



# Retinal detachment secondary to bungee jump

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**Introduction:** Bungee jumping is a recreational sport that involves head-first jumping from certain heights with an elastic cord attached to the person's leg. It has the potential to develop ocular complications ranging from subconjunctival hemorrhage to retinal hemorrhage and even retinal detachment.

**Case presentation:** Here, the authors report a case of a 28-year-old myopic male with Left-Eye retinal detachment secondary to a bungee jump.

**Discussion:** In recent years, a few case reports have archived a variety of visual injuries caused by bungee jumping. But only few literatures have reported the event of retinal detachment related to bungee jumping. Patients with moderate to high myopic refractive error may have different vitreous and retinal changes, like vitreous degeneration, lattice degeneration, and peripheral retinal tears. The authors accept that these retinal findings are more related to the vitreoretinal traction mechanism leading to retinal detachment in bungee jumping.

**Conclusion:** This case highlights that retinal detachment secondary to a bungee jump is a rare but serious ocular manifestation, and bungee jumping should be considered a risk factor for retinal detachment in predisposed patients

**Keywords** bungee jump, Nepal, retinal detachment

## Introduction

Bungee jumping is one of the most well-established recreational sports in Nepal. Bungee jumping is prone to some physical and physiological injuries. Ocular complication secondary to bungee jump is rare. In the literature review, ocular complications secondary to a bungee jump can range simply from subconjunctival hemorrhage, small retinal dot hemorrhage to sight-threatening complications like retinal detachment, vitreous hemorrhage, and retinal tear<sup>[1–4]</sup>. This case has been reported as per SCARE 2020 criteria<sup>[5]</sup>.

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*Retinal detachment secondary to a bungee jump is a rare but serious ocular manifestation.*

*Bungee jumping should be considered a risk factor for retinal detachment in predisposed patients like those with peripheral retinal degeneration, high myopia, or a thinner retina.*

*Extraordinary care must be taken by such patients before jumping and hopping maneuver.*

*Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.*

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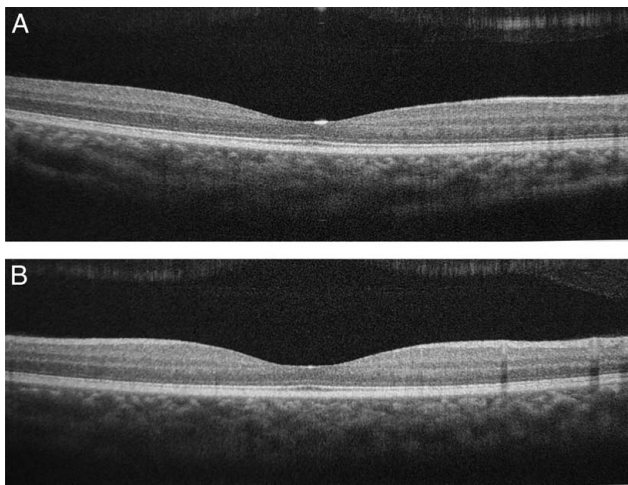
## Case presentation

A 28-year-old male presented to our eye clinic complaining of reduced vision and blurriness in the superior aspect of the visual field of the left eye immediately after a few bungee jump. He complained of seeing light flashes after a few minutes of a bungee jump. The patient complained of mild discomfort and dizziness during the time of presentation. He presented to us nearly 9 h after the onset of symptoms. The patient was stable on hemodynamic metrics and had stable vital signs. He was not on any systemic medication. He had no history of previous eye trauma or surgery.

His visual acuity was 20/20 in both eyes with his habitual spectacle correction. Still patient was complaining discomfort and blurriness of vision in left eye compared to right eye. On autorefraction, patient was mildly myopic in both eyes with a –3.00 diopter refractive error in both eyes. Intraocular pressure was 13 and 14 mm Hg in the right and left eyes, respectively. Anterior segment parameters and the pupillary light reflex were normal. Funduscopic examination and fundus photography revealed normal vitreous, normal disc and retina in right eye (Fig. 1a) but left eye had retinal tear along with retinal detachment in the inferior aspect of the retina with macula being spared (Figs 1b, c). An optical coherence tomography examination revealed normal macular scans in both eyes (Figs 2a, b). Patient was planned for vitrectomy and Scleral buckling along with tamponade following day of presentation and was referred to surgical center. Patient was suggested not to involve in any motion activities and keep head still till next day. He was also referred for an MRI, which did not reveal any abnormalities.

