck, at least I know what works.

5/8/96

I continue to be able to read books and notes faster and with ease, comprehending more in the process. Work is still going well. My head tilts when I'm tired, but at least I know it. I hope I go see Doctor Gallop so I can learn what is wrong and how I can compensate for the problems.

I got a B in my course this semester, maybe in the fall I'll try two.

Another interesting piece of information came out when I first met Gina's father who transports her to my office. He told me that he had spoken to his daughter a few days after she had received the binasals. He had not spoken to her for a week or so prior to that and had no idea of what had transpired. Within a few minutes, he interrupted their conversation to ask Gina what had happened. He said that he could tell there was something different even over the phone; she sounded happier, more relaxed, and the fluency of her conversation was better than he could ever recall. I was quite pleased that the change was so global. He further stated that "This is some kind of miracle. For over 30 years we have gone from one doctor to another trying to do something about her posture. They all shrugged it off as some muscle problem caused by the cerebral palsy and said nothing could be done."

Binasal Occlusion

My initial exposure to binasal occlusion was in the treatment of eso deviations. Black tape was placed on the nasal portion of both lenses, typically covering the area from the lens' nasal edge to the nasal pupillary border. It was put forth that by blocking off the nasal field(s), the eso deviating eye(s) would be stimulated to turn out rather than see the black occluding material.² In my work with head trauma cases I have had occasion to try a similar approach with exo deviations, and vertical deviations, including some that were very severe. The changes were astonishing for several reasons: the type of change, the speed of change, and the stability of change. Some people with exo deviations would show an immediate response once

the tapes were introduced; their eyes would turn IN. In some cases, with little other intervention, the eyes would remain better aligned even after removing the tapes following some weeks of full-time use. Subjective reports from patients included reduction of the separation of diplopic images, improved sense of judging space and distances, increased feeling of comfort in their eyes, etc. Objective changes included: reduction in the angle of deviation, improved head and body posture, improved findings in areas such as oculo-motor and binocular testing. I propose that the important issue is that these changes result from an internal learning process. The tapes have provided the brain with an opportunity to process information differently. As Skeffington said, "the value of a lens is that it changes the orders to the system—it can be appreciated that the change in orders is directed to the posturing mechanisms of the body, not higher order mechanisms. Thus, 'a lens does nothing to a person' save altering light distribution, but 'a person may do much with a lens.'³ I believe the same holds true for any alteration in the interface between a person and his lighted environment, binasal occlusion included. When an appropriate opportunity is presented the experience will be positive, creating the potential for maintaining the changed behavior. This is unlike the use of compensating devices which take the place of some functional activity. While this experience may also be positive, it is merely a masking of symptoms, not a means of dealing with the causes of the disturbance. It is possible that this is what often leads to prism adaptation. The compensating prism masks the ocular misalignment, but does nothing to stimulate change in the internal behavioral patterns. Since these patterns remain unchanged, they may continue unabated creating the need for stronger compensation over time.

My application of binasal occlusion differs in two ways from that to which I was initially exposed:

-Instead of black tape, I use a translucent material that is all but opaque. This makes less of a cosmetic statement. Others use clear nail polish, concerned that the tape is easily removed by children, or not durable enough.

-Instead of occluding to the nasal pupillary border, I occlude no further than the nasal limbus, and rarely go that far. This has proved to be a critical factor in obtain-

ing the best subjective results. It seems that it is difficult to make them so narrow that they have no effect, but it is easy to make them wide enough to be annoying.

The earliest reference to binasal occlusion that I could find was by Louis Jaques in 1950.⁴ Years later he also wrote about some cases, including himself, being "just such a case in 1907 and was still cross-eyed after becoming an optometrist in 1911"⁵ He referred to them as bimedial covers or half covers (or binocular monocular macular covers), and recommended that they be measured to "apparently bisect the pupil of the right eye during monocular fixation of a distant target by the right eye - and apparently bisect the pupil of the left eye during monocular fixation of a distant target by the left eye."⁴(p.124) He summarized what he felt binasal occlusion accomplished:

"We believe, then, that the half cover technique:

Makes possible instant experience in seeing.

