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to Strabology: Binocular Vision and Strabismus

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***CORRESPONDENCE***

Strabology Surgery Textbook Co-Author, DAVID COATS, MD
SUMMITS Worlds Highest Peak (Outside of the
Himalayas), Aconcagua, 23,000 feet in Argentina.
(Email Correspondences, supplemented)

POWELL: Color Vision Deficiency Tutorial

*** ORIGINAL EVIDENCE-BASED SCIENTIFIC ARTICLES ***

GAMIO: Diagnosis and Surgical Treatment of
Dissociated Horizontal Deviation Strabismus

BISHOP: Surgical Approach for Nystagmus-Induced Head Turn

*** REVIEW and CASE REPORT ***

KHAWAM, AND FAHED: Inferior Oblique Muscle Palsy with
"Paradoxical" V-Pattern Strabismus

HYDE PARK EDITORIAL:

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Strabology Surgery Textbook Co-Author, DAVID COATS, M.D. SUMMITS Worlds Highest Peak (Outside of the Himalayas), ACONCAGUA, 7000 meters, 23,000 feet in Argentina. (Email Correspondences)
Correspondence

Cordillera de los Andes - Aconcáguia (detrás: Mercedario y Ramada), Argentina.

by André Bonacin

This photo is selected for Google Earth [?] - ID: 562995
Aconcagua

The Aconcagua is the center and main motive of the Aconcagua Provincial Park, one of the most spectacular protected areas of the Republic of Argentina. The 71000 hectares are located in the Province of Mendoza, a few kilometers East of the borderline with the Republic of Chile. All its waters flow towards the interior of Mendoza, through the Horcones, Vacas and Cuevas river basins.

The Aconcagua is the highest mountain of the Southern and Occidental Hemisphere and the highest peak of the American Continent. It is one of the icons of the appraised Seven Summit circuit. It is also important for introducing yourself to high altitude, due to its elevations, geographical and climatic conditions, it constitutes the ideal stage for moderate demands, also to prepare yourself for one of the most important athletic feats the 8000 m peaks of the Himalaya demand.
Correspondence

This correspondence is between your editor (in italics) and friend (in not italics) and BV&SQs-r’s Ed Board member, David Coats, who graciously has shared his (and his extraordinarily better half, Evelyn Paysse’s) heroic outdoor adventurism with us for the past several years. (See David’s story of his 24 hour 100 mile trek across Arkansas reported in this publication, 2009; 24(4); 204-209)

More recently, they have tackled the Colorado Trail from the Denver area to Durango. We (in this case your editor and spouse and BV&SQs-r’s manager and everything else) have provided a certain mild but needed support function, which was aided in part by “Spot Tracker”, an internet service which relays one way reports of their GPS location and progress and any calls for help or other assistance.

The past two Summers we met them with supplies while they managed the top third from Denver to the end of the presidential range, and the middle third from there to Spring Creek Pass just south of Lake City, south of Gunnison, Colorado. This summer they are hoping to finish the last third over the San Juan mountains to Durango.

In the meantime, they have run all over the place, Evelyn running the yearly marathon up Pikes Peak and David climbing Mount Ranier.

But, we had no forewarning however of David’s very latest SOLO adventure.

We were first apprised of it by this curt email:

From: <noreply@findmespot.com>
To: <perxbvq@colorado.net>
Sent: Wednesday, December 22, 2010 8:08 PM
Subject: Check-in/OK message from Coats/Paysse Spot Tracker SPOT Messenger

Coats/Paysse Spot Tracker
Latitude:-32.75156
Longitude:-69.80759
GPS location Date/Time:12/22/2010 20:08:21 EST

Message:Hi, Just checking in as we climb Aconcagua. You can click the link below to find our location, altitude, etc.

Click the link below to see where I am located.
http://fms.ws/3_RuD/-32.75156/-69.80759

If the above link does not work, try this link:

Coats/Paysse Spot Tracker

You have received this message because Coats/Paysse Spot Tracker has added you to their SPOT contact list.

Every day is an Adventure. Share Yours.
http://www.findmespot.com
By remarkable coincidence, our favorite newspaper, the WSJ, had prepared us for this otherwise unbelievable news just two days earlier by running a big feature on Mendoza, Argentina, including pictures of the city and Aconcagua in the background! So we immediately knew where David was and what he was up to NOW! OMG! and without Evelyn! (Although he didn’t tell us he was actually soloing until after he made it to the summit!)

We have integrated David’s first hand story with his own pictures and pictures from the internet and Google. But this is where he was when he sent us that first Spot Tracker email:
INTRODUCTION
Aconcagua 2010 (December 19 - January 4)
Aconcagua is the highest peak in the Americas, and at 22,840 feet, it is the highest peak outside Asia. Known as the Stone Sentinel, this mountain is often referred to as The America’s challenge. Temperatures as low as minus 30 C and strong winds often greet climbers of this peak, the second highest of the popular Seven Summits. For example, about a week prior to our arrival, winds of up to 100 knots had leveled base camp. The following is a journal of our climb along a variation of the False Polish Glacier Traverse route.

THE CLimb
Our journey started in Mendoza, Argentina, in the eastern foothills of the Andes Mountains with 10 U.S. climbers and 3 expert guides from International Mountain Guides. From Mendoza, we traveled by bus to Los Penitentes (See map prior page) where we sorted gear to be carried by us and gear to be carried by mules to base camp at Plaza Argentina deep in the Andes. The actual climb got started on December 22, 2010, where we entered the trail at Punta de Vacas (See map prior page).

Over the first 3 days, we hiked a relatively easy 20-25 miles to base camp with one river crossing, (see below, credit D. Coats) moving from 7900 feet to 13,800 feet. We spent Christmas day in base camp. Each day we saw people taken from base camp by helicopter with various manifestations of acute mountain sickness.
After a day of rest and acclimatization in base camp, the climb started in earnest. Mules cannot climb above base camp, and the climbers have to carry everything from here. Just as the altitude increased and began to have negative effects on physical performance, the pack weight went up as well. The loads above base camp were heavy at 50-60 pounds or more, estimated. The loads certainly felt heavier than the 60 pound loads that I trained with, though the altitude may have been a mitigating factor making things seem more difficult.

by Fritz Follmer
From base camp, we made 3 more camps, each at a higher altitude than the previous. Our plan was to carry and cache half our gear one day, and then move to our new camp the next day. This is done both because it is almost impossible to carry a pack of more than 100 pounds at altitude and because this cache and move strategy offers acclimatization advantages.

The camp altitudes were 16,500 (higher than anything in Colorado), 17,800 and 19,500 respectively (6300 meters). All according to plan.
Correspondence

until a blizzard struck late one night while we were sleeping in camp one. (See below, credit D. Coats) The storm forced us to weather in place for an unplanned and unexciting day of tent life.

Throughout the next several days we heard avalanches throughout the night, though we were well away from any avalanche danger.
After this brief delay, we continued our ascent. We learned of a fatality on the mountain as we ascended and the remains of the climber were carried through camp 2 while we were in camp. This makes a climber pause to think. One of our climbers decided not to continue above camp 1 due to a lingering cold. He descended to base camp and took a helicopter out. Two others decided against continuing their attempt 2 days later and descended.
Correspondence

Sent: Monday, December 27, 2010 2:19 PM
Check-in OK message from Coats Paysse
Spot Tracker SPOT Messenger

- Coats Paysse Spot Tracker
- Latitude: -32.63°83
- Longitude: -69.9761
- GPS location Date Time: 12/27/2010 14:20:11 EST

Message: Hi, just checking in as we climb Aconcagua.
You can click the link below to find our location, altitude

- Click the link below to see where I am located:

If the above link does not work, try this link:
- http://maps.google.com/maps?q=hl=en&geocode=
  &q=-32.63°83,-69.9761&&hl=-32.63°83,-69.9761
  &ie=UTF8&z=11&com=1

---

Sent: Saturday, January 01, 2011 3:45 PM
Subject: Check-in OK message from Coats Paysse

- Coats Paysse Spot Tracker
- Latitude: -32.63°45
- Longitude: -70.01794
- GPS location Date Time: 01/01/2011 15:45:40 EST

Message: Hi, just checking in as we climb Aconcagua.
You can click the link below to find our location, altitude

- Click the link below to see where I am located:
  - http://fms.ws 41o-R, -32.63°45,-70.01794

If the above link does not work, try this link:
- http://maps.google.com/maps?q=hl=en&geocode=
  &q=-32.63°45,-70.01794&&hl=-32.63°45,-70.01794
  &ie=UTF8&z=12&com=1
The Spanish word “Canaleta” means “chute”, or maybe “small canal” literally. We found one reference to the term in these tour guides that suggested it was a term to describe a route, a shortcut, on the north side, around the base of the final ascent, as pictured here, while the following picture indicates (next page) that the term with a “THE” refers to the extra extraordinary steep precipice on the backside (southwest) of the summit (see next page!) Which also certainly qualifies quite well as a “chute.”

Canaleta NW Face Aconcagua.

by Seara
As we continued our climb, weather again played an important role in our progress. Weather at the summit appeared to be inhospitable. Reports suggested summit winds would be in the range of 80-100 knots in a few days; right when our summit bid was anticipated. Safe climbing is not possible in these conditions. Therefore, we discarded plans for a day of acclimatization at 17,800 feet and decided to “thread the needle” and make our bid for the peak on the now, one day remaining, of anticipated good summit weather.

Excitement and the altitude conspired to rob us of sleep the night before we were to leave high camp for the summit, 3500 feet straight up into thin air today. The round trip took on the order of 15 hours +/- . Snow made the route significantly slower and I am told more difficult than usual for this mountain. Crampons were required all the way. Another climber dropped on the summit the morning before we started due to persistent headaches, a sign of acute mountain sickness. About 3 hours into our summit bid, we encountered a mid 50’s man who appeared to be having a heart attack and who was in the process of being evacuated. One of our climbers considered turning back at this point, but with some trepidation, decided to continue; instead turning around a few hours later.
After more than 7-8 hours of climbing, we came within 100 yards of the summit and we hit a wall; a wall of people. There was a group of 10-12 climbers on the route just ahead of us, below the summit. We were so close that we could see people on the summit looking down. The group ahead of us was spent; they appeared to have nothing left in their tanks. At just under 23,000 feet, we were all moving very slowly, but these people were moving even slower than slow, or not at all. They would struggle to move a couple of steps, then stop, sit or fall on the ground and then after several minutes, individuals would get up and inch forward a few more steps only to stop again.

Our head guide asked them to step aside and allow us to pass, but was refused. At this point, it was getting late, weather was moving in, and we had a discussion among our group about turning around and going back even though we were within sight of the summit. We decided to keep an eye on the weather and maintain a low threshold for turning back. The group ahead of us probably added an hour to an hour and a half to our summit day, but we finally did make it to the summit. Ultimately, 5 of 10 climbers and 3 of 3 guides made it.

I remember being up there and taking photos and looking around at this very small piece of real estate, 22,840 feet in the air, but I do not remember everything. I do not remember looking off in the distance, do not remember how long we were there or what was said while we were there, but I do recall that it was all very exciting.

From: <noreply@findmespot.com>
To: <perxbvq@colorado.net>
Sent: Monday, January 03, 2011 5:47 AM
Subject: Custom message from Coats/Paysse Spot Tracker

Coats/Paysse Spot Tracker
Latitude:-32.63742
Longitude:-70.01801
GPS location Date/Time:01/03/2011 05:48:09 EST

Message: We are on the summit!!!!
David Coats, right, MD, at the Summit of Aconcagua, with group climbing “buddy” and tentmate, Doug Ingram, left, Director of Performance for the USOC. He is still wearing a protective nose shield. Coats proudly displays the Strabismus Surgery text he co-authored with Scott Olitsky, which weighs only 2.5 pounds, a minor added burden to his daily back pack for two weeks of 60 pounds during their vertical climb of four miles.

The summit marker monument cross is one of several there. This one is a memorial to those Argentine Air Force aviators who were lost in the Malvinas.
We regrouped and started the long trek back to high camp. Dinner consisted of mashed potatoes. Sleep was sound that night.

We woke to freezing temperatures and high winds with an estimated wind chill of minus 30 to minus 40 degrees Centigrade. Waiting climbing teams were essentially pinned down, unable to make a summit attempt. Our decision to proceed early had, in the end, been a good one. Our climbing plan was to go up and over, from base camp on one side of the peak, to base camp on the other side. After packing our gear, we headed down to Plaza de Mulas, (see below) which represents base camp on the so-called Normal Route. This is a very steep snow and scree covered mountain that descends rapidly to 14,340 feet. We had pizza for dinner when we arrived and enjoyed a sound night of sleep. The next day, we followed Rio Horcones out to the trail head on an 18 mile trek back to civilization, a bath and a soft bed. It was cold and the winds were at times fierce; but we did not care; we were on our way home and the thick air filling our lungs was utterly satisfying.
PS emails:

----- Original Message ----- 
On Mon, Jan 17, 2011 at 3:45 PM, Paul E. Romano, BV&SQ <perxbvq@colorado.net> wrote: to David Coats, after receiving and reading his foregoing account of his climb:

I keep re reading your account... [fantastic vicarious experience !].

