PICTORIAL MEDICINE

Devastating projectile injury of the eye caused by a remote-controlled toy helicopter

Radio-controlled helicopters with electric motor driven rotor blades have become trendy toys, not only for children but also adults. Despite their popularity, they are not accompanied by necessary safety precautions for operators, which are indispensable for avoiding devastating bodily injuries. We, as ophthalmologists, have witnessed an unreported serious and irretrievable ocular trauma caused by a radio-controlled helicopter.

A 30-year-old model salesman helped a customer to assemble a radio-controlled helicopter (Fig 1) from a kit. After fixing the 325-mm long carbon fibre main propeller blades to the metal rotor head with metal screws, he checked the alignment of the blades by inspecting the blades at eye level and within his arm's span while the 300 W, 31 746–revolutions per minute motor was in motion. A shaft fixing the blade to the rotor head housing suddenly broke down, and one of the swirling blades dislodged, propelling out at high velocity and directly hitting his right eye. He sustained a full thickness ruptured eyeball and lower lid laceration, immediately reducing his vision to no light perception at all. There was total hyphaema and vitreous haemorrhage, and prolapsed uveal tissue was seen underneath the temporal conjunctival laceration. A computed tomographic scan showed the 'flat tire' sign (Fig 2) compatible with extensive rupture of the eye ball.[1] During surgical repair, the scleral rupture was extensive, from the limbus to the macular region, exposing the whole temporal globe (Fig 3). The lens, vitreous, and retinal fragment prolapsed out. The retinal damage was irreparable and the globe was closed intra-operatively. Postoperatively the eye was blind with phthisis changes. The patient developed post-traumatic stress disorder and needed psychological therapy.

Lack of proper public education and awareness of this potential danger converted this full-of-fun toy to an agent of potential, preventable tragedy. Easy accessibility via the internet has certainly fuelled the seriousness of this problem. Moreover, many customers are not equipped with adequate mechanical knowledge and experience of building models with high-speed propellers. The kit instructions accompanying the model that caused this eye injury advise the beginner to seek assistance from someone experienced when handling the toy, but information about potential dangers, such as the possibility of an eye injury, is not included. Test flying after self-assembly without a final manufacturers' inspection like other ready-to-use toys may put the customer

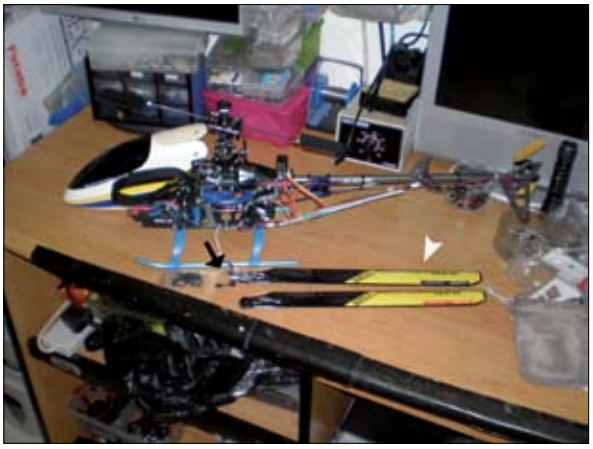

FIG 1. The dislodgment of the blades (white arrowhead) of this radio-controlled helicopter due to breaking of a shaft (black arrow) caused a devastating projectile injury of the eye that resulted in permanent blindness

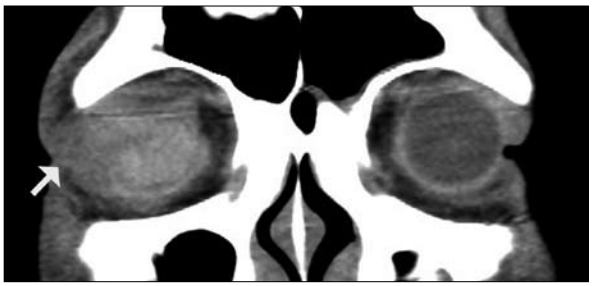

FIG 2. Computed tomography of the orbit showing a distorted right globe (arrow) with the 'flat tire' sign compatible with a ruptured eyeball

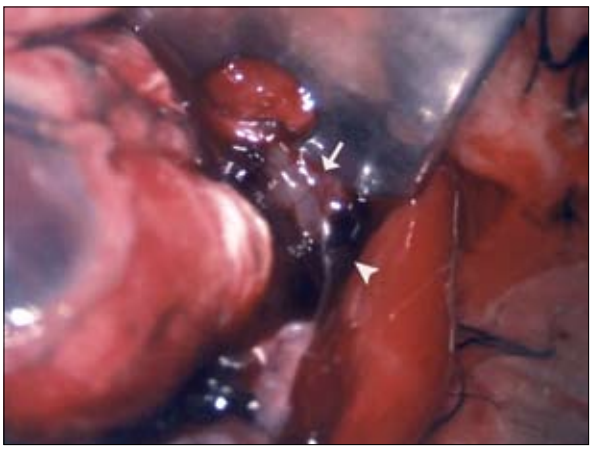

FIG 3. Surgical repair of the ruptured eyeball caused by a radio-controlled helicopter propeller blade. The retina in the macular region (arrow) and uveal tissue (arrow head) were found to be prolapsing from the temporal scleral wound during wound exploration

at risk. As demonstrated by our case, the scale of damage that can be caused by this toy is comparable to an industrial injury. In view of the seriousness of the physical and psychological damage caused to victims, protective goggle wearing and supervision by an expert are mandatory when operating any high-speed rotor blade battery powered device. Toys are no exception.

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Reference

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