- (1) Makes possible instant mental comparison of the two images in such a manner that the memory of the image seen through the more experienced eye may be carried over for the use of the less experienced eye.
- (2) Makes possible the normal use of reciprocal innervation and inhibition without suppression, fear of diplopia, confusion, or any type of conscious effort.
- (3) Makes possible the loss of old and established habits of experience
- (4) Makes possible the entire loss of memory of ever having experienced strabismus.
- (5) Makes possible the later introduction of the new experience of fusion, which is latent, was innate, and should have been acquired except for some good reason, or was given up because of some good reason."⁴(p.122)

Jacques recommended these half covers for both eso and exo deviations.⁶ Greenwald recommended binasal occlusion for various types of esotropes for the purpose of "forcing [the esotrope], in effect, to alter his strabismic or highly heterophoric method of projecting."⁷ Birnbaum⁸ and Maino, et al⁹ also found positive changes using binasal occlusion with esotropes, as well as presenting a case study of a child with cerebral palsy and esotropia.¹⁰

My philosophy is to use as little as possible to achieve the desired benefits in the shortest time. I will use fairly low power lenses and yoked prisms as therapeutic tools, and I have chosen to do the same with all types of occlusion therapy. This is not to say that other variations have no value. I have recently begun to use wider binasals as put forth by Jacques, sensing that this is designed to achieve something that perhaps cannot be achieved when the tapes are very narrow. I feel it is important to try different approaches, perhaps even those we have never seen before. Different things work for different people, both doctors and patients. I generally strive to obtain a situation where the intervention is not disruptive on a conscious level even though it is providing some level of disruption of the status quo subconsciously.

I propose that the application of binasal occlusion is successful for the following reasons:

- * There is an effect on binocular integration by occluding the middle of the binocular nasal field. This portion of the visual field is within the area where the fields of both eyes overlap.¹¹ It is conceivable that this is an area of intense demand. It would therefore require the highest degree of binocular integration to be efficiently and comfortably processed and utilized. When the visual process is labored, the organization and integration of this portion of visual space may be the most demanding as far as maintaining comfortable and clear binocular, single vision. Modifying the input from the very core of this area may serve to relieve stress. Therefore, the confusion of trying to organize this portion of space is less demanding. Relieving pressure in this way may make increased energy available for processing more peripheral areas of space, which in turn can help reduce overall visual stress.
- * The temporal peripheral fields are relatively more stimulated causing greater awareness of the overall environment.¹² Increased peripheral awareness is always desirable, but our culture tends to minimize the way we use it. The way we utilize peripheral awareness is similar to our use of the sense of smell. Humans, for the most part, don't use the sense of smell to its fullest. It has been said that there is a significant

relationship between smell and memory, but that we don't utilize smell on a conscious level as much as our more primitive ancestors. Similarly, we have come to put much more emphasis on central visual behavior than on peripheral. Peripheral and central processing must maintain a constantly fluid relationship. Both must be permitted to function optimally in order to efficiently interact. Some circumstances demand that one take the lead, some the other. By removing some of the stress of binocular integration as noted above, peripheral vision is permitted to function more appropriately. Peripheral vision provides dynamic and vital information regarding the overall status of the environment.¹³⁻¹⁵ This information is critical to feeling secure about our relationship to the external world.^{13,16} This is not always a conscious process, but has an effect on our most basic life-support regulators. Reduced peripheral awareness increases stress, and increased stress can reduce peripheral awareness.

- * The perception of the binasal occluders as an "object" in the environment provides a visual reference point, which helps to stabilize visual-spatial perception.¹⁷ Even though the tapes may not be consciously noticed, they act as a constant and consistent presence. The location of this presence in the visual field remains consistent in its spatial relationship to the person. This provides something reliable in the interface between a person and her external visual environment, and therefore helps to better organize visual input. The fact that it is mainly a subconscious phenomenon makes it no less important, nor any less effective.