You make no mention of O2?

and how long have you been training for this? what did that involve?

and how in Gods name did you all make it up 3500 vertical feet in one day - at that altitude? that alone is the vertical height of a major ski mountain! and probably several times steeper like all double black diamonds, Uphill, no? you were only barely acclimated to 18000 feet (only 2x keystone !)

Unbelievable...

we plan to publish several Google pics of that monster mountain we found on your referenced website along with your story... too.

how close did you get to the canaleta? we have maps of the summit and trails and will try to plot your route...

I have read National Geographic for fifty years and recall no story on this mountain. (my memory takes the fifth.)

p.

From: David Coats
To: Paul E. Romano, BV&SQ
Sent: Monday, January 17, 2011 7:12 PM

Hey Paul, You must have been asleep at the wheel; then again, why would you need to know about this mountain unless you were going to climb it. About 3000 people reportedly attempt Aconcagua annually; it is a very popular mountain! I trained by carrying a 60 pound pack up and down the 22 flights of stairs in my building for an hour or more a few times a week since September. On the weekends, I went to a local park where I found the only hill in Houston and I hiked with my pack, boots, etc up and down that hill for hours until I had no more energy or I was bored which ever came first--usually the boredom. I often pulled a sled behind me for a bit of extra resistance to better simulate climbing.

As far as the O2 levels go, we mitigated this problem by moving slowly. Last hour of summit day, for example, it took maybe 3-5 breaths for each step. Nevertheless, many days the climbing was brutal; just the way I like it. Only real problem related to the low O2 was sleep the night before the summit. I could not sleep due to Cheyne-Stokes respiration related to the low O2; hence I had a taste of what it would be like to have sleep apnea. My %SpO2 that night was 72.

For your interest, the route from high camp to the summit followed the northwest ridge, then crossed the Cresta del Viento (Windy Crest). From there we did a very long traverse of the upper part of the Gran Acarreo, [see earlier photo page 10] which
leads to the Canaleta [see photo page 14]. The Canaleta provided the final approach to the top. After that, you end up on the north end of Cresta del Guanaco, the long ridge that also joins the lower (by 100 feet) South Summit (6930 m) to the higher North Summit (6962 m); and along this ridge path to the very top...

David

---

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Webmaster: Ryan Soderberg, Webez.net Internet Services, Dillon, Colorado. Official publication date of this issue January 1, 2011 Distribution date by March 31, 2011. This is a Simms-Romanino Enterprise (Simms is the maiden name of the founder's mother,R.N., a Daughter of the American Revolution, (DAR), honored here as the laudable custom in many other world cultures; his father was Battalion Surgeon for the 33rd Infantry Division in World War II, serving from 1942-1945, in the Pacific; scheduled to invade Japan, when Hiroshima saved his life and those of many other Americans and Japanese.).

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-Watzlawick, 1976

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Paul E. Romano, M.D., M.S.O  MEDLINE Abbr.  ISSN 2160-5904 (Print)
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Volume 26, Number 1
FIRST Quarter of 2011

Information for Authors can be found on the web site (binocularvision.net) or by sending an email to judyatbv@vail.net and a PDF copy will be sent to you.

3  Correspondence:  Strabology Surgery Textbook Co-Author (and BV&SQ Ed Board Member), David Coats, M.D., SUMMITS World’s HIGHEST Peak (Outside of the Himalayas), Aconcagua, 23,000 feet in Argentina  [Email Correspondences]  Paul E. Romano, M.D. and David K. Coats, M.D.

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CELEBRATE WITH US OUR 25TH ANNIVERSARY OF PUBLICATION

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Richmond Products  Pages 20, 22
Richmond offers Open Complimentary Tutorial on Color Vision Deficiency

To the Editor:

Richmond Products is offering, at no charge, a concise tutorial on color vision deficiency (CVD) describing the causes and effects of CVD, methods of detecting and diagnosing the various forms, the effects of certain toxic substances and work (occupational) considerations. The final chapter deals with the current status of treatment and therapeutic methods, including gene therapy research in primates that may possibly be applied to humans.

Contributors include several very well known experts on color vision:

Frederick T. Fraunfelder, MD., Oregon Health and Science University’s Casey Eye Institute.
Jay Neitz, PhD and Maureen Neitz, PhD. University of Washington DC.
Bernard Blais, MD, Albany Medical College, New York
James D. Bailey, OD, PhD, Southern College of Optometry, Memphis, Tennessee.

With the advent of color computer screens and more sophisticated security systems, the occupational demand for excellent color vision is growing rapidly. Further, many newly developed pharmaceuticals can become toxic to the body, where research shows effects of color vision deficiency, especially in yellow and blue. A major publication on clinical ocular toxicology by Dr. Fraunfelder currently lists over 134 drugs, industrial chemicals and herbal compounds that may induce ocular side effects that manifest as color vision deficiency.

The CVD tutorial can be downloaded as a PDF document from our web site: www.richmondproducts.com.

Lloyd Powell, Albuquerque, New Mexico

(The Editor applauds Lloyd Powell and Richmond Products, a serious source of color vision tests for all ages, and a broad spectrum of other examination tools especially for orthoptists (see page 20) strabologists, and pediatric ophthalmologists (see page 23). We also applaud the use of the term, “Color Vision Deficiency” instead of “Color blindness” a totally unwarranted terminology and label, from which one in ten males suffer (including your editor and several fellow strabologists ?Is that cause and effect?). We have long preferred the term, “color amblyopia”, or even “color organic amblyopia” as the proper diagnostic terms, also to avoid confusion with “inorganic” functional amblyopia -per).
We regret to report the sudden and premature passing of one of the world of Strabology’s Best, best known, best recognized and best loved, John P. Lee of Great Britain, while attending a meeting in the U.S., Michigan, last year.

He was always a friend, and an Editorial Board member and contributor for many years. We restore him herewith to Emeritus membership therein and hope to publish a more fitting and complete biography/eulogy in the next issue. -per.

MICHAEL X. REPKA, M.D.

Wilmer Eye Institute congratulates Dr. Repka, as the inaugural recipient of the David L. Guyton, M.D. and Feduniak Family Professor in Ophthalmology. The Professorship was established in order to support patient care and research related to amblyopia, strabismus and eye diseases of children. Dr. Repka is nationally and internationally known for his contributions in the fields of pediatric ophthalmology, strabismus, retinopathy of prematurity and pediatric neuro-ophthalmology.

In addition, Dr. Repka also received a generous donation from the Greek Orthodox Ladies Philotochos Society in honor of the care Savas Michael Emanuel received at Wilmer.

Children’s Eye Foundation (CEF)

Dr. George Beauchamp, Chairman of the CEF, writes us that the CEF has received a grant from Alcon, Inc. to fund their vision screening program “See by Three”. The goals of the program are ambitious, but certainly worthwhile. See by Three will:

• Screen more than 26,000 children in the Fort Worth, Texas area;
• Train more than 300 medical professionals on AAP-approved vision screening techniques;
• Increase the followup rate when a vision disorder is identified.

One of the main goals of the program is to help pediatrics and their staff with vision screening efforts.

For more information or to contribute to the CEF contact: George Beauchamp, M.D. at gbeau1127@aol.com

Meeting Announcements, 2011


Buenos Aires, Argentina. July 6-9, 2011. Pan American Academy of Ophthalmology, AAPOS Co-Sponsored Symposia. Contact: Michael X. Repka, M.D. Email: mrepka@jhmi.edu

Montreal, Canada. October 14, 2011. 36th Annual Pediatric Ophthalmology Day. Contact: Caroline Bélanger, MD, Tel: 514-345-4715; Fax: 514-345-7706

Meeting Announcements, 2012


Toronto, Canada. June 26-29, 2012. International Orthoptic Congress. AAPOS Session on “Surgical Management of Strabismus” Contact: Michael Repka, M.D. Email: mrepka@jhmi.edu
A History of this scientific periodical, Binocular Vision & Strabismus Quarterly.  
A Celebration of Our 25th Anniversary, Starting our 26th year

The year was 1984. Parks’ sub-specialty of pediatric ophthalmology, which had absorbed the previously free standing, but much less marketable subspecialty of ocular motility & strabology, in the United States, for sure, was growing rapidly. This was the era before managed care intruded. It was the very last of the good years to be a physician and/or an academician.

Our sole subspecialty periodical in 1984 was the Journal of Pediatric Ophthalmology and Strabismus which had been founded as the Journal of Pediatric Ophthalmology (only) by Editor Samuel V. Abraham in 1964 (the very first year your Editor started his ophthalmology training!). With the advent of the American Association for Pediatric Ophthalmology (and [later] strabismus) in the early 70’s it was now fully owned by its New Jersey publisher, Slack. With the requirement of submission of all papers from the annual AAPOS meetings, the waiting time in 1984 for publication of an article in the JPOS was two and a half years! Even though the journal was subsidized by the AAPOS, Slack would not enlarge the journal enough or even at all to handle this demand, in spite of significant profits from the journal. No solution to this dilemma was apparent from Slack, or elsewhere.

At that time your founding editor (FE) was running the Pediatric Ophthalmology and Strabismus Service at the University of Florida in Gainesville. Another member of the faculty there, Frank Pollack, who ran the Cornea Service, had recently started a new journal entitled "Cornea" with the help of the American, New York, arm of the French publisher, Masson.

At a departmental party at his home, he proudly showed us his new computer and office for running his journal. Realizing that our subspecialty could certainly use some help with regard to publishing that backlog of 2 ½ years for the JPOS, we mentioned our problem to Pollack. He said he would talk to Pierre LaHaye, at Masson in New York, who was in charge of the eye journals.

Pierre said they were very interested in another eye subspecialty journal. We agreed on undertaking the job of assembling an Editorial Board and soliciting articles as the first Editor. It didn’t take long to put together an outstanding, large, international Editorial Board. Alberto Ciancia and Joseph Lang were especially helpful. Everyone agreed it was a good idea. Only my old mentors refused an invitation to join the Ed Board! (I guess taking a job working for a former student is not a high priority!) They still thought it was a good idea. Excellent scientific articles were quickly volunteered by many Ed Board members. We started putting the first issue together with the help of Alvin Fayman who was to be our production manager at Masson.

Only one person in our professional community objected to BVQ, because he thought we were already publishing enough articles about strabismus and he didn’t want to read any more. He wrote to our entire professional community in an effort to stop our efforts, but no one seconded his singular sentiments.

We titled the journal “Binocular Vision” because BV is what the study and treatment of strabismus is really all about. “BV” is also the first term of the title of our mentor von Noorden’s esteemed textbook “Bible”, so it had to be OK.

"BV", we intended, would compliment and fit in with the “JPOS”, both literally and figuratively. It would not sound like a direct competitive threat - which too many of our associates were all too ready to assume anyway!

To be sure, we further staked out our strabology area by adding as a subtitle “eye movements, strabismus, and amblyopia”.

We later called it a “quarterly”, because that was our intended publication schedule for starting, and because we think the name of a periodical, when it takes a common term for a title, needs to have another word in the title so the periodical stands by itself alone and is not confused with, and does not have to be additionally separated from, the clinical item; (i.e., when you refer to Ophthalmology or Retina or Cornea, don’t you often find yourself adding, “the journal” so your listener knows that you are referring to a periodical and not to a piece of anatomy or a science? But "journal" is only French for “daily”, actually a misnomer for anything else, so we called it "Quarterly” which it truly is).

In early 1985 as the first issue was about to go to press, in April, Masson suddenly decided to close its American branch and sell all of its scientific periodicals, "lock, stock and barrel", to Raven Press in New York. (We suddenly felt like a professional athlete getting “traded” without choice or input.) The President/owner of Raven Press, Dr. Alan Edelson, PhD, invited us to journey to their New York offices to discuss the future of BVQ with him.

On arrival, Edelson first told us that Tom France, then President of the AAPOS, had just visited him only the day before seeking a publisher to replace Slack, who would not permit the needed expansion of the JPOS.

Edelson suggested that France and the AAPOS and we could and should combine the two publications into one Raven publication.

Tom and I presented this idea to both of our Editorial Boards. But our board members were most enthusiastic about having a separate journal devoted specifically to strabismus and binocular vision and only by remaining separate could we do so. Nor did sharing their journal with us go over very well with Tom France, the JPOS Editorial staff, or the AAPOS.
That left Dr. Edelson and Raven with just us, BVQ. Edelson said that BVQ did not justify his efforts financially. Since BVQ had not even printed its first issue yet, Edelson felt no obligation to me, BVQ, or its Editorial Board members. Therefore, he said, that he would not publish BVQ but rather would simply abandon/cancel BVQ and just let us die, evaporate or whatever.

Neither I nor our Editorial Board liked that at all. After further discussions Dr. Edelson agreed to "give" the ownership and rights to BVQ to your FE. He said we could try to publish it ourselves, on our own. We had to contractually agree to do it all by ourselves and not seek or use the assistance of, or sell BVQ to, any (other) publishing house for at least five years.

So we became owner, publisher and Editor.

