

## Case Report

# Trampoline Use and Retinal Detachment in Stickler Syndrome

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## Keywords

Stickler syndrome · Retinal detachment · Trampoline

## Abstract

Stickler syndrome is one of the most common inherited causes of retinal detachment in childhood. We present the case of a 6-year-old boy with Stickler syndrome who developed a retinal detachment in his better seeing eye after prolonged trampoline use. We suggest that trampolining should be avoided in all patients at increased risk of retinal detachment, especially in Stickler syndrome, and in those with other risk factors including high myopia and previous retinal detachments.

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## Case Report

A 6-year-old male with genetically confirmed type 1 Stickler syndrome presented to the emergency department complaining of sudden onset black floaters and painless reduction in vision in his better-seeing left eye. His parents reported no recent direct ocular trauma or head injury but reported extensive trampoline use the day prior to presenting.

The patient's autosomal dominant Stickler syndrome had been diagnosed genetically in early childhood. His father and paternal grandmother also had the condition. His extensive previous ocular history included high myopia (−10 diopters) and a previous right retinal detachment at 6 months of age which had been successfully repaired with a scleral buckle and 360° peripheral cryotherapy. In addition, prophylactic 360° cryotherapy was performed just

posterior to the ora serrata in the left eye at 5 years of age when his vision was 6/12 in the right eye and 6/6 in the left eye. His parents had previously asked about buying the child a trampoline, but had been advised against this because of the detachment risk. Unfortunately, after the cryotherapy, they no longer considered him at risk, so they purchased a trampoline for his 6th birthday. He then used his trampoline for an average of 2–3 h per day, 5–7 days per week for the next 6 months until he presented.

On examination, best-corrected visual acuity was 6/12 in the right eye and counted fingers in the left eye. Tobacco dust in the anterior vitreous and a total rhegmatogenous retinal detachment with Grade B proliferative vitreoretinopathy was present in the left eye due to a superior giant tear posterior to the previous prophylactic cryotherapy (not at its edge). This was repaired with vitrectomy, lensectomy, laser/cryotherapy to the giant tear, silicone oil, and a 360° scleral buckle (#277 silicone tire; Labtician Ophthalmics, Oakville, ON, Canada). Given the total retinal detachment, the rationale for the buckle was to support the vitreous base as posterior as possible and treat the existing proliferative vitreoretinopathy. The retina was initially flat under oil, but the retina subsequently redetached inferiorly with oil still in situ 3 months later. This necessitated revision vitrectomy, retinectomy of the inferior 6 clock hours, laser and silicone oil due to 4 clock hours of Grade C proliferative vitreoretinopathy inferiorly and retinal foreshortening. Seven months after initial repair, there was still an ongoing macula involving inferior chronic retinal detachment under silicone oil in the left eye. Six years later, at age 13 years, the right eye had a best corrected visual acuity of 6/12 with an attached retina, while the left eye was hypotonus with band keratopathy, vision of light perception only, and silicone oil still in situ.

## Discussion

Stickler syndrome is an inherited vitreoretinopathy with common ocular manifestations including high myopia, glaucoma, cataracts, and vitreoretinal anomalies [1, 2]. Stickler syndrome carries a high risk of retinal detachment from a combination of high myopia, vitreous traction, and weakness of the peripheral retina. Significant myopia is especially associated with accelerated vitreous liquefaction, reduced vitreous viscosity/stability, and early anomalous posterior vitreous detachment. This can ultimately lead to retinal tear and retinal detachment.

Previous studies have shown that prophylactic cryotherapy in Stickler syndrome can decrease the risk of retinal detachment 10-fold, but this risk is not completely eliminated as seen in our patient who developed a giant retinal tear posterior to prophylactic cryotherapy not at its edge or with associated cryo-necrosis [3]. Although evidence linking the development of retinal tears and detachment to large sudden changes in ocular inertial forces is anecdotal, we hypothesize that our patient's trampoline use played a role in the development of his retinal detachment. To our knowledge, there are no reports in the literature regarding a link between trampoline use and retinal detachment, although anecdotally, advice against trampoline use is often given to children at risk, including aphakic children.

Although the patient had been warned to avoid trampolining and ball sports such as tennis, his parents did not consider that trampolining was a high-risk activity after his prophylactic cryotherapy. This case illustrates the importance of careful education of patients with Stickler syndrome and their caregivers about the significant increased risk of retinal detachment. The avoidance of vigorous activities which result in sudden changes in head direction causing posterior vitreous detachment and retinal tears is paramount in any person with a predisposition for retinal detachment. Trampolining with its repeated to-and-fro head

movements would appear to be a particularly high-risk activity in this regard. In predisposed children, it is also important to clearly outline warning symptoms of vitreoretinal traction and to have an emergency plan for immediate assessment if these are experienced.

## Statement of Ethics

This case report did not require ethical approval in accordance with local/national guidelines. Written informed consent was obtained from the parent/legal guardian of the patient for publication of the details of their medical case and any accompanying images.

## Conflict of Interest Statement

No conflicts to disclose.

## Funding Sources

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## Author Contributions

Thomas P. Moloney and Glen A. Gole both contributed in identifying the case, drafting, and editing the manuscript.

## Data Availability Statement

All data generated or analyzed during this study are included in this article. Data is not publicly available on legal or ethical grounds. Further inquiries can be directed to the corresponding author.

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