One reason I had initially chosen to keep the tapes so narrow was my personal experience in using them. According to Jacques "it is somewhat common, at the beginning, to expect the binasal tapes to create discomfort and feelings of animosity toward the optometrist."¹⁸ I will rarely use an intervention with a patient with which I have not had first-hand experience. When I first tried wearing binasal occluders, I immediately noticed how annoying it was to have this "thing" right in front of me. I gradually narrowed the tapes until they were no longer obtrusive. They still provided the peripheral enhancement

and a feeling of greater visual relaxation.

Another issue is the purpose behind using any lens or lens-related device. Other authors^{6,18,19} relate how the binasal occluders "force" the eyes into a different posture. Whenever possible, I avoid using a device in order to *force* some change in performance. I am more interested in utilizing a device which will provide an opportunity for learning, and therefore the possibility of changes in behavior. I prefer using the smallest magnitude of external interference which will stimulate the internal processes to make the desired changes. When used in very small amounts, lenses, prisms, and binasal occluders can have an effect which is analogous to the effects of internally ingested homeopathic medicines. Homeopathic medicine is designed to stimulate the body's own mechanisms for healing.²⁰ It uses what is typically considered to be a very small amount of a substance which, when introduced into the body, stimulates learning by the immune system. This enables the system to respond more effectively in similar future situations. This is unlike immunization which uses significant amounts of a substance to trigger an actual response to the toxin. This can cause an actual illness from the exposure, and does so, in a some instances.

My homeopathic approach to binasal occlusion (or lens usage) stimulates a gentle change in the wearer's relationship to the environment. This serves to provide an option, or options, to perceiving and responding to the environment. In most cases, these devices can be removed, once the learning they stimulate has occurred, and the desired changes will remain. This will most likely occur when the change is positively received, which indicates that it is of benefit to the individual. Subconsciously, we are constantly searching for the path of least resistance and most effectiveness. It is difficult to achieve this if we do not have options from which to choose. Without a broader context, we can only know what is available to our awareness. When there are choices available to us, we have power to select what suits us.

Conclusion

I recommend that you try binasal occlusion personally to experience the phenomenon. It is not uncommon for healthy visual performers to report a kind of "brightening" of the temporal peripheral

fields, although this is more obvious if the tapes are wider. Experiment on yourself, especially if you have any visual issues of your own. There was a brief period when my previous binocular difficulties resurfaced, manifesting in intermittent diplopia when fatigued. The diplopia would immediately resolve when I tried on the binasal occluders.

There is no doubt that for many optometrists the utilization of binasal occlusion may require something of an intuitive leap. There is little mention of this technique in the literature, let alone double-blind studies or scientific discussion of its mechanisms.²¹ Its use may also require a little creative thinking. However, it seems that there is a growing movement within the health professions to refocus on the art of healing. We are beginning to see through the blinders that have narrowed our approach, and confined us to the science of healing. This means being more creative, less by-the-book, and less driven by statistical data, but always with the patient's best interest guiding the way.

We must reestablish the human in health care on both sides of the table. It is important to treat people as individuals, not scientifically reproducible findings.²² Patients must be given access to all the options that are available, enabling them to make informed decisions about their care. Practitioners must rely on more of their own human gifts as doctors. This includes utilizing intuition in addition to statistics. Recall a primary motivation for the birth of behavioral optometry:

"As the years passed, many became aware of the limitations, restrictions, and contradictions imposed on patients by the applications of these earlier notions of vision. Behavior did not conform to conventional wisdom; questions arose; and, recognizing the inconsistencies between theory and reality, inquisitive professionals searching for solutions sought to untangle the imposed web."³(p.5)

This article is dedicated to the spirit of Robert A. Kraskin, Optometrist - who inspired me to keep asking questions, never resting on the illusion of easy answers.

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