

ABSTRACT FORM

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| <input checked="" type="checkbox"/> Research Study | <input type="checkbox"/> Case Report |
| INCLUDE: | INCLUDE: |
| - Background | - Background |
| - Methodology | - Case Summary |
| - Results | - Discussion |
| - Conclusions | |

TITLE: Binocular Vision Deficits and Post-Concussion Symptom Scores (PCSS) in Adolescents with Concussion

ABSTRACT:

Background: PCSS surveys are used at the initial post-concussion visit and follow-up visits to triage patients to appropriate referral clinics. Although binocular vision deficits are frequently observed post-concussion, it is unclear if the PCSS will adequately aid referrals to vision examinations. In this retrospective study, we evaluated associations between PCSS scores and binocular vision deficits post-concussion.

Methods: Medical records of patients examined in the multidisciplinary brain injury clinic from July 2014 to October 2015 were reviewed. PCSS scores were compiled prior to the clinic visit. These data along with the comprehensive eye examination and binocular vision assessment data, including the Convergence Insufficiency Symptom Survey (CISS) scores, were abstracted.

Results: Forty-five patients were identified (mean age: 15 years \pm 3.3; best-corrected visual acuity \geq 20/25 in each eye). Patients reported one or more lifetime concussions (median: 1, range: 1 -11) and presented to clinic between 1 to 50 months (median: 3.9) after their last concussion. The mean total symptom score on PCSS and CISS was 54.5 (\pm 26.4) and 27.8 (\pm 14.1), respectively (correlation: $r=0.61$, $p<0.001$). The binocular vision assessment showed deficits in 87% of these patients. Principal components stepwise linear regression identified the number of concussions ($t = -2.204$, $p = 0.035$) and factor 1 (linear combination of near point of convergence, monocular amplitude of accommodation, distance and near positive fusional vergence and vergence facility measures; $t = -2.266$, $p = 0.03$) to be significantly associated with the PCSS score. Similarly, number of concussions ($t=-2.659$, $p=0.012$), factor 1 ($t=-3.046$, $p=0.005$) and factor 2 (linear combination of monocular and binocular accommodative facility; $t=-2.147$, $p=0.04$) were significantly associated with the CISS score.

Conclusion: These findings suggest that binocular vision deficits post-concussion could contribute to a high PCSS score, which warrants a thorough binocular vision assessment in these patients for the management of post-concussion symptoms.