The first major hurdle was to get the OK of our boss, the University of Florida Ophthalmology Professor and Chairman who was himself!, with his wife, a medical publisher (Triad Publishing, Gainesville). Fortunately, our non compete contract with Raven would not allow him to require that BVQ be published by his company, Triad.

We found a local printer in town, Ewing Press, who printed the football programs for the University of Florida football program, (Go Gators!) and with the help of a free lance local typesetter we set about publishing the journal. Your FE did the old cut and paste wax layout routine. (Can you remember that?!) The first issue was actually completed, printed and mailed out near the end of 1985. Volume I was initially called "1985" because we still had high hopes of somehow making that year our first full year of publication. However, that was not to be and the first full "year" of the journal ended in 1986, denoted Vol. 1, "1985-1986".

Within that first year we were also to have the first of many recurring changes with printers. Ewing Press was bought out by another local printer, Marsh, and we had to break in another set of layout, typesetters and press operators.

Volume 2 was then calendar year 1987. In 1988 (Volume 3), half way through it our printer, Mr. Marsh, passed away and the firm closed down. We then went to our third local Gainesville printer in three years, Storter.

In early 1989, after leaving UF, and thanks to computers we took over in house production of BVQ. Fortunately, "desktop publishing" on computers had just reached the point where one did not have to be a computer engineer-whiz to do it.

So we plunged in full time, purchasing a 286-12! desktop (for about $1800!) and an HP Laser Printer (for another $1400!), which, believe it or not, has just been retired after 14 years of service although it has required repair from time to time. Unbelievably? that printer also had about 100,000 road miles on it as we trucked it back and forth between Florida and Colorado every 3 months for five years (until we moved here in 1995). We certainly have seen a number of computers (?12+) come and go, and almost as many copy and fax machines as well during this same 14 year period. But we still use our original word processing software WordPerfect 5.0 because that is all we needed then and now.

Your FE, because of his ancient artistic bent, (alternate careers at one point were architecture and industrial or automotive design) continued as the layout man and became also the typesetter while his "better half" became chief typist as well as both the managing editor and the business manager, which included doing just about everything else except the printing. She is in fact really "the publisher."

We learned a lot and fast. In those days, it took two months of our time, truly full time, both of us, to turn out each issue. That gave us a few weeks to breath and catch up on other things in between issues. (We have gotten a lot quicker at it, but it still takes the better part of a month.)

At the end of 1989, Storter decided they suddenly needed a lot more of our money just to print the journal since we were no longer paying them for layout and typesetting. So we searched for another printer which we finally found down in Kissimmee, (near Orlando), Cody Publications, who was at that time all periodicals. They were great, printing 50 or 60 commercial serial publications.

Also that Spring, on recommendation, we traveled to Washington DC to personally talk to the people at the National Library of Medicine about getting into Index Medicus. It was already longer that we thought it should have been but we were soon to find our expectations not rapidly fulfilled. Nor did our visit to NIH seem to help at all, in spite of our attempt to play Washington politics.

Maybe, we thought, a more impressive title would help, so we became Binocular Vision & Eye Muscle Surgery thinking that "surgery" in the title might be a key to entry to the NLM as we could claim to be the only journal devoted to strabismus SURGERY.

Just a year later, in 1991, Mr. Cody retired and closed his printing business. One of his salesmen, a Mr. Willis, opened his own company and tried to service Cody's customers. However, as good as he was as a salesman, he was not a good printer's agent and after a couple of difficult issues, we again sought printing elsewhere.

This time we found it in the F.M.A., the Florida Medical Association. We turned to their printer in Jacksonville, Centurion Press. They did a nice job on the monthly Florida Medical Journal and they did a nice job for us. But once again, after just a few good years, the Florida Medical Association, which had created Centurion Press to print their journal, closed it and turned the printing over to a foreign printer. [very early out-sourcing!] Some employees at Centurion, who had been most helpful to us, found themselves new printing jobs....(continued on page 61)
EDITORIAL: STRABOLOGY? YES !... and now implemented in our new title with this issue; Thank Jobs; Eye Muscle Surgery for Infantile Nystagmus, DHD and Paradoxical V, & CELEBRATE with us OUR 25TH ANNIVERSARY! Thanks to All you Subscribers, Contributors and Ed Board Members.

Here we go.

One does not need any approval to modify the title of a publication, so “alia iacta est”, “the die is cast”, it is done.

On the cover you will note also the full familial name of the founding editor, as explained in the masthead, on page 21of this issue. He (me) would not have dared to do this in his youth, but we all seek legacy when we get older and this is ours. We are encouraged to follow the youngest generation in its irrepressible self centration., which in spite of its contradiction of what older generations were taught, seems to be the inevitable direction of the future. So get onboard! The “I” phone and the “I” PAD seem such appropriate names, don’t they!

And while we are on Steve Jobs we must thank him for breaking the “wide screen” movie mode monopoly on our monitors, and making the vertical, page like, monitor screen, which we have long advocated, an easily accessible alternative.

As noted, title and name changing is easy, but the ISSN International Standard Serial Number authorities want to give us a new number because there is a change within the first five words of the title, so we are awaiting that, and so is MedLine, so we are temporarily, momentarily in limbo but have been assured that nothing else will change. (See our updated history, pages 26-27and 62-64, especially the last page for details).

IN THIS ISSUE

First dig the Correspondence: Join Ed Board member-adventurer as he summits the highest mountain in the world! (outside the Himalayas!-which may be next?). And Richmond Products gives us a free tutorial.

A Stellar New Surgical Approach for Nystagmus-Induced Head Turn. Bishop JE. Binocul Vis Strabology Q 2011; 26:30-36. [A Power Point Presentation]

The author sent us the PP slides of a paper he had presented at a couple of meetings last year, for our opinion regarding the publishability of his research.

We thought it was good and suggested submission. Then, when it was apparent that the presented PP paper was a good outline of the formal scientific article, we thought maybe we could publish both with the PP slides of the presentation first, as an outline super abstract of the written article.

So after acceptance, Dr.Bishop accep-
Our proposal and we did it (as above).


To name the procedure properly, traditionally, he (and we) continued the custom with the still longer multiple eponym above. Dare we further suggest that, maybe for efficiency one might just call this procedure “a Bishop”? Results are good.

This cartoon (right), (just published!); if you follow Dilbert (right) and his pain-in-the-butt coworkers (left), suggests that Power Point Slides are an art form! We are flattered to have already published them as such...

Diagnosis and Surgical Treatment of Dissociated Horizontal Deviation Strabismus. Gamio S. Binocul Vis Strabology Q 2011; 26:43-50

We commend this author for attacking this most difficult area of both diagnosis and treatment in strabology. We especially appreciated her very careful and precise clinical method of determining and separating DVD from similar strabismus pathologies.

Inferior Oblique Muscle Palsy with “Paradoxical” V-Pattern Strabismus. Khawam E., Fahed D. Binocul Vis Strabology Q 2011; 26:51-60

Once again these authors thoroughly review and explain and illustrate with a case another most unusual form of strabismus.

Thanks to the extraordinary personal experience and report of David Coats, which we just had to publish since those “spot checks” we were sent almost daily were remarkably strong in making us feel we were part of his climb and publishing it, we have no room in this issue for our usual Hyde Park blog.. How about a supplement?

As a ghost of that blog, we will stick in here just a couple of traditional items:

1. Tax time is upon us. Check the last issue of Hyde Park in BV&SQ 25(4) for our latest advice on that. Government at every level continues to rip its citizens off. Now they tell us to make sacrifices and accept higher taxes to fill the monster gap they created by their errors which they won’t even admit or apologize for, or help pay for ever.

2. The health care insurance industry continues to make outrageous and enormous profits on us and our patients: United Health posted a 31% increase in profit last year, and just this last week it is revealed that KKR and Bank of America invested $5 billion in HCA in 2006 and are now reaping $15 billion in return, a $10 billion profit in 4 years - only almost 50% a year....

Hope to CU in SD -per
A Stellar Novel Surgical Approach for Nystagmus-Induced Head Turn

JOHN E. BISHOP, M.D.

Slides for Paper presented (i.e. an outline for the following article) at the Costenbader Society Meeting Augusta, Maine, August 8, 2010 and the Texas Pediatric Ophthalmology [ & Strabology ] Meeting, Fort Worth, Texas, September 18, 2010. From the Driscoll Children’s Hospital and the Department of Pediatrics, Texas A & M Health Science Center College of Medicine, Corpus Christi, Texas.

**Kestenbaum Procedure**
- Described by Kestenbaum in 1953
- For right head turn recess RMR and LLR and resect RLR and LMR
- Kestenbaum operated 5 mm each muscle. Parks described 5-6-7-8, and Calhoun and Harley augmented this further.
- Because of its power to correct a head turn widely considered to be the procedure of choice for null point nystagmus.

**Anderson Procedure**
- Described independently by Anderson in 1953
- For right head turn recess RMR 5 mm and LLR 5 mm. Avoids resections which may exacerbate nystagmus
- Currently most surgeons augment this with larger recessions (MR 7-10 mm, LR 9-12 mm)

**Criticalisms of Kestenbaum Procedure**
- Patients may assume opposite head turn for comfortable/casual seeing
- Some patients may be overcorrected
- Resections may exacerbate nystagmus, limit future surgical alternatives and create greater patient discomfort
- Correction may fade with time

**Criticalisms of the Anderson Procedure**
- May undercorrect head turn
- Effect may fade with time

"NEWER" NYSTAGMUS PROCEDURES
- Retroequatorial recession of four horizontal recti
- Tenotomy/re-insertion of four horizontal recti
Repeat Slide 7 of 19 (Bishop)

“NEWER” NYSTAGMUS PROCEDURES

- Retroequatorial recession of four horizontal recti
- Tenotomy/re-insertion of four horizontal recti

Slide 8 (Bishop) of 19

Retroequatorial Recession of Horizontal Recti

- Described by Bietti in 1956 and Bietti and Bagolini in 1960
- Popularized by Von Noorden and Helveston et. al in 1991
- Recess MROU 9-10 mm and LROU 11-12 mm

Slide 9 (Bishop) of 19

Criticisms of Four Muscle Recession

- Very large recessions may be technically challenging
- Re-operations may be difficult
- Effect may fade with time
- Corrects head posture only by dampening nystagmus

Slide 10 (Bishop) of 19

Tenotomy and Re-insertion of Horizontal Recti

- Described by Dell’Osso and Hertle in 1999
- Advocated principally for nystagmus without compensatory head posture
- Corrects CHP only by dampening nystagmus
- Suggested that much of the nystagmus dampening effect of the Kestenbaum procedure could be attributed to the 4 muscle tenotomies.
- Proposed (but presented no data) that ET with nystagmus could be effectively treated with recession of MROU and tenotomy/re-insertion of LR0U
- Effect may fade with time
“Ideal” Procedure for Nystagmus with Face Turn

- Effectively corrects CHP
- Maximally dampens nystagmus
- Technically easy
- Preserves options for future surgery
- Minimal patient discomfort

Proposed “New” Procedure

- For right head turn – recess RMR 7-10 mm and LLR 9-12 mm, combined with tenotomy/re-insertion RLR and LMR
- Essentially an augmented Anderson procedure combined with tenotomy/re-insertion of the remaining horizontal recti

Advantages of “New” Procedure

- Seems to effectively correct CHP (data later)
- May dampen nystagmus more than Kestenbaum by avoiding resections and more than Anderson by tenotomizing all 4 horizontal recti
- Preserves options for additional surgery (i.e., conversion to Kestenbaum)
- Avoids overcorrection or opposite head turn for comfort seen in Kestenbaum procedure (data later)
- Technically less challenging than Kestenbaum or retro-equatorial recession of all 4 horizontal recti
- More comfortable for the patient
Slide 14 and 15 (Bishop) of 19: **RESULTS of “NEW” Procedure in Five Patients**

(In column four, “nystagmus”: Cases 1-3 and 5 showed a reduction of nystagmus \( \downarrow \); in case 4 it was unchanged.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Amt MR/LR</th>
<th>Pre-op CHP</th>
<th>Post-op CHP</th>
<th>Nystagmus Change</th>
<th>Follow Up (Days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7/9</td>
<td>14°</td>
<td>4°</td>
<td>( \downarrow )</td>
<td>345</td>
</tr>
<tr>
<td>2</td>
<td>8/10.5</td>
<td>40°</td>
<td>11°</td>
<td>( \downarrow )</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>7/9</td>
<td>19°</td>
<td>2°</td>
<td>( \downarrow )</td>
<td>222</td>
</tr>
<tr>
<td>4</td>
<td>8/10</td>
<td>20°</td>
<td>3°</td>
<td>Same</td>
<td>43</td>
</tr>
<tr>
<td>5</td>
<td>8/10</td>
<td>15°</td>
<td>1°</td>
<td>( \downarrow )</td>
<td>48</td>
</tr>
</tbody>
</table>

Pre and Post-Op Photos

#2  #3  #4  #5
Slide 16 (Bishop) of 19

Limitations of Study

• Retrospective
• No controls (Kestenbaum or Anderson)
• Small sample size with limited follow up
• No eye movement recordings

Slide 17 (Bishop) of 19

Conclusion

An augmented Anderson procedure combined with tenotomy/re-insertion of the remaining horizontal recti appears effective at correcting a CHP in null point nystagmus. Compared to other procedures, this operation is technically easy, preserves future surgical options, may avoid overcorrections, may maximally dampen nystagmus, and is more comfortable for the patient.
"Bear in mind the imperfection of our current knowledge. Science is never finished. It proceeds by successive approximations, edging closer and closer to a complete and accurate understanding of Nature, but it is never fully there. From the fact that so many major discoveries have been made in the last century – even in the last decade – it is clear that we still have far to go. Science is always subject to debate, correction, refinement, agonizing reappraisals, and revolutionary insights."

