

Traumatic retinal detachments

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There are two types of retinal detachment which are a direct result of trauma to the eye. One type results from contusion to the globe and has characteristic retinal breaks; the other is a consequence of a perforating injury to the posterior segment of the eye. Clinical features, mechanism of retinal break formation, and prognosis are quite different in the two types.

Detachment following contusion

Traumatic detachment following contusion results from a significant blow to the globe itself—usually by a high-speed missile such as a ball, fist, or foot. The retinal breaks are characteristic and are of two types: retinal dialyses (usually in the superior nasal or inferior temporal quadrant) and large, round, irregular breaks at the level of the