

Strabismus: Complications into Middle Age

Tom Koch*

Department of Geography (Medical), University of British Columbia, Canada

***Corresponding author:** Tom Koch, PhD, Department of Geography (Medical), University of British Columbia, 1984 West Mall Vancouver, BC, Canada

Received: March 28, 2025

Published: May 01, 2025

Abstract

Background: While childhood strabismus is well understood long-term effects among mature and middle-aged adults is not. The serious practical effect of a congenital lack of binocular vision in patients with strabismus is typically undiscussed with patients who then are unprepared for the result. This brief report considers the cases of adults, most undiagnosed in childhood, who in adulthood developed a series of debilitating symptoms, including diplopia and blurred vision. Principal observations result from unstructured interviews with patients who sought the author's advice not as a specialist in chronic care but, himself, a strabismic.

Abstract This is true as well of strabismus patients in middle age who without exotropic deviations are sometimes misdiagnosed and whose symptoms may be ignored or mistreated.

Observations: Principal observations in this study result from unstructured interviews with patients who sought the author's advice and perspective knowing that he was also a strabismic.

Conclusions and Relevance: Conclusions include, first, assuring those with strabismus at every age be informed of the effect of non-stereoscopic vision and its potential effect on activities of daily living. Adult strabismus patients may present with blurred vision, diplopia, and eye strain headaches even.

Keywords: Adult strabismus; Childhood strabismus; Binocular vision; Stereoscopic vision

Introduction

I did not know I was a strabismic until I was thrown out of the ophthalmologist's office.

I was twenty years old when I applied to qualify for a student air pilot's license. "Get outta' here," the ophthalmologist laughed. "This is a joke, right?" When informed I was serious, he explained, chuckling, that a congenital lack of binocular vision meant I would never qualify to be a small plane pilot. Certainly, that explained why, even after 120 hours copiloting a small plane on a research program, I had trouble with take-offs ("Watch those trees!") and landings (15 feet above ground seemed ... right).

That my misaligned "whale eye," [1] canted diopters off centre was obvious. That it affected not just my appearance but my vision had never been explained to me. For the first time I understood my inability to catch a baseball, play tennis, or stop a hockey puck lifted off the ice and into my shin. I wasn't simply "clumsy". Lacking depth perception, I was sight-impaired.

For years afterward I kept a portrait of existentialist philosopher

Jean Paul Sartre on my wall. Nearly blind in his right eye, as are some strabistics, he was also a severely "wall-eyed". The effect was "disorienting for the unwary," his partner Simone de Beauvoir would later write, and practically resulted in severe eye strain and a scrawling penmanship that shifted across the page ... like my own [2].

Background

Strabismus is one of the most common disorders presenting in children as a primary condition with a strong pattern of genetic inheritance [3]. A neuromuscular disorder in which the failure of both eyes to simultaneously focus results in a failure of binocular vision, it may also occur—albeit far less frequently—as symptomatic of tumors or the result of injury [4]. The literature's principal focus, and that of most practitioners, has been its cosmetic effects in children [5] resulting in a sense of social isolation and low self-esteem [6]. Recent research has shown some success in training binocularity in young children through the use of computer games promoting fusion and diminishing image suppression by the weaker eye [7]. But by the age of seven or at most eight years most young patients pres-

ent with a consistent absence of stereoscopic abilities. Some, especially those without cosmetic differences (“wall-eyed” or “cross-eyed”), may be able to achieve temporary fusion but lack sufficient ocular resources to sustain it.

While there are very rare cases of adults like neurologist Oliver Sacks’ “Stereo Sue” [8] developing binocular vision, stereoscopy is commonly only naturally acquired in early childhood. Surgery, historically the preferred corrective procedure, may normalize a patient’s appearance but will not induce binocularity or resolve problems resulting from it lack. Generally, “The consequences of not identifying and treating strabismus and amblyopia early include permanent visual impairment, adverse effects on school performance, poor fine motor skills, social interactions, and self-image” [9].