SHADOWS OF FORGOTTEN ANCESTORS
Carl Sagan and Ann Druyan, 1992
REFERENCES

A Novel New [Yet Again] Procedure for Correction of Compensatory Head Posture in Infantile Nystagmus: Augmented Anderson Plus Dell’Osso-Hertle

JOHN E. BISHOP, M.D.

from the Driscoll Children’s Hospital and the Department of Pediatrics, Texas A & M Health Science Center College of Medicine, Corpus Christi, Texas.

ABSTRACT: **Purpose:** To evaluate the effectiveness of an augmented Anderson procedure combined with tenotomy and reattachment of the remaining horizontal rectus muscles in correcting horizontal compensatory head posture associated with idiopathic infantile nystagmus.

**Methods:** Clinical records of five subjects with horizontal compensatory head posture secondary to infantile nystagmus who underwent an augmented Anderson procedure combined with tenotomy and reattachment of the remaining horizontal rectus muscles were retrospectively reviewed. The main outcome measures were angular reduction of head turn, nystagmus reduction, and visual acuity.

**Results:** The mean preoperative head deviation of 19.6 degrees decreased 79% to a postoperative mean of 4.2 degrees. No patient was overcorrected. Nystagmus was decreased in four of five subjects. Visual acuity improved by one Snellen line or more in three eyes, improved less than one Snellen line in two eyes, and was unchanged in five eyes.

**Conclusions:** An augmented Anderson procedure combined with tenotomy and reattachment of the remaining horizontal rectus muscles is safe and effective in reducing both abnormal compensatory head posture and nystagmus in idiopathic infantile nystagmus with minimal risk of overcorrection.

Received for consideration November 15, 2010; accepted for publication December 3, 2011. Presented at the 2010 Costenbader Society Meeting, Augusta, Maine, August 8, 2010 and at the 2010 Texas Association for Pediatric Ophthalmology and Strabismus Meeting, Fort Worth, Texas, September 18, 2010.

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INTRODUCTION

Compensatory head posture associated with infantile nystagmus is well described. Classic approaches for correcting an abnormal head posture, a head (face) turn with gaze-shifting surgery include the Kestenbaum procedure (1), and the Anderson procedure (2).

Others have advocated nystagmus reduction procedures to achieve head posture correction. Helveston (3) suggested maximal four horizontal rectus recessions. Dell'Osso and Hertle (4) described four horizontal rectus tenotomy and reattachment surgery for nystagmus damping. More recently, last year, Hertle et al (Binoc Vis Strab Q. 25:72-93, 2010) reported seven subjects who underwent an Anderson procedure combined with tenotomy and reattachment of the remaining horizontal rectus muscles (5). See discussion on page 39, 40 for further details of background history.

This report describes the author’s contemporaneous detailed experience with combining the gaze-shifting principle of an augmented Anderson procedure with the nystagmus reducing principle of tenotomy and reattachment of all four horizontal rectus muscles.

SUBJECTS and METHODS

Under Driscoll Children’s Hospital Institutional Review Board approval, and in compliance with the requirements of the United States Health Insurance Portability and Privacy Act, (HIPPA) the clinical records of five subjects receiving simultaneous gaze-shifting and nystagmus reduction surgery were retrospectively reviewed.

All patients had onset of horizontal nystagmus in early infancy which remained horizontal in upgaze and did not produce oscillopsia. None had serious visual loss, structural signs of albinism, optic nerve hypoplasia, photophobia or paradoxical pupillary phenomena to suggest a congenital retinal dystrophy. None had neurologic disease or developmental delay.

All procedures were performed by the author between July 2009 and July 2010. With parental informed consent, all patients received an augmented Anderson procedure (recessing one medial rectus muscle 7-8 mm and recessing the contralateral lateral rectus muscle 9-10.5 mm) combined with tenotomy and reattachment surgery on the remaining two horizontal rectus muscles. Pre- and postoperative head posture, nystagmus and monocular best-corrected visual acuities were assessed by the author solely employing clinical observations, measuring head turn with a goniometer.

RESULTS

The five subjects consisted of three males and two females with typically habitual abnormal head posture secondary to idiopathic infantile nystagmus, aged 25-141 months (mean 64 months, median 56 months). The Table, top next page, outlines the clinical data. Pre-operative horizontal head turn ranged from 14° to 40° (mean 19.6°, median 19°).

Postoperatively, all their head turns were improved, with a residual same-sided head turn range of 2° - 11° (mean 4.2°, median 3°). Mean correction was 79% of the preoperative angle. The net angle of correction ranged from 10° - 29° (mean 17.4° and median 17°). Follow-up ranged from one day (subject lost to follow-up) to 345 days, with a mean of 132 days and a median of 48 days.

Monocular visual acuity improved by one Snellen line in three eyes, improved less...
### Table

**Summary of Patient Clinical DATA, Pre- and Postoperatively and RESULTS of Eye Muscle Surgery for Abnormal Head Posture in Infantile Nystagmus**

<table>
<thead>
<tr>
<th>Subject #</th>
<th>Sex</th>
<th>Age (Months)</th>
<th>mm Surgery</th>
<th>Pre-Op Head Turn</th>
<th>Post-Op Head Turn</th>
<th>Pre-Op VA OD/OS</th>
<th>Post-Op VA OD/OS</th>
<th>Change in Nystagmus Amplitude</th>
<th>Follow-up (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>141</td>
<td>7/9</td>
<td>14°</td>
<td>4°</td>
<td>20/40-1</td>
<td>20/30-1</td>
<td>Decreased</td>
<td>345</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>25</td>
<td>8/10.5</td>
<td>40°</td>
<td>11°</td>
<td>CS(M)</td>
<td>CSM</td>
<td>Decreased</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>38</td>
<td>7/9</td>
<td>19°</td>
<td>2°</td>
<td>20/60</td>
<td>20/60</td>
<td>Decreased</td>
<td>222</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>61</td>
<td>8/10</td>
<td>20°</td>
<td>3°</td>
<td>20/30-2</td>
<td>20/30+2</td>
<td>Same</td>
<td>43</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>56</td>
<td>8/10</td>
<td>15°</td>
<td>3°</td>
<td>20/40</td>
<td>20/30</td>
<td>Decreased</td>
<td>48</td>
</tr>
</tbody>
</table>

than one full Snellen line in two eyes, and was unchanged in five eyes.

The amplitude of horizontal nystagmus was clinically reduced in 4 of the 5 subjects.

No subject experienced a surgical complication or significant post-operative discomfort.

**DISCUSSION**

Patients with null point nystagmus assume an abnormal and compensatory head posture of a horizontal head (i.e., face) turn to put the eyes in the direction of gaze where nystagmus is minimized and visual acuity is maximized.

The ideal eye muscle surgery procedure for these patients would correct the head turn, and also maximally damp the nystagmus, be technically easy, preserve future surgical options, and produce minimal patient discomfort. Previously described surgical approaches for customary abnormal head posture secondary to null point nystagmus have either aimed to correct the head posture by shifting gaze (Kestenbaum and Anderson procedures) or by damping the nystagmus (large recession of four horizontal rectus muscles).

In 1953 Kestenbaum (1) treated the head turn by recessing both a medial rectus muscle and a contralateral lateral rectus muscle 5 mm, and resecting the two remaining horizontal rectus muscles 5 mm. This procedure was augmented to 5-6-7-8 mm by Parks (6), and further increased 2 mm per muscle to 7-8-9-10 mm by Calhoun and Harley (7). Because of its power to correct a head turn, the
augmented Kestenbaum procedure became the standard treatment for nullpoint nystagmus. Although efficacious, the Kestenbaum procedure has several practical problems. It may produce overcorrections. Because patients must chronically exert a large gaze direction effort to hold their eyes and head straight, some assume a head turn to the opposite side to sustain comfortable vision. Furthermore, resections create more patient discomfort. Theoretically, by strengthening muscles, large resections could exacerbate nystagmus. Because resections discard tissue, they are inherently irreversible, and future surgical options may be limited. Finally, the head posture correcting ability of Kestenbaum procedures may fade with time.

Independently, but also in 1953, Anderson described recessing a medial rectus muscle 5 mm and the contralateral lateral rectus muscle 5 mm for correction of horizontal head posture with nullpoint nystagmus. This approach is, in essence, the recession half of Kestenbaum's procedure. Because the original procedure’s ability to correct a head turn was limited, most surgeons perform an augmented Anderson procedure by recessing the medial rectus muscle 7-10 mm and the contralateral lateral rectus muscle 9-12 mm. Like the Kestenbaum procedure, the Anderson procedure’s head posture therapeutic effect may fade with time. Because only two horizontal muscles are disinserted, the Anderson procedure is believed to damp nystagmus less than the Kestenbaum procedure, where all four horizontal rectus muscles are disinserted.

Large recessions of all four horizontal rectus muscles to decrease horizontal nystagmus was described in 1956 by Bietti. Generally, to place the new insertions behind the equator, recession amounts are large, from 10 to 12 mm. Although principally employed to damp nystagmus and improve visual acuity, Helveston has reported correction of anomalous head posture in some cases. As the recessed muscles undergo contracture, the effect of this operation may fade with time. Very large recessions may be technically challenging, with reoperations being even more difficult.

In 1999, based on research in the achiasmatic Belgian sheep dog model of infantile nystagmus, Dell'Osso and Hertle proposed four horizontal rectus tenotomy and reattachment surgery to damp nystagmus. In the same article, they also suggested that much of the nystagmus damping effect of the Kestenbaum procedure could be attributed to the four horizontal rectus muscle tenotomies, and further proposed (but presented no data) that infantile esotropia with nystagmus could be effectively treated by recessing both medial rectus muscles and tenotomizing and reattaching both lateral rectus muscles. Later clinical studies by Hertle and Dell'Osso showed improved nystagmus in adults and children following four horizontal rectus muscle tenotomy and reattachment surgery. Although diminished nystagmus may improve an anomalous head posture, there are no reports specifically employing this procedure (tenotomy and reattachment of all four horizontal rectus muscles) to correct an abnormal compensatory head posture due to nullpoint nystagmus. More recently, in 2010, Hertle et al reported that of their 100 surgical nystagmus patients, seven were treated with an Anderson procedure combined with tenotomy and reattachment on the remaining horizontal rectus muscles for head posture correction. Three of these patients had...
other significant underlying neurologic or ophthalmologic diseases. The favorable results, furthermore, were not independently analyzed with regard to the effect on such head postures from such a specific procedure, being reported only in combination with 15 other subjects receiving simultaneous horizontal strabismus and nystagmus reduction surgery.(5)

By combining elements of both gaze-shifting and nystagmus reduction procedures, the specific technique described and used in this report may have several advantages. It appears to effectively correct head posture with little to no risk of overcorrection. By avoiding the resections of the Kestenbaum procedure, it may have less propensity to exacerbate nystagmus, as well as better preserving future surgical options (including conversion to a Kestenbaum procedure, should significant undercorrection occur). Furthermore, by avoiding resections, there is less patient discomfort. Compared to Anderson’s procedure, because a tenotomy is performed on all four horizontal rectus muscles, the new procedure may damp nystagmus more effectively. Such additional reduction in the magnitude of nystagmus may expand the null zone more effectively, further obviating the need for a compensatory head posture. Finally, because the new procedure limits large recessions to only two horizontal rectus muscles, it is also technically less challenging than large recessions of all four horizontal rectus muscles.

The present study has several limitations. First, it is an uncontrolled retrospective study with no control groups receiving either an augmented Anderson procedure alone or a Kestenbaum procedure. Second, the sample size is small and the follow-up limited in some cases. Third, there are no eye movement recordings to document the magnitude of nystagmus reduction, the effect of the procedure on foveation periods, or the expansion of null zones. Finally, this study does not provide proof of concept for an additive or synergistic effect for tenotomy and reattachment and two muscle recession since the two procedures were not performed sequentially.

Nevertheless, based on the limited data presented here, it appears that an augmented Anderson procedure combined with tenotomy and reattachment of the remaining horizontal rectus muscles is demonstrably safe and effective at correcting a compensatory head posture in infantile nystagmus.

This procedure is technically easy, preserves future surgical options, avoids overcorrections, effectively damps nystagmus, and produces minimal patient discomfort.

