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Ocular injuries from boxing

What about prophylactic laser coagulation of boxers' retinas?

All sports have their popular heroes, and the sound of leather on Gooch's willow or the crack of Faldo's drive are evocative of their powerful prowess. Indeed, the wheezy thud of a boxer's cushioned fist may betoken a force of over half a tonne, as in the instance of Frank Bruno's fiercest punch.¹ Anxieties over the dangers of boxing were never more publicly debated than when Britain's best loved sportsman was himself found to have sustained serious ocular trauma.

The eyes and adnexae of boxers suffer a panoply of blunt injuries, from orbital blow out fracture to "cauliflower choroid."² Apart from periorbital swelling and laceration, most damage arises from diffuse impact on the eyeball from the knuckle or thumb of the glove. Fair blow or foul, the effect of such frontal assault is a momentary deformation of the globe³ similar to that of a golf ball on impact. Because of the differential elasticity between the outer wall and contents of the eye, disruption of intraocular tissue ensues, especially at the iris root in the anterior chamber drainage angle, within the lens, or through the attachments of the vitreous to the retina. Few of the injuries give rise to symptoms or immediate visual loss, but in a sample of active professional boxers, 58% had at least one sight threatening injury to the angle, lens, or retina (half had bilateral damage).⁴

Ripping of the retina at its anterior annular limit (the ora serrata), often with avulsion of a strip of oral tissue, is pathognomonic of blunt trauma and has been reproduced by firing bullets at the cornea of excised pig eyes.⁵ The retinal breaks thus differ from those causing spontaneous retinal detachment in old age or myopia. The breaks may extend over 90 degrees of the retinal circumference—"giant tears"—as have occurred recently in three senior British heavyweights (one sustained bilateral giant tears). The subsequent traumatic retinal detachments are often slow to progress towards the macula and may present some months or even years after the injury. Nevertheless, with modern retinal and vitreoretinal surgical techniques, including (but not wholly dependent on) the use of lasers, the damage can generally be successfully repaired and the retina even deemed more secure than before the injury.

The anthropometric relation between the globe and its protective orbital shell is clearly important in predisposing

towards injury but is difficult to quantitate⁴ while the importance of myopia (whether by virtue of increased scleral elasticity, relative proptosis, or susceptibility to retinal tearing) is unproved. Racial factors may be relevant; black people are apt to have a shallow orbit but have a reduced tendency to retinal detachment.⁵ Another factor may be the orbital swelling that often develops during a hard fight.

Banning boxing, regarded by some as a mark of a civilised society⁶ but by others as "a modest tyranny,"⁷ would obviously provide the ultimate prophylaxis. (Ophthalmologists dealing with boxing injuries do well to distance themselves from the moral dilemma, not least because their management objective—cure and rehabilitation of their patient—may necessitate advising the boxing authorities on whether resumption of boxing should be permitted; the sport's limited credibility and sometimes millions of pounds in purse money ride on these decisions.) Revision of the official target area to exclude the head and the use of thumbless boxing gloves^{4,8} are resisted by punter and pugilist, but the British Boxing Board of Control has a visual standard, one purpose of which is to exclude boxers with appreciable myopia. A new strategy might be to undertake laser coagulation of boxers' peripheral retina, which, although unlikely to prevent retinal tearing, should limit retinal detachment. But the effectiveness of any preventive measures (whether thumbless gloves or retinal laser coagulation) could be judged only by a sorely needed longitudinal survey. Does the boxing board have the courage and clout to stage such a study?

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