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CASE REPORT

Bungee cords—Time for a change

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Introduction

Bungee cords are increasingly widespread workplace and household items that have many uses, most commonly in securing luggage to vehicle rooftops. Yet the physical properties that make these elastic straps so useful are also responsible for the growing incidence of ocular injuries. Recoil velocities produce huge forces that cause blunt and penetrating eye trauma; safety awareness, highlighting the need for caution and protective eyewear, is largely ignored by the general public. For this reason an inherent change in their design is required.

Case report

A 35-year-old man presented to our eye department as an emergency with a history of sudden decreased vision in his right eye having been struck by a bungee cord whilst fastening luggage to his roof rack. His left eye was asymptomatic and he had no past ophthalmic or medical history of note.

On examination, visual acuity was 6/6 in the left eye and 6/36 in the right. On the right, a peri-orbital haematoma was present along with blood stained corneal endothelium and a 1 mm hyphaema associated with 1 plus of cells in the anterior chamber. There was an iris dialysis inferonasally and 1 plus of cells in the anterior vitreous, without tobacco dust. Through a combination of dialysis and trauma, the pupil was unreactive, though he had no signs of a relative afferent pupillary defect using the reverse swinging flashlight torch test. The lens on the affected side was stable and clear and the only significant fundal finding was a subretinal macular choroidal haemorrhage. Examination of his fellow eye was unremarkable.

Three months post injury, vision in the right eye remained 6/36; he had an iris root dialysis as noted

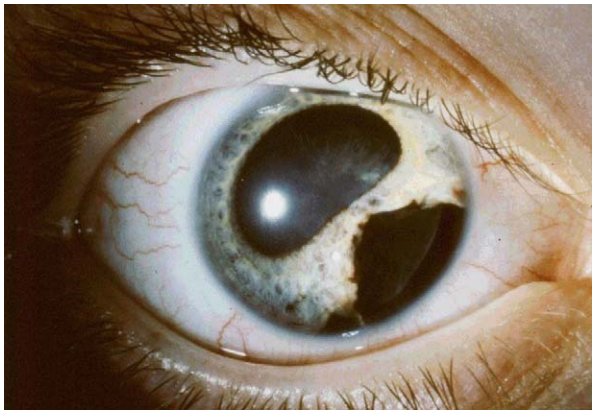

Figure 1 Slit lamp image showing inferonasal iris dialysis.

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Figure 2 Typical metal hooked bungee cord. Although encased by rubber initially, repeated wear often exposes the sharp hook predisposing to lacerating as well as blunt injuries.

previously (Fig. 1) and was developing a sub retinal macular scar (gliotic membrane).

Discussion

The typical bungee cord consists of an elastic band with two open metallic hooks secured on both ends (Fig. 2). These detach and subsequently rebound either because of failure of the connector or elastic cord, or inappropriate use of the strap, the latter commonly as a consequent of overstretching.[4] In the event of such failure, the considerable energy contained within these straps can manifest in rebound velocities of up to 74 m/s.[8]

The most common ocular injuries associated with bungee cords are caused by blunt trauma.[6] Hyphaema is the most common ocular injury, occurring in up to 82% of patients.[1,7,8] Other common anterior segment injuries include corneal abrasions, iris dialysis and traumatic cataract. Twenty-three to forty percent of patients develop angle recession[1,7] and require close follow up because of the risk of secondary glaucoma. Posterior segment injuries occur in up to 50% of patients and include vitreous haemorrhage, commotio retina, retinal and subretinal haemorrhage, retinal tears, dialysis and retinal detachment.[1,7,8] Periocular injuries often occur as a result of trauma to the lids and peri-orbital tissues from the hook shaped attachments. One death related to bungee cord use has been reported in Australia.[4]

The outcome of such injuries varies but over 50% of patients require medical or surgical treatment[6] and up to 20% have a final visual acuity of Count Fingers or worse.[6,8] Although infrequent, open globe injuries are especially severe, carrying the worst prognosis for functional vision.[2]

Conclusion

A number of proposals have been made to enhance the safety of bungee cord use. These have included the use of a gated spring-loaded clip[5] to replace the 'J' or 'S' shaped hooks or modifications to the cord to a non-elastic material in order to reduce the likelihood of accidental recoil.[3] Others have suggested improved package labelling, with black letters on a yellow background and the sale of protective eyewear with bungee cords.[4]

However, we support the use of a cord design which replaces the high stretch — low tensile properties of most bungee cords with that of a cord with low stretch — high tensile properties. For example, ROK™ straps are flat elastic luggage straps which have loops rather than hooks. These may be a safer alternative to bungee cords in that both ends of the strap can be fastened before tensioning. Similarly, tension can be released prior to their removal. The loops at either end mean that there are no dangerous hooks which may accidentally injure the eye.

Given the potential for severe sight threatening injuries from bungee cords, we feel it is time manufacturers acted in a responsible manner and change their inherent design, putting the safety of the public first. A ban on the future sales of bungee cords would be sensible but would fail to deal with the large number of bungee cords in circulation.

Certainly, we feel their use in the work place ought to be prohibited and the increased use of low-stretch—high tensile straps is to be encouraged.

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