References, next page

[Editor’s note: For the record, it is noted that the cited Hertle study was actually first electronically published in this periodical at our website, BinocularVision.net on June 30, 2010 (and as they also are, quarterly, restricted hand made print copies were produced and distributed shortly thereafter in mid-July), while all patients in this Bishop paper are reported to have had their here-reported surgery by, i.e. prior to, June 30, 2010: “Between July 2009 and July 2010”, see text above. -per]
REFERENCES

Diagnosis and Surgical Treatment of Dissociated Horizontal Deviation Strabismus

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ABSTRACT: Purpose: Obtaining satisfactory binocular alignment in patients with Dissociated Horizontal Deviation (DHD) requires a proper diagnosis and a specific surgical strategy. Clinical characteristics, surgical treatment and the results obtained in 20 patients with DHD are reported with a mean of 35 months postsurgical follow up.

Patients and Methods: Retrospective record review of patients with DHD who underwent surgery between 2000 and 2007. Patient data were recorded, including age, sex, history of prior surgery, visual acuity, pre-operative angle with each eye fixing, Reversed Fixation Test (RFT) when available, type of operation performed, and final binocular alignment.

Results: Twenty patients were identified, mean age 11.7 years old, all of them with age < 12 months at the time of strabismus onset. Ten of them had prior surgery for congenital esotropia. Nine showed exotropia (XT), 9 esotropia (ET) and 2 had ET when fixing with OS and XT when fixing with OD. All of them also had an associated Dissociated Vertical Deviation (DVD). Seven patients had amblyopia in the non-dominant eye. Six patients underwent a single operation, 13 underwent 2 operations and 1 needed 3 surgeries to obtain satisfactory binocular alignment.

Conclusions: Patients with DHD also exhibit bilateral and, very often, asymmetric DVD. Therefore, a surgical plan for both the horizontal and vertical dissociation drift of the eyes is needed. Bilateral surgery is almost always necessary, even in cases with a strong fixation preference, in order to obtain satisfactory binocular alignment.

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INTRODUCTION

Dissociated strabismus represents a challenge for diagnosis and surgical treatment. It is commonly found in patients with early onset strabismus and profound sensorial anomalies.

Diagnosis is not easy because the movement is slow and needs a more prolonged occlusion to appear; the amount of deviation is variable, intermittent and depends on attention. Besides, these patients usually show horizontal, vertical and torsional movements when performing the cover test and the amount of deviation is different when fixing with each eye. They also have head tilts and associated oblique muscles dysfunctions in many cases.

Therefore, surgical treatment of patients with DVD (Dissociated Vertical Deviation) and DHD (Dissociated Horizontal Deviation) requires a specific surgical approach. Long-term surgical results and recommendations for these cases remain sparse in literature.

The purpose of this article is to report the clinical characteristics and the surgical outcomes of 20 patients with DVD and DHD who underwent surgery between 2000 and 2007 and have a mean of 35 months of post-surgical follow up.

PATIENTS AND METHODS

Retrospective record review of patients operated on for DVD and DHD between 2000 and 2007. (See Table 1, next page.)

The diagnosis of DHD was made according to the detection of a different horizontal deviation when fixing with each eye during cover testing; unrelated to accommodation, muscle weakness or restriction which can induce a primary and secondary deviation.

The horizontal deviation cannot be neutralized through the classical prism and alternating cover test. Alternate cover testing must be performed slowly allowing the non-fixing eye time for the slow drift to fully manifest. It is necessary to make the right eye fixate first and neutralize with prism the left eye deviation and then let the left eye fixate and neutralize the right eye deviation.

Measuring horizontal and vertical dissociated deviations is complicated because we need to superimpose horizontal and vertical prisms over each eye. In addition, it is necessary to measure DVD and DHD with each eye fixating in all gaze positions (including head tilts) in order to have the necessary panorama to choose the best surgical procedure for each case.

The Reversed Fixation Test (RFT) had been performed in 7 patients only before the surgery. During this test, the patient was asked to fixate through the prism that neutralized the deviation of the non-fixing eye and then the occluder was shifted to the fixing eye while being observed for any refixation movement when the cover test was performed. The test is positive when we can observe a refixation movement which can be measured placing prisms in front of this fixing eye.

DHD is often observed to be larger with visual inattention than when the prism measurements are made and the eye position under general anesthesia usually shows greater deviation than the measured angle in the awake state.

The following data were obtained: 1) age of strabismus onset 2) sex 3) history of
# TABLE 1: Preop’ Clinical data of 20 patients with DHD and DVD

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Sex</th>
<th>Prior surgery</th>
<th>Fixing eye</th>
<th>VA</th>
<th>Refraction</th>
<th>Fixing OD</th>
<th>Fixing OS</th>
<th>Oblique</th>
<th>Tilt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>8 F</td>
<td>6</td>
<td>Bil MR rec</td>
<td>OD: 1.0</td>
<td>OD: 1.0</td>
<td>+2.25 +2 x 85 +2.50 +1.25 x 96°</td>
<td>XT 15 DVD 12</td>
<td>DVD 8</td>
<td>SOOA</td>
<td>I</td>
</tr>
<tr>
<td>2.</td>
<td>12 F</td>
<td>7</td>
<td>Bil MR rec</td>
<td>OD: 1.0</td>
<td>OS: 1.0</td>
<td>+0.75 x 75° +0.75 -1.50 x 170°</td>
<td>XT 20 DVD 8</td>
<td>XT 8 DVD 20</td>
<td>4 ob. OA</td>
<td>D</td>
</tr>
<tr>
<td>3.</td>
<td>36 F</td>
<td>Bil surgery</td>
<td>OD: 0.9</td>
<td>OS: 0.2</td>
<td>+3.50 +1.25 x 50° +3.50 +1.75 x 110°</td>
<td>XT20</td>
<td>DVD12</td>
<td>normal</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>25 F</td>
<td>Bil. surgery at 1.5 yo</td>
<td>OD: 1.0</td>
<td>OS: 0.2</td>
<td>+0.25 x 64° +2.50 x 120°</td>
<td>XT15 DVD 12</td>
<td>XT10 DVD 15</td>
<td>normal</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>6 M</td>
<td>Botox in MR (6months) Bil IO weak.</td>
<td>OD: 1.0</td>
<td>OS: 1.0</td>
<td>+2.25 x 100° +1.25 +1.50 x 80°</td>
<td>XT 20 DVD 12</td>
<td>DVD 10</td>
<td>IOOA</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>7 F</td>
<td>6.5 mm Bil MR rec at 14 months</td>
<td>OD: 1.0</td>
<td>OS: 1.0</td>
<td>+0.50 -0.50 x 109°</td>
<td>ET 10 DVD 15</td>
<td>DVD12</td>
<td>IOOA</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>9 F</td>
<td>no</td>
<td></td>
<td>OD: 1.0</td>
<td>OS: 1.0</td>
<td>+1.50 +0.50 x 90° +1.75 +0.50 x 55°</td>
<td>ET 20 DVD 20</td>
<td>ET15 DVD 20</td>
<td>IOOA</td>
<td>D</td>
</tr>
<tr>
<td>8.</td>
<td>9 F</td>
<td>Esp. Evolution from ET to XT</td>
<td>OD: 1.0</td>
<td>OS: 1.0</td>
<td>+1.25 +0.75 x 95° +1.25 +0.50 x 80°</td>
<td>XT30 DVD 10</td>
<td>ET6 DVD 20</td>
<td>SOOA</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>7 F</td>
<td>no</td>
<td></td>
<td>OD: 1.0</td>
<td>OS: 0.9</td>
<td>+2 -3 x 160° +2 -3.25 x 180°</td>
<td>ET 10 DVD 15</td>
<td>ET20 DVD 10</td>
<td>normal</td>
<td>D</td>
</tr>
<tr>
<td>10.</td>
<td>6 F</td>
<td>Esp. Evolution from ET to DVD</td>
<td>OD: 1.0</td>
<td>OS: 1.0</td>
<td>0.50 +0.25 x 125° +0.50 +0.50 x 124°</td>
<td>ET12 DVD 15</td>
<td>DVD10</td>
<td>IOOA</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>7 F</td>
<td>no</td>
<td></td>
<td>OD: 1.0</td>
<td>OS: 1.0</td>
<td>-2.25 -2.50 x 177 -2.50 -1.75 x 175°</td>
<td>XT 20 DVD 15</td>
<td>XT 30 DVD 10</td>
<td>IOOA</td>
<td>I</td>
</tr>
<tr>
<td>12.</td>
<td>4 F</td>
<td>Evoluc. Esp. de ET a ortotropia</td>
<td>OD: 1.0</td>
<td>OS: 1.0</td>
<td>+2.25 +2.50 +0.50 x 90°</td>
<td>DVD20</td>
<td>ET10 DVD 15</td>
<td>IOOA</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>16 M</td>
<td>LMR rec + LLR resec</td>
<td>OD: 1.0</td>
<td>OS: Cf</td>
<td>+0.25 +0.75 x 109° +0.75 +0.25 x 30°</td>
<td>ET 20 DVD 15</td>
<td>ET 5 DVD 5</td>
<td>normal</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>17 F</td>
<td>surgery at 3 and 5 yo</td>
<td>OD: 1.0</td>
<td>OS: 0.5</td>
<td>+3 +4</td>
<td>XT 25</td>
<td>ET 8 DVD 6</td>
<td>normal</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>13 F</td>
<td>no</td>
<td></td>
<td>OD: 1.0</td>
<td>OS: 0.9</td>
<td>+1.75 -1.50 x 165°</td>
<td>XT25 DVD 6</td>
<td>XT20 DVD 17</td>
<td>normal</td>
<td>I</td>
</tr>
<tr>
<td>16.</td>
<td>13 M</td>
<td>Bil MR rec</td>
<td>OD: 1.0</td>
<td>OS: 1.0</td>
<td>+1 +1.25 x 70° +0.75 +1 x 80°</td>
<td>ET 8 DVD 25</td>
<td>ET 15 DVD 15</td>
<td>normal</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>16 F</td>
<td>Bil MR rec + LLR resect</td>
<td>OD: 1.0</td>
<td>OS: 0.3</td>
<td>-0.50 -1.25 x 130° -1.50 x 12°</td>
<td>XT12 DVD 20</td>
<td>DVD15</td>
<td>normal</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>12 F</td>
<td>Bil MR rec + Bil IO weak</td>
<td>OD: 1.0</td>
<td>OS: 1.0</td>
<td>+1 +2 x 60</td>
<td>XT4 DVD 20</td>
<td>ET8 DVD 12</td>
<td>SOOA</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>5 F</td>
<td>no</td>
<td></td>
<td>OD: 1.0</td>
<td>OS: 0.5</td>
<td>+0.75 +1.25 x 70° +2.50 +0.75 x 30°</td>
<td>ET30 DVD 8</td>
<td>ET10 DVD 15</td>
<td>normal</td>
<td>D</td>
</tr>
<tr>
<td>20.</td>
<td>7 F</td>
<td>no</td>
<td></td>
<td>OD: 1.0</td>
<td>OS: 0.1</td>
<td>3 +0.75 x 0° +4.50 +1.50 x 0°</td>
<td>ET25 DVD 15</td>
<td>ET10 DVD 12</td>
<td>normal</td>
<td>D</td>
</tr>
</tbody>
</table>

prior strabismus surgery 4) visual acuity 5) presence of amblyopia 6) refraction under cycloplegia 7) dominant eye 8) presence of head tilt 9) horizontal and vertical deviation with each eye fixing 10) reversed fixation test when available 11) oblique muscle dysfunction 12) type of operation performed 13) final binocular alignment 14) length of follow-up since the last surgery.

Ductions and versions were carefully checked because lateral deviation incomitancies due to weakness or restriction could, at first sight, resemble DHD. Glasses were used to correct refractive errors, and thus prevent accommodation differences between eyes.

The surgical plan was tailored to each patient. It was sometimes changed because of the eye position or the findings when performing the spring back test and the forced duction test under general anesthesia.

**PATIENT GROUP CHARACTER**

Twenty patients (See their data also in Table 1, prior page) received surgery for DVD and DHD in the 2000-2007 period. Mean age at surgery was 11.7 years (4 to 36 years old). Seventeen patients (85%) were female.

All patients had a history of their strabismus onset in the first year of life.

Nine patients had received prior bilateral MR recession, 3 others had spontaneous evolution from ET to orthotropia or XT. One child received monocular surgery (MR recession and LR resection), another one had undergone Botox® injections in the medial rectus muscles and bilateral Inferior Oblique (IO) muscle weakening. The remaining 6 patients had had no prior surgery.

The right eye was the dominant eye in 15/20 cases (75%). Seven patients (35%) had amblyopia in the non-dominant eye.

Nine patients had XT, 9 ET and 2 had ET when fixating with OS and and XT when fixating with OD.

Six patients had Inferior Oblique (muscle) OverAction (IOOA), 3 had Superior Oblique (muscle) OverAction (SOOA), one patient had both oblique muscles overacting and the other 10 had normal oblique muscles.

Reversed Fixation Test was performed in 7 patients prior to surgery. (Table 2).

**TABLE 2: Reversed Fixation Test (RFT)**

<table>
<thead>
<tr>
<th>Case</th>
<th>Fixing OS</th>
<th>Fixing OD</th>
<th>RFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>DVD8</td>
<td>xt15 DVD12</td>
<td>ET15 DVD10</td>
</tr>
<tr>
<td>2.</td>
<td>XT8 DVD20</td>
<td>XT20 DVD8</td>
<td>ET15 DVD15</td>
</tr>
<tr>
<td>3.</td>
<td>DVD12</td>
<td>XT20</td>
<td>ET15 DVD10</td>
</tr>
<tr>
<td>4.</td>
<td>XT10 DVD15</td>
<td>XT15 DVD12</td>
<td>DVD15</td>
</tr>
<tr>
<td>5.</td>
<td>DVD10</td>
<td>XT20 DVD12</td>
<td>ET15 DVD10</td>
</tr>
<tr>
<td>15.</td>
<td>XT20 DVD17</td>
<td>XT25 DVD6</td>
<td>ET6 DVD17</td>
</tr>
<tr>
<td>19.</td>
<td>ET8DVD12</td>
<td>XT4DVD20</td>
<td>ET10 DVD12</td>
</tr>
</tbody>
</table>

DVD: Dissociated Vertical Deviation
ET: EsoTropia; XT: eXoTropia
Only two patients had symmetric DVD. Eleven patients with asymmetric DVD had greater hypertropia when fixing with the non-dominant eye. This means that the DVD was greater in the dominant eye.

Nine patients (45%) did not exhibit head tilt, 7 (35%) had a direct (ipsilateral) head tilt: towards the shoulder of the fixing eye and 4 cases had inverse (contralateral) head tilt (20%): towards the shoulder of the non-dominant eye. In the four cases with inverse tilt and in 5/7 cases with direct tilt, the head position improved (reduced) the vertical binocular misalignment. The five cases with direct tilt had a greater DVD in the fixing eye.

The red glass test was performed in two patients:

**Case 2:** A 12 yo girl who had 20 pd XT and 8 pd DVD when she fixated with her right eye and 8 pd XT and 20 pd DVD when she fixated with her left eye. She saw the red light at the right side and below the white light when the red glass was placed in front of her right eye, and with the red glass in front of her left eye she saw the red light also to the right side and below the white one.

**Case 4:** A 25 yo woman who had 15 pd XT and 12 pd DVD when fixing with her right eye and 10 pd XT and 15 DVD when fixing with her left eye exhibited a positive Bielschowsky phenomenon with the red glass in front of her right eye: the left eye went down and adducted. With the red glass in front of the left eye: she saw the red light below the white one and to the right side. With the red glass in front of the right eye she saw the red light below the white one and to the left side.

**SURGERY**

(See Table 3, NEXT page). The extraocular muscle (EOM) surgical techniques most frequently used for DHD were: unilateral LR recession (6 cases); bilateral LR recession (4 cases), unilateral medial rectus recession (4 cases), bilateral medial rectus recession (2 cases). Therefore, 10 patients underwent unilateral horizontal surgery, six bilateral and 4 had no horizontal surgery.

Regarding the surgery for DVD, the procedure most commonly used was bilateral SR recession (7 asymmetric and 6 symmetric recessions). Four patients underwent bilateral InferiorObliqueAnteriorTransposition (IOAT) [and recession IORAT-ed], and 1 case underwent weakening of all 4 oblique muscles. Only 2 cases didn’t receive vertical surgery.

Three cases required a re-operation: one of them underwent a bilateral IOAT and after the surgery the esotropia worsened and the patient then needed a bilateral medial rectus recession; the second one also underwent a bilateral IOAT and unilateral lateral rectus recession and needed an inferior rectus recession for a vertical deviation and a recession of the other lateral rectus for a recidivant XT. The remaining patient needed a unilateral SR recession due to a non-dissociated vertical deviation post- four oblique muscles weakening procedure. When a reoperation was needed, the mean interval between the first and second intervention was 42 months (12 to 72 months).

Including the previous surgery for congenital esotropia, 13 patients received a total of 2 operations; 6 had only one, and one patients had 3 surgeries to obtain adequate binocular alignment. Mean follow-up was 35
TABLE 3: RESULTS: 20 Patients with DHD and DVD After Surgery performed.

<table>
<thead>
<tr>
<th>Case</th>
<th>Surgery</th>
<th>Outcome</th>
<th>Second surgery</th>
<th>F up (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>OD 8 mm SR rec</td>
<td>ort 5 Left DVD</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>OS 9 mm SR rec + 6 mm LR rec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>OD 10 mm SR rec</td>
<td>orthotropia</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>OS 7 mm SR rec+7.5 mm LR rec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>OD 8 mm SR rec+5 mm LR rec</td>
<td>orthotropia</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>OS 7 mm SR rec+7 mm LR rec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>OD 5 mm LR rec</td>
<td>OD DVD 15</td>
<td>OS DVD 5</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>OS 5 mm LR rec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>OD 10 mm SR rec</td>
<td>orthotropia</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>OS 10 mm SR rec + 8 mm LR rec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Bilat IOAT</td>
<td>orthotropia</td>
<td></td>
<td>72</td>
</tr>
<tr>
<td>7.</td>
<td>OD MR rec.+ IOAT</td>
<td>orthotropia</td>
<td></td>
<td>73</td>
</tr>
<tr>
<td></td>
<td>OS MR rec + IOAT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>OD: IO +SO weak.</td>
<td>FixOD ortho</td>
<td>FixOS ET10DVD15</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>OS IO+SO weak +LR rec.</td>
<td>FixOS ET10DVD15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>OD 11 mm SR rec+ 5 mm MR rec</td>
<td>Fix OD DVD 5</td>
<td>Fix OS ET5 DVD5</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>OS 12 mm SR rec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>OD 13 mm SR rec</td>
<td>w/OD ET10DVD6</td>
<td>w/OS DVD8</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>OS 11 mm SR rec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Bil IOAT + 6 mm RLR rec</td>
<td>Fix OD ET6</td>
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<td>Bil. IOAT</td>
<td>Fix OD ET 25</td>
<td>Fix OS ET 30</td>
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<td>13.</td>
<td>OD 6 mm SR rec+ 5mm MR rec</td>
<td>ortho</td>
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<td>OS 10 mm SR rec</td>
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<td>14.</td>
<td>OD 5mm LR rec</td>
<td>ortho OD hyper</td>
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<td>OS7mm LR rec w/adj sut</td>
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<td>15.</td>
<td>OD 6.5 mm LR rec+10 mm SR rec</td>
<td>ortho DVD</td>
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<td></td>
<td>OS 7 mm LR rec+ 7 mmSR rec</td>
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<td>16.</td>
<td>OD12 mm SR rec</td>
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<td>ET15 DVD6</td>
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<td>OS 12 mm SR rec</td>
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<td>17.</td>
<td>OD 10 mmSR rec</td>
<td>ortho</td>
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<td>OS 12 mm SR rec+ 6 mmLLR rec</td>
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<td>18.</td>
<td>OD:10mmSR rec</td>
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<td>OS:8 mm SR rec</td>
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<td>19.</td>
<td>OD:10mm SR rec</td>
<td>ortho</td>
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<td>OS: 8mm SR rec+ 5mm MR rec</td>
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<td>20.</td>
<td>OD:8 mm SR rec</td>
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<td>OS:8 mm SR rec + 5.5 mm MR rec</td>
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The final binocular alignment and the follow up time since the last surgery are shown in Table 3, prior page.

DISCUSSION

DHD has become a more recognized entity in the last few years and is usually related to the horizontal deviation that is associated to DVD in patients with early onset strabismus history. (1-6) The main diagnostic signs of DHD are the presence of horizontal deviation (ET or XT) that changes with the fixation of each eye, unrelated to different accommodation due to anisometropia or presence of primary and secondary deviation due to weakness or restriction.

It is a slow and variable horizontal movement, similar to the intermittent hypertropia that characterizes DVD. Commonly both conditions coexist; both are variable and difficult to measure and are also more prominent during inattention.

The Reversed Fixation Test was proposed to diagnose dissociated strabismus. It was first described by Mattheus and col. (7) as a clinical tool to diagnose DVD and later Graf applied it to DHD. (8-10)

Brodsky (11) found that 50% of his patients with consecutive exotropia had DHD as evidenced by a positive RFT. Seven of the 14 patients with DHD had a greater exodeviation when fixating with the preferred eye in Primary Position (PP). In our series, 8 patients had greater exodeviation when fixating with the dominant eye, 4 patients had greater esodeviation when fixating with the non dominant eye and 2 cases had XT when fixating with the dominant eye and ET when fixating with the non-preferred eye. Five patients had greater esotropia when fixing with the dominant eye. (cases 6,13,16,19,20). These findings seem to support his hypothesis that the exodeviation is usually smaller with the nonpreferred eye fixating.

Actually, patients with DVD and DHD may also have horizontal and vertical non-dissociated deviations. If we perform RFT for the vertical deviation alone we can still see the horizontal movement of the eye that is not neutralized with prisms. If we neutralize the horizontal deviation first, the vertical deviation we are measuring is not the vertical deviation that we have in Primary Position (PP). In certain cases, DVD is known to be very asymmetric in lateral gazes, so if we are performing RFT with a 25 pd base in prism in front of the left eye, we are measuring the right DVD in abduction, not in PP.

Examining the patient under general anesthesia (GA) is extremely useful to decide the amount of surgery to be performed. The eye position under GA tends to show greater exodeviation when the innervational forces are abolished. The forced duction can reveal a restriction and the spring back test can determine a weakness in a previously recessed medial rectus muscle.

In 1991, Wilson and McClatchey (12) recommended graded unilateral lateral rectus recession for the treatment of DHD and this was the most common method to treat it when surgery was indicated.

It was said that bilateral surgery is less often required for DHD than for DVD. However, DHD is almost always associated to DVD. Therefore, bilateral surgery to treat both is a good option in many patients. Wilson et al (13) had reported their outcomes from surgical treatment of 33 consecutive patients...
with DHD and they consider that bilateral surgery is needed only occasionally for bilateral DHD when alternate fixation is present and when XT and DHD coexist.

All our patients had DHD coexisting with DVD; 13 cases received bilateral surgery to treat both conditions, 5 underwent surgery just for the DVD because the horizontal deviation was small, and 2 patients received surgery for the horizontal deviation alone, despite the fact that they also had DVD.

**CONCLUSIONS**

DVD and DHD usually coexist. When the vertical or the horizontal deviation manifests frequently, a surgical plan to fix the drift of the eyes is needed. Bilateral surgery is proposed in order to address both conditions simultaneously.

To obtain long-term control of the deviation in patients with dissociated strabismus is difficult; a successful outcome in the post-operative period does not guarantee final binocular alignment. In patients treated for dissociated strabismus we will always detect residual deviation when performing the cover test. The DVD never disappears completely, and the dissociated behavior in DHD persists when testing under a slow cover test as well.

**REFERENCES**

Review and Case Report

Inferior Oblique Muscle Palsy with “Paradoxical” V-Pattern Strabismus

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ABSTRACT: Background and Purpose: A- and V-patterns are commonly encountered with cyclovertical muscle palsies. Inferior oblique (IO) muscle palsy produces an A-pattern caused mainly by the decreasing abducting action of the IO in upgaze and an increasing abducting action of the superior oblique in downgaze. V-pattern association with an IO palsy has not been, to our knowledge, reported before.

The purpose of our paper is to report a patient with IO palsy and a paradoxical V-pattern and explain the proposed pathophysiology behind the V-pattern.

Case Report: We report a 67 year-old female with a 3 year history of diplopia. She met the Bielschowsky/Parks’ three-step test to identify an IO muscle palsy, and she showed all the usual criteria of an IO muscle palsy except for a paradoxical V-pattern.

Conclusion: Many forces affect patterns in cyclovertical muscle palsies. A V-pattern in IO palsy can be explained by the spread of comitance resulting in inhibitional innervational pseudo-palsy of the superior rectus muscle resulting in V-exotropia or in inhibitional palsy of the contralateral superior oblique muscle resulting in V-esotropia.

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INTRODUCTION

In patients with cyclovertical muscle palsy, secondary A- or V-pattern to the horizontal deviation develops along with the vertical and torsional deviations (1).

The pathologic physiology that produces a secondary horizontal deviation in all isolated cyclovertical muscle pareses occurs when the paretic muscle develops a weakness of its horizontal component while, according to Herring’s and Sherington’s laws, the antagonist and yoke muscles of the paretic muscle develop overactions of their horizontal components (2).

The most commonly encountered secondary muscle anomalies in cyclovertical muscle palsies are 1) overaction of the direct antagonist muscle and overaction of its yoke muscle in the fellow eye, and 2) underaction of the yoke of the antagonist, described by Chavasse as “Inhibitional palsy of the contralateral antagonist” (3).

A mnemonic rule (4) to identify the muscle involved in an inhibitional palsy in all isolated cyclovertical muscle palsies would be to change oblique to rectus –or rectus to oblique, the right eye to left eye –or vice versa, and keep superior or inferior unchanged.