## Discussions

In arrange to extend tourism industries; Bungee jumping has ended up more prevalent in Nepal. In recent years, a few case reports have archived a variety of visual injuries caused by bungee



**Figure 1.** (a) Oct Scan Of Right Eye Macula. (b) Oct Scan Of Left Eye Macula.

jumping<sup>[3]</sup>. But only few literatures have reported the event of retinal detachment related to bungee jumping. According to these reports, the patient presented with starting complaints of obscuration of vision extending from 6/9 to finger counting and loss of visual field, along with complaints of floaters<sup>[6,7]</sup>. Most of them had acquired great visual results if they got quick treatment facilities and follow-up<sup>[2]</sup>.

In spite of the huge number of participants, the number of injuries appears to be small. According to past reports, the most common clinical complication that may be associated with bungee jumping includes periorbital bruising, subconjunctival hemorrhage, and intraocular bleeding. Intraocular hemorrhage can be preretinal, subhyaloid, or intravitreal bleeding that may include the foveal or parafoveal area and may be associated with macular edema<sup>[7,8]</sup>.

The mechanism of visual injuries caused by bungee jumping remains vague; in any case, a few causes have been hypothesized. Most authors have suggested that subconjunctival or intraocular hemorrhage is caused by shifts within the intracranial, intrathoracic, and intra-abdominal pressures alongside changes in blood pressure that are transmitted through the optic nerve sheath and result in retinal venous hypertension<sup>[9]</sup>. As of late, a more widely acknowledged component is related to vitreoretinal traction, which proposes that acceleration–deceleration forces result in mechanical disruption of the vitreous at the location of its strongest attachments, counting the macula, optic nerve, blood vessels, and vitreous base. Hence, there is an unconstrained burst

of capillaries, which comes about in a hemorrhagic separation of the subinternal limiting membrane in the foveal region and causes retinal detachment<sup>[1]</sup>.

The most recent thought about the mechanism of retinal detachment may clarify the rise in retinal venous pressure leading to retinal detachment in our patient.

In the case of our patient, he was a 28-year-old young boy with myopia of around 3 diopters. Patients with moderate to high myopic refractive error may have different vitreous and retinal changes like vitreous degeneration, lattice degeneration, and peripheral retinal tear<sup>[10]</sup>. We accept that his retinal findings are more related to the vitreoretinal traction mechanism given that his retinal detachment was seen within the zones of the inferior retina. In our case, in spite of the fact that the conceivable cause for retinal detachment is acceleration–deceleration forces, and gravitational drive, the myopic refractive error may act as a strong predisposing factor.

Furthermore, some reports concluded that the mechanism of retinal detachment in patients with high-risk acceleration–deceleration activities like bungee jumping is similar to that of retinal detachment in myopic patients, that is, an increase in traction at the predisposed area of retinal degeneration and thinning<sup>[11]</sup>. Our report highlights that extraordinary care must be given to patients with myopia.

## Conclusions

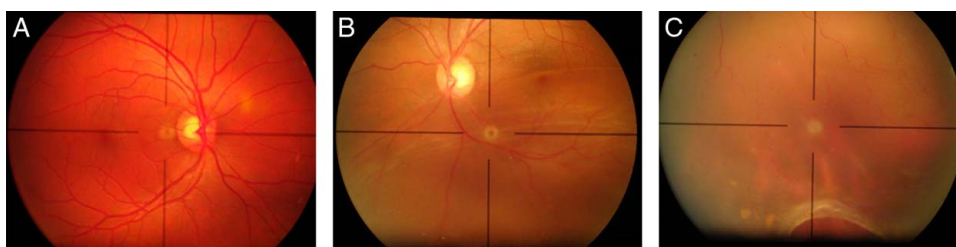
Bungee jumping is often prone to eye-related complications. Similarly, our case showed that extraordinary care must be given to patients with myopia. Patients with preexisting risks like a thinner retina, moderate to high myopia, lattice degeneration, and vitreous degeneration must be warned about the potential complications of high-risk acceleration–deceleration sports like bungee jumping.

## Ethical approval

No.

## Consent

Written informed consent was obtained from the patient for the publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.



**Figure 2.** (a) Right Eye Fundus Photo. (b) Left Eye Fundus Photo. (c) Left Eye Fundus Photo of Inferior Retina Showing Retinal Detachment.

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### Authors' contribution

B.K. and A.S. conceptualized the study, reviewed, edited the manuscript, and were in charge of the case.

### Conflict of interest disclosure

Authors have no conflict of interest to declare.

### Research registration unique identifying number (UIN)

1. Name of the registry: none.
2. Unique Identifying number or registration ID: none.
3. Hyperlink to your specific registration (must be publicly accessible and will be checked): none.

### Guarantor

Bipin Koirala.

### Data availability statement

All the required data are available in the manuscript itself.

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