When binocular vision is absent, blurred, double vision or eye-strain headaches may result [10]. And yet, the literature on adults as well as children has focused primarily on psychosocial effects resulting from an eccentric appearance [11,12]. Quality of life issues discussed in that literature rarely consider the focal challenges and resulting inability of strabismus patients to perform mundane tasks [13,14].

Adult Strabismus

For some strabismatics, especially those presenting with a normal appearance, focusing and resulting eye strain headaches only emerge in early adulthood or middle age. Even those for aware of their condition, its relation to visual deficits had never been explained or explored. The partner of a high school gym teacher, for example, asked for a consult, pleading, I “do something to get him help. I’m afraid to drive in a car with him.” A treating ophthalmologist had informed him of his strabismus for the first time. “So that’s why I was never really able to catch a ball!” the teacher said. The congenital lack of depth perception explained for the first time why he could coach but had difficulty playing games requiring binocular vision like baseball, football, tennis, or squash. Understanding that, he said, was itself a relief. But absent cosmetically obvious deviations, his ophthalmologist insisted strabismus had no causal relation to his patient’s increasing focal difficulties or his persistent head aches. Progressively stronger corrective lenses prescribed provided little relief.

Finally, after referral to an optometrist specializing in adult strabismus, he was prescribed corrective lenses with Fresnel prisms and only a modest correction for presbyopia. The incidence of blurred vision and eye strain headaches immediately decreased as a result. At the same time his driving abilities, his partner reported, improved. A regime of frequent rests during taxing visual assignments—grading tests or writing students reports, for example—further helped diminish reported symptoms.

Others similarly reported the failure of early diagnosis and problems presenting in adulthood from a lack of depth perception. For these patients, understanding their strabismus and its effect explained a history of psychosocial difficulties. For example, an adult male in his 40’s with no cosmetic deviation presented with eye strain headaches and decreasing acuity. Stronger prescriptions for myopia and presbyopia had little effect. When informed the likely cause of his symptoms was congenital strabismus, and a resulting lack of binocular vision, he was furious. He had lived with the burden of feeling always

clumsy, inept and inadequate. “I paid an enormous emotional price for always being the last kid picked for any baseball game which of course I had to play daily at the various camps I went to as a kid,” he said. In his very sports-oriented family—two older brothers excelled at hockey and ball-based sports—his father was especially dismissive of his youngest son’s athletic limits.

The complaint that life might have been different with earlier diagnosis and treatment was similarly reported in an earlier case study describing the difficulties faced by a woman first diagnosed with concomitant strabismus in her late 30’s [15]. As a child she had been told her eccentric head tilt, an adaptation by some to strabismus [16], was caused by congenital scoliosis. Treating physicians assumed that was also the source of her chronic neck, shoulder and back pain. Diminished visual acuity as well as frequent headaches were unsuccessfully treated and may have been exacerbated by progressively stronger corrective lens prescriptions.

Following corrective surgery at the age of 39 years she experienced temporary relief from her symptoms including the almost complete absence of chronic pain. After several weeks, however, persistent neck and back pain recurred as her body attempted to accommodate to a different posture without the anomalous head positions. On examination, neck and shoulder muscles were asymmetric as the result of weight lifting, she had employed in an attempt to strengthen her back. Focal difficulties also returned resulting in depression and suicidal ideation.

First, the return of discomfort and pain requiring a long course of physical therapy was in itself depressing. In addition, she reported anger at “everyone” who she said had failed her as a child. That included the pediatric ophthalmologist who had not diagnosed her condition, her mother (“she should have protected me”), school mates who mocked her “stand-offish” appearance and teachers who didn’t understand or support her. She blamed her strabismus, its resulting eye strain and thus reading challenges for a failure to advance professionally. It required three years of psychotherapy and physiotherapy as well as pain relief medication supervised by a family physician before she learned to function without normally.