Less well known and less encountered secondary muscle anomalies in cyclovertical muscle palsies are described by Urist (5), and called the “Synergistic Hyper” and “Synergistic Hypo”. Urist points out the presence of two “synergistic hyper”: overaction of the synergist of the antagonist, and overaction of the synergist of the yoke. He also describes two “synergistic hypo”: underaction of the synergist of the paretic muscle, and underaction of the synergist of the yoke of the antagonist. So, when underaction of the depressors is produced in one eye, there will tend to be underaction of the elevators in the opposite eye, or vice versa; and conversely, when overaction of the depressors occurs in one eye, there will be overaction of the elevators in the opposite eye, and vice versa.

Starting with a known paretic vertical muscle (5), by constructing the diagram shown in Figure 1, below all of the possible secondary vertical deviations can be easily determined. To explain this, the steps of constructing the diagram are described by Urist (5) as follows: represent underaction of the muscles by a solid triangle, and overaction of the muscles by arrows pointing in the direction of the overaction. Place the base of the triangle in the field of action of the paretic muscle of the involved eye; reverse this triangle in the contralateral eye.

Taking a right superior oblique (SO) palsy as an example, there will be underaction of the right eye looking down, so the triangle is placed with its base down for this eye. For the left eye, the base is reversed. Next, all the muscles are marked in relation to their field of action.

Figure 1 (Khawam & Fahed): Adapted from Urist: Secondary deviations in right superior oblique muscle palsy.
In SO muscle paresis, on looking down, there is decreased abducting action to the paretic muscle along with increased adducting action of its overacting yoke muscle, the inferior rectus (IR) muscle. On gaze up, there is increased abducting action of its overacting antagonist, the inferior oblique (IO) muscle. That explains clearly why in SO muscle palsy a V-pattern horizontal deviation is the rule.

In a superior rectus (SR) paresis, on upgaze, there is decreased adducting action of the paretic muscle, combined with increased abducting action of its overacting yoke muscle, the IO muscle. On gaze down, there is increased adducting action of its antagonist, the IR muscle. Thus, there is a tendency for the eyes to diverge looking up and to converge looking down, producing the V-pattern.

In IR paresis, an A-pattern develops due to the decreased adducting action of the IR on downgaze, combined with the increased abducting action of its yoke, the SO muscle, in downgaze. In upgaze, there is an increased adducting action of the overacting antagonist, the SR muscle.

In IO muscle palsy, the A-pattern is caused by the decreasing abducting action of the IO, and increasing adducting action of its yoke, the SR muscle on looking up and, on looking down, there is increasing abducting action of its overacting direct antagonist, the SO muscle.

In Brown Syndrome (6), there is consistently a V-pattern due to the short SO muscle tendon. The V-pattern is explained by Urist on an anatomical or mechanical basis (2): the tendon of the SO muscle leaves the trochlea and passes downward, backward, and outward at an angle of 54° with the sagittal Y-axis, to insert on the posterior, superior quadrant of the globe. When the tendon is pulled, the anterior portion of the globe depresses and abducts. On looking up, the posterior portion of the globe depresses, and, as it depresses, the tendon of the SO relaxes and lengthens. However, if the tendon is short, it cannot stretch enough to allow the posterior portion of the globe to depress. Consequently, the pull on the tendon on attempt to look up, while not allowing the anterior portion of the globe to elevate, produces abduction of the globe: a V-pattern exotropia results.

PURPOSE

The purpose of our paper is to present a patient who developed an IO muscle palsy fulfilling all the usual criteria of an IO palsy with the exception of developing a V-pattern to the esotropia.

This paradoxical V-pattern in an IO palsy is due to the less well known, and less commonly-encountered secondary muscle anomalies in cyclovertical muscle palsy, described and named by Urist as the “synergistic hyper, and synergistic hypo” (5).

Clinical Findings in IO Muscle Palsy

The action of an individual muscle depends on the relation of the direction of its pull, the “muscle plane” of that muscle, to the three axes around which the globe rotates (7). It also depends on the relation of the axis of rotation of that muscle to the three axes around which the globe rotates. (Figure 2, top next page.)
Figure 2 (Khawam & Fahed): Relationship of the 'muscle plane' and the 'axis of rotation' of the inferior oblique muscle to the x- and y-axes.

When the axis of rotation of a muscle coincides with one axis of the system, contraction of that muscle produces a pure rotation around that particular axis. On the other hand, when the "muscle plane" of a muscle coincides with one axis of the system, no action around that particular axis takes place when that muscle contracts (7).

The IO muscle plane forms, in primary position, an angle of 51° with the median plane or the sagittal Y-axis — "the line of sight" (7) (See Figure 2). Because of this large angle, the IO muscle (as well as the SO muscle, whose "muscle plane" forms, in primary position, an even larger angle of 54° with the Y-axis rendering the SO muscle as a strong incycloductor) is a primary extortor.

In primary position, contraction of the IO muscle, therefore, causes excycloduction, elevation, and abduction of the globe. When the globe is adducted, the angle between the Y-axis of the eye and the muscle plane is reduced and the IO acts more and more as an elevator and less as an excycloductor. With
abduction of the eye, the angle between the Y-axis of the globe and the muscle plane increases. Therefore the IO produces, increasingly, an excycloduction. Since the IO muscle is an excycloductor, an elevator, and an abductor, its paralysis therefore results in weakness of these three components:

1. **Torsional Deviation:** The result is an intorsion of the eye. However, the absence of incyclotropia could be due to cyclofusion, or to monocular sensory adaptation whereby a reordering of the spatial response of the retinal elements along new vertical and horizontal retinal meridians, analogous to abnormal retinal correspondence (ARC). It can also be due to spread of comitance to the synergistic muscle (8) which has an opposite torsional movement: the SR muscle that has a secondary incycloduction movement.

2. **Vertical Deviation:** The paretic eye is hypotropic if the uninvolved eye fixates. If the involved eye fixates, a hypertropia of the uninvolved eye is present. The hypotropia may become especially pronounced in adduction and depression, associated in such instances with overaction/contracture of its direct antagonist, the SO muscle.

3. **Horizontal Deviation:** The normal abducting effect of the IO muscle is greatest in upgaze. Its paralysis, therefore, results in greater esodeviation in upgaze. And, with increasing abducting action, mainly in downgaze, of its antagonist, the SO muscle, an **A-pattern esodeviation** is encountered. An **A-pattern exodeviation**, not infrequently encountered, may develop due to the marked overaction of the SO muscle(s).

4. **Findings on Rotations:** Weakness of the vertical action of the IO muscle, especially in the adduction position is found. However minimal weakness on rotation does not rule out the diagnosis of IO palsy.

   a. **Overaction of its direct antagonist:** the SO muscle. A prominent finding that, in my experience, is always present.

   b. **Overaction of the yoke muscle:** the SR muscle of the opposite eye. In case the affected eye is fixating in adduction, a “Rising eye phenomenon” of the fellow eye is seen in abduction.

   c. **Underaction of the yoke of the antagonist:** described by Chavasse (3) as “Inhibitional palsy of the contralateral antagonist”, the IR muscle of the opposite eye.

5. **Associated Secondary Mechanical Anomalies:** With time, vergence-adaptation followed by muscle-length-adaptation take place: the innervationally-overacting muscles shorten with actual loss of sarcomeres resulting in contractures with structural and fascial restrictions; and the inhibitionally pseudo-palsied muscle(s) elongate with actual increased number of sarcomeres (9).

6. **Habitual Head Postures:**

   a: **Head Tilt:** to the ipsilateral shoulder so that the affected IO muscle is put at rest and the tonic impulses, sent by the otolith apparatus will not have a direct action on it. Head tilt —we believe— is usually a compensatory mechanism to reduce the vertical deviation rather than the torsional one, and thus to gain fusion (10).
b. Head Turn: commonly seen, to the shoulder of the opposite side placing the eye in the field of the lesser vertical deviation, away from the vertical field of fixation of the IO muscle, placing the affected eye in abduction.

c. Abnormal Chin Posture: less commonly encountered than head tilt. In eso-deviation with an A-pattern to the deviation, the patient may assume a chin-up posture to avoid the esodeviation in upgaze. In A-exotropia, the patient may assume a chin-down posture to avoid exodeviation in down-gaze.

7. Forced Head Tilt Test (Bielschowsky’s Sign): The head must be tilted to the opposite shoulder in order to cause maximal vertical deviation. With tilting to the opposite shoulder, both extorters of the eye in the opposite side are stimulated. Since the IO muscle is paretic, its elevating action cannot offset the depressing action of the IR muscle, resulting in increasing hypotropia of the affected eye.

8. Raising-Eye Phenomenon of the Fellow Eye in Abduction: The mechanism of this phenomenon is as follows: in adduction of the affected eye, excessive innervational input is sent to the paretic IO muscle in order to balance that eye vertically. Therefore, a corresponding, equal, excessive innervation goes to its yoke SR muscle via Hering’s Law. This increased innervational input to the SR of the contralateral eye in abduction causes upshot or rising of that eye.

9. Duction versus Version: In palsy of an extraocular muscle, the action of that muscle improves on duction compared to its action on version. A characteristic that does not pertain to mechanical restrictions.

CASE REPORT

This is a 67-year-old woman referred to us because of diplopia and right hypotropia of 3-years duration (Figure 3 A, Below and 3 B, Next Page).

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**Figure 3 A** (Khawam & Fahed): Our patient in 8 of the 9 cardinal gaze positions.

**Figure 3 B** (Khawam & Fahed): Our patient in Bielschowsky Head Tilt Test.
Retinoscopy revealed +1.50 Diopters and +1.00 Diopter of refractive error in the right and left eyes respectively. Visual acuity with her correction was 20/80 OU. Cover testing in the primary position with correction disclosed 16 prism diopters (PD) of right hypotropia (HoT) with 3 PD of exotropia (XT) at distance, and 12 PD of right HoT with 3 PD XT at near. Cover testing in upgaze revealed 25 PD of right HoT with 16 PD of XT, and in downgaze 10 PD of right HoT. In left gaze, cover test showed 30 PD of right HoT and 7 PD of XT, decreasing in right gaze to 6 PD of right HoT. Above, in Figure 3 B, on head tilt test, to the right shoulder, (left frame) there was 12 PD of right HoT. On head tilt to the left shoulder, (right frame) the right HoT increased to 30 PD.

On versions, patient showed a -3 underaction of the right IO muscle, a very pronounced overaction of the right SO muscle, the right eye shooting down on levoversion (Figure3, top, this page). When monocular ductions were performed, the right eye improved substantially its elevation in adduction. When the patient looked down on adduction, in the field of action of the right SO muscle, the left IR muscle appeared underacting by virtue of Hering’s Law of equal (lesser) innervation (Inhibitional Palsy of Chavasse). Indeed, the underaction of the left IR muscle was only seen when the right eye (Figure 4, below, left frame) fixes in adduction and depression, but disappears on duction, (right frame). Double Maddox rod testing revealed 6 degrees of incyclotropia.

**Figure 4** (Khawam & Fahed, stretched): Left, our patient showing underaction of the left inferior rectus muscle in version, but, right, not on duction, on gaze down-and-left.
On external examination, the patient showed a face turn to the left (Figure 5, below) and, at times, a head tilt to the right shoulder.

The presence of a habitual head tilt, the positive BHTT, the marked overaction of the antagonist SO muscle, and the improvement of elevation action of the IO muscle in adduction by duction compared to version all rule out Brown Syndrome (6). Forced duction test could not be done since the patient failed to return to our clinic as repeatedly requested and was therefore “lost to follow up”.

A pseudo-V-pattern can occur if glasses are not worn, because correction reduces the deviation by an unequal amount in elevation, primary position, and depression. To avoid it, all our measurements were done with full optical correction at distance and near (11).

A pseudo-V-pattern, as well as failure to diagnose a clinically significant A-pattern can be seen if accommodation is not controlled during measurements of the A- and V-patterns. That is due to the un-naturalness to the subject to exert accommodative effort in upward gaze, consequently resulting in a decrease of accommodative convergence in that position (11). That was avoided by measuring the A- and V-patterns at the fixation distance of 6 meters.

**DISCUSSION**

A- and V-patterns manifested by a horizontal change of binocular alignment of the eyes from upgaze to downgaze are common (12). V-patterns are most commonly associated with IO muscle overaction and A-patterns with SO muscle overaction (13).

The principles advanced to explain the cause of A- and V-patterns are discussed in the literature by Costenbader (12) and Parks (13). However, “paradoxical” A- and V-patterns to the horizontal deviation are rare. There are few illustrating reports in the literature:
Paradoxical A-pattern esotropia with primary marked bilateral primary over-action of the IO muscles (14-16): We believe factors related to horizontal rectus muscle function in up- and down-gazes may explain this rare pattern seen in reports (14): medial rectus underaction in downgaze, and lateral rectus underaction in upgaze being the cause of the A-pattern despite bilateral IO overaction. In such a situation, we advocated suprplacement of the MR muscles to deal with the A-pattern (17), plus surgical weakening of the IOs to prevent a postoperative development of a V-pattern by their abducting forces.

- **Paradoxical A-pattern in bilateral SO palsy** was reported by Mansour and Reinecke (8). They attributed the pathophysiology of A-pattern, in cases of SO palsy, to the spread of comitance with a) either inhibitional innervational pseudo-palsy of the synergist of the paretic muscle (the IR of the ipsilateral eye), resulting in A-exotropia (Figure 6 directly below), ...

![Figure 6](Khawam & Fahed): Right superior oblique muscle palsy. Spread comitance to the ipsilateral inferior rectus muscle (RIR).

...or b) to inhibitional innervational pseudo-palsy of the synergist of the yoke of the antagonist (the IO muscle of the fellow eye), resulting in A-esotropia (Figure 7, below).

![Figure 7](Khawam & Fahed): Right superior oblique muscle palsy. Spread comitance to the contralateral inferior oblique muscle (LIO).

Our case herein reported, of a patient with a right IO palsy fulfilling all the Parks’ (17), 3-step-diagnostic criteria of cyclovertical muscle palsy, showed a paradoxical V-pattern in her horizontal exodeviation. In agreement with Mansour & Reinecke’s hypothesis, we believe the pathophysiologic mechanism of this paradoxical V-pattern with IO palsy can be explained by the spread of comitance resulting in inhibational innervational pseudopalsy of the synergist of the paretic muscle, the right SR muscle of the affected eye, resulting in V-exotropia (Figure 8, below).

![Figure 8](Khawam & Fahed): Right inferior oblique muscle palsy. Spread of comitance to the ipsilateral superior rectus muscle (RSR) resulting in V-exotropia.

Had the spread of comitance reached the synergist of the yoke of the antagonist – the contralateral left SO, the resulting pattern would have been a V-esotropia.

(Figure 9, top next page, References).
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Vision / Visual Acuity / Amblyopia

When the Mind’s Eye Processes Language. The New Scientist 2011; 209:22. [Précis]

In people blind from birth, the visual cortex adopts complex language processing duties. [No author information]


Amblyopia affects both the programming and the execution of visually guided reaching. The increased ... acceleration phase,... reduced peak acceleration and peak velocity, might reflect a strategy or adaptation of feedforward/feedback control... to compensate for degraded spatio-temporal vision..., allowing patients to optimize reaching performance. (Agnes Wong, Dept of Ophthalmology, Hospital for Sick Children, 555 Univ. Ave, Toronto, Ontario M5G 1X8, Canada Email: agnes.wong@sickkids.ca )

Extraocular Muscles


Consistent segregation of intramuscular motor nerve arborization suggests functionally distinct superior and inferior zones within the horizontal rectus EOMs in both humans and monkeys. Reduced or absent compartmentalization in vertical rectus EOMs supports a potential functional role for differential innervation in horizontal rectus zones that could mediate previously unrecognized vertical oculorotary actions. (Joseph Demer, MD, PhD. Email: jld@ucla.edu)

Botulinum Toxin


The return of function after botulinum toxin-induced muscle paralysis is due to terminal sprouting and formation of new neuromuscular junctions... Injection of CRF or anti-IGFIR after[wards]... prevents this sprouting, which in turn should increase the duration of effectiveness of single botulinum toxin treatments. ...prolonging botulinum toxin’s clinical efficacy should decrease the number of injections needed ..., decreasing the risk of negative side effects and [loss] in drug effectiveness... over a lifetime...  (Dr. Linda McLoon. Email: mcl00001.umn.edu)
(Cont'd from page 27) and us too a new, and our current, printer in Jacksonville, Economy Printing. We have been with them ever since even though we are now retired to Colorado. Fed Ex and UPS and faxes make it easy.

Over the next couple of years we received inquiries from Aeolus Press. In 1995, following the introduction by Aeolus of a European journal entitled simply Strabismus two years earlier, our Board felt should change our name replacing the "Surgery" in our title to become what we still are today, Binocular Vision and Strabismus Quarterly. We also finally officially retired from Florida and clinical practice, to the Rocky Mountains.

The last major chapter in our history to date, was our admission, finally, after 13 years, to Medline and Index Medicus in the mid 1998. This was followed almost immediately by admission to Excerpta Medica and EM Base. This was at least largely the result of the good offices of BV&SQ Editorial Board members Larry Tychsen and David Guyton.

[For the most complete index, however, of what has appeared in BVQ over the first 21 years, including the dozen before we made the NLM grade consult our own Index Binoculus. The NLM is only interested in indexing scientific articles, and only according to the relatively general (for us) MESH keywords. A great deal of the material in BVQ such as meeting reports, book reviews, news, and editorial followup type material is therefore not NLM indexed. Index Binoculus also indexes scientific articles with more detailed and specific terms than MESH, facilitating your retrieval of information. We plan to update it to the present one of these days.]

Last year in the first issue of 2002, we updated and wrote here:

"Now in 2002, we enter yet another phase.

A combination of events has contributed:
1. This "mom and pop" operation, successful for 17 years, is finding it harder and harder to keep up with the latest advances in the use of computers, (no thanks to Bill [the fraud] Gates) and the new on line services provided by large publishers.
2. There have been in the last two years, several exciting medical problems for your editor, which have left him unimpaired but which have made him realize that he's not going to be around forever, and it is time to look for a permanent home for BV&SQ, while I am still able to do so.
3. The journal has enjoyed cooperative efforts of co-promotion with Swets & Zeitlinger, the Dutch successor publisher of Strabismus. Now they are interested in merging the two journals in the near future.

Keep being a subscriber, but keep tuned for future events!"

(Continued)
Update 2003: Well, it (2002) was an exciting year but it didn't turn out quite as we had intended or hoped. We have described some of those happenings already in these pages [See BV&SQ 17(2):76 and 17(4):278]

1. Long time Charter Editorial Board member and [former] friend Carlos Souza-Dias, as outgoing Prexy of the ISA, cleverly blocked our well planned proposal for this journal to become the permanent ISA journal because he thought $49 a year for one merged journal which combined two journals currently costing $84 + $126 = $210 per year - that this was a not an affordable special price for ISA members, who were already being taxed about $75 per person per year to pay for fellowships for non ISA members to provide labor for ISA honchos.!

2. John Martin, the new head of Publisher Swets and Zeitlinger had so much trouble managing Huibert Simonsz, the Editor of his S&Z "Strabismus" Journal, that he changed his mind and upped (insisted upon) his requirement to total 100% Editorial control of the merged journal, in spite of the fact that nowhere in the scientific publishing world is this done by anyone. No M.D. was happy with that.

3. The S&Z Board, in spite of the fact that they would more than double or triple their profit by buying BV&SQ, reneged totally on previously discussed offers for BV&SQ. They limited their offer to initially only one sixth and then finally to only one third of what they had offered in earlier discussions. I had been warned of Dutch businessmen but this was the biggest fraud that this publisher has ever been subjected to by anyone. [P.S. except Bill Gates, of course]

Some unintended consequences of these events were enumerated in last issue's lead editorial. Chief among these is Editor Burt Kushner, after 17 years and 68 cases of his superb strabismus "Grand Rounds", deciding to move on to other major projects since he too has not yet found the fountain of youth, and after almost two decades providing his Grand Rounds published last year. We were all quite happy with the way it turned out. We did the best we could to copy the gorgeous cover style of Jean Paul Wayenborgh's History of Ophthalmology, but in a rich red rather than his royal blue.

Everything else continues unchanged in the lives of your FE and his publisher-orthoptist-wife. She put out Burt's book virtually single handed last year. [P.S. But who would have thought that Slack would continue publishing the JPOS, or that so many AAPOS members would be so willing to help them do so considering how poorly they treated the AAPOS and its membership for all those years? Who would have thought we could have not just one but FOUR scientific periodicals servicing our subspecialty — and surviving?]

Amazingly this is our twentieth volume and our twentieth year of publication. We plan to celebrate the completion of our twentieth year during the annual AAPOS meeting about this time next year, which will be held just five miles from our home and offices, up the road at the Keystone ski resort. -PER

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Update BV&SQ 2005: 20(1): 4-6

Since the last printing of this history two years ago, with the help of Marcia Youngdahl, owner of our local print shop, we did get that book of Burt Kushner's 68 editions of his Grand Rounds published last year. We were all quite happy with the way it turned out. We did the best we could to copy the gorgeous cover style of Jean Paul Wayenborgh's History of Ophthalmology, but in a rich red rather than his royal blue.

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Update 2007 BV&SQ 22(1)

That 2006 AAPOS meeting next door was most successful but our 9500 foot altitude was not well tolerated by too many participants (see Dr. Mims III’s report published in our pages in the Q2 summer issue page 102) so a repeat is not likely. There are, however, many good ski resorts available in the more comfortable 8000 or so foot range like our neighbor Vail.

At that meeting I found out that our recent myopia collaborator-contributor Michael Chiang was limiting his periodical subscriptions to those available on the internet. That did start us thinking about what you see culminating, thanks to a host of factors, including many advantages, in this first issue for 2007 conversion to an electronic internet version (see Editorial in 22(1), pages 15-16). -PER

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Update 2008 BV&SQ 23(1)

Conversion exceeded our expectations in many ways: very well received by virtually all subscribers but Bill Gates requires us to contribute two or three times as much time to editing, typesetting, proofing of BV&SQ than our old semi-cut and paste. That includes upgrading our know-how from 1987 WP 5.0 to MS Office, WP 10.0, Adobe PDFs, etc. Thank God we are retired so we could work FT for a year+ on it !! -PER, now IT Tech

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Update 2009, 2010 BV&SQ 24(1), 25(1)

Onward, Unchanged! -PER, gateshater
History Update for 2010 and Q1 2011
Surprises and more Surprises

Maybe, somehow, because I was stressed by injuring my back yet again just before Thanksgiving, 2009, raking too much snow off the garage roof, my early cataracts accelerated over the holidays, and I was down to about 20/60 and 20/200 by New Years 2010.

Gave up reading and even walking outside: couldn’t see cars coming! Finally got the worse left eye done in March with a +4 multifocal lens that gave me 20/15 virtually everywhere sc! Then my right retina rebled again a week later! and we had to delay the right eye an extra 6 weeks but that turned out just a few letters shy of the left eye!

Wow, I never saw that well cc or sc before in my life and I enjoy it immensely, daily especially every time I drive or am driven anywhere, especially here in the Rockies..

Then, a month later, repeating, orthoptist and old friend Cindy Pritchard called again and said the International Orthoptists Association was again interested in us.

Current IOA proxy Elizabeth Caines and BVQ found some common interests and themes, and we are continuing our conversations about long term objectives. The recent admission of the American Orthoptic Journal to Index Medicus, and rumors of yet another new eye journal for ophthalmic technicians, is really crowding our niche.

Then in the last issue of 2010 we rationalized our adoption of the term strabology (invented by Lang, not Hugonnier, as best as we can determine) and now with this issue we have implemented it, along with a formal proper appellation, celebrating our 25th anniversary with this egotistical attempt at familial legacy manufacture. (See masthead, page 21 this issue, for rationale.)

In preparation for this we notified the government (-mistake!) of our intentions to make a minor modification to the title name of the publication (which would require a new ISSN (International Standard Serial Number), in response to which our title was immediately dropped out of their Medline listing!

They didn’t bother to tell us what they were doing. But we then discovered this enormous THREAT to our reputation when one orthoptist, Allison Firth, of Great Britain, informed us that she was not sending us a paper for consideration as previously offered, because she had heard we were no longer in Medline. What?!

It was then we traced upstream the foregoing... Do you remember when the brand new JAapos in 1998 panicked because the new journal was not off the ground and had no ISSN or Medline slot, while we suddenly got Medline indexing approval, and they thought we had stolen theirs! As we have said before elsewhere, government sucks! Their only product is FEAR! Of them....

Then we made our application to the ISSN and then discovered that in their official records we were recorded as being “DEAD” as of 2008!

Suddenly we got an email from the gov’t that said that was the result of their publication vendor, Svets and Zeitlinger of Amsterdam having so declared us at that time, which was the year after we started the online internet version!. They never tried to contact US! And the other end of NLM (the right hand doesn’t know what the left is doing) has continued, without hesitation, to process and accept our quarterly journal electronic abstract submissions and accept and list them in Pub Med! Svets owned our major direct competition, the new journal, “Strabismus” !!!! Talk about more dirty Dutch business pool! - the same organization that had totally reneged on a prior offer to buy us out in 2002?!.And the year they declared us not alive, they actually sold for us, as our vendor too, 19 subscriptions to our publication! They took our money but stabbed us in the back at the same time!

We just got this fully corrected this past week! So at this point, everything is OK again. WE are still indexed and articles which may have not been included in the final stage of indexing will soon be. Just awaiting our new ISSN numbers now...

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Volume 6, No.1,2,3, Winter-Summer, 1991

Volume 6, No.4. Fall,1991
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TENTH Anniversary (end of) 1995
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Twentieth Anniversary 2005
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TWENTY-FIFTH ANNIVERSARY 2010 Vol.25
Print version: new ISSN Pending for title change
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Online Version: Now required second ISSN Pending