“Quality of life” concerns simply do not adequately address the distress and discomfort that accompanied a lack of fusion in adults [17]. With others in this informal survey, a woman formally diagnosed for the first time at the age of 27 remembered “getting headaches quite often and always wondered if it was from my eyes being strained all the time.” Repeated visits to physicians over the years resulted in ineffective treatments “Every eye doctor I had gone to figured I just needed a stronger prescription [but] I knew my eyes were getting worse. I remember one day I was riding on the chair lift and I saw someone skiing down alongside a rope and I couldn’t tell which side of the rope he was on ... Later, I was driving and got really scared because I couldn’t tell which lane the car in front of me was in. That’s when I REALLY knew something was wrong.”

Finally, corrective surgery was prescribed with the warning that afterward some form of eye therapy might be necessary. Immediately following surgery there was a radical but temporary improvement in her vision. “I felt like I was seeing clear and 20/20. But after a month or so, things started getting a bit fuzzy again.” She struggled “differentiating whether I was

seeing blurry or double,” squinting in an attempt to improve her focusing.

In passing it is important to note that while state and provincial jurisdictions in North America may test potential drivers for binocular vision it is nowhere a license requirement. In most states and Canadian provinces drivers need only demonstrate visual acuity of a minimum 20/40 in one eye with corrective lenses. The exceptions are Georgia, requiring an acuity only measured at 20/60, and Tennessee where the requirement is 20/35.

Not all those experiencing diplopia found it a handicap when driving. A woman in her 20's diagnosed as a child had not been informed her lack of stereoscopic vision resulted from the strabismus she assumed was only cosmetically significant. She denied a lack of stereoscopic vision affected her driving or other, daily activities. Her episodic diplopia, sometimes fuzzy vision and chronic “clumsiness” were simply facts of life to be accepted like the cosmetic eccentricities resulting from her exotropia. Admittedly, there were a number of “dings” and “bumps” on the passenger side of her car. But because she never entered from any but the driver's side she rarely had to see them. On trips through New England to Quebec, where signage switched from English to French, she reported experiencing episodic diplopia. But that was not a concern, she said, because being monolingual she could not read French with either eye. Thus she simply ignored highway signs as they and the roads stacked, side by side, in her doubled vision.

Discussion

While anecdotal, cases included here suggest adult strabismatics in middle-age may, like the high school gym teacher, may experience for the first-time strabismus-related symptoms of visual degeneration. For them treatment, including prismatic corrective lenses and non-invasive programs (eye rests during the day), may helped control symptoms. Together these cases emphasize, first, the importance not only of early diagnosis but of discussions with young patients and their families of the practical limits resulting from a lack of binocular vision. Understanding them may minimize the psychosocial problems reported by patients in this study. It is one thing to be thought merely “clumsy” or a “spaz”; another to be someone with a recognized chronic disability. And today, with early diagnosis, there are a range of techniques, including frequent eye resting and larger fonts on computers, that may diminish symptoms and thus reduce the daily effect of visual deficits.

Second, these cases suggest that symptoms may first manifest among middle-aged adults who previously were either unaware of their strabismus or, like the gym teacher, simply accommodated to it. General practitioners and ophthalmologists aware that visual difficulties may first manifest in middle age will be more likely to treat appropriately. Where strabismus has resulted in psychosocial deficits during maturation, the relation of their strabismus to their lived experience may help patients accept a history of their “clumsiness” and other difficulties. The potential of prismatic lenses to reduce symptoms of diplopia and eye strain must be emphasized. In several cases this option was first ignored by ophthalmologists in favor of ineffective prescriptions with stronger myopia and presbyopia corrections, and in one case, ultimately ineffective surgery.

As with any research based on case histories, future study is warranted. In this work those with and without cosmetic differences necessarily will be distinguished. Those with exotropias will obviously be aware of their condition if not necessarily its effect on visual acuity. Others with no obvious cosmetic effect will similarly suffer from lack of binocularity but also distinct psychosocial experiences. For those with symptoms manifesting first in adulthood, the psychosocial effect of strabismus on their maturation must be better understood. And, too, the treatment of the focal challenges arising during middle age require future investigation. These cases suggest a worsening of acuity and increase in discomfort in middle age resulting for the first time in diplopia and debilitating eye strain. With this work hopefully strabismus as an inherited disorder will be both better treated in children and then, when necessary, in adults.

References

1. Robinson J. How Life Looks through my ‘Whale Eyes.’ New York Times, 2021.
2. Bakewell S Sir. What a Horror, Existentialism. At the Existentialist Café: Freedom, Being, and Apricot Cocktails. Toronto: Penguin Random House Canada. 2016: 1-2.
3. Sanchez MM, Whitman MC. Genetics of Strabismus. Ophthalmology 2023; 3.
4. Kolinsky SE, Sudesh S, Graziano A, Hamblen J. et al. The negative psychosocial impact of strabismus in adults. J. of Am. Assoc. for Pediatric Ophthalmology and Strabismus, 1999; 3(4): 209-211. [https://doi.org/10.1016/S1091-8531\(99\)70004-2](https://doi.org/10.1016/S1091-8531(99)70004-2).
5. Friedman DS, Repka MX, Katz J, et al. Prevalence of amblyopia and strabismus in white and African American children aged 6 through 71 months: The Baltimore Pediatric Eye Disease Study. Ophthalmology, 2009; 116: 2128–2134.
6. Satterfield D, Keltner JL, Thomas L, Morrison TL. Psychosocial Aspects of Strabismus Study. Arch Ophthalmol, 1993; 111(8): 1100-1105. doi:10.1001/archophth.1993.01090080096024.
7. Ibid.
8. Sacks O. The New Yorker, 2006.
9. Birch EE. Amblyopia and Binocular Vision. Prog Retin Eye Res, 2023; 33: 67–84. doi: 10.1016/j.preteyeres.2012.11.001.10
10. Satterfield D, Keltner JL, Morrison TL. Psychosocial Aspects of Strabismus Study. Arch Ophthalmol, 1993; 111(8): 1100-1105. doi:10.1001/archophth.1993.01090080096024.
11. Olitsky SE, Sudesh S, Graziano A, Hamblen J, et al. The negative psychosocial impact of strabismus in adults. J. of Am. Assoc. for Pediatric Ophthalmology and Strabismus, 1999; 3(4): 209-211. [https://doi.org/10.1016/S1091-8531\(99\)70004-2](https://doi.org/10.1016/S1091-8531(99)70004-2).
12. Davidson S, Quinn GE. The impact of pediatric vision disorders in adulthood. Pediatrics, 2011; 127: 334-339.
13. Hatt R, Leske DA, Kirgis PA, Bradley EA, Holmes JM. The Effects of Strabismus on Quality of Life in Adults. Am. J. Ophthalmol, 2007; 144(5): 643-647.
14. Van de Graff ES, Borsboom GJ, van der Sterre GW, Felius J, et al. Differences in quality-of-life dimensions of adult strabismus [with] Quality of Life and Amblyopia & Strabismus Questionnaires. Pediatrics, 2017; 255: 1851-1858. <https://doi.org/10.1007/s00417-017-3694-x>.
15. Koch T, Butler MC. Strabismus: Delayed into Adulthood. Diagnoses and Unreported Damage to Qualities of Life, Binocular Vision & Strabology Quarterly, 2013; 28(4): 203-208.
16. Teodorescu L. Anomalous Head Postures in Strabismus and Nystagmus—Diagnosis and Management. Rom J Ophthalmol. 2015; 59(3): 137–140. PMID: 26978880.
17. Hatt, Leskie, et al. Op.Cit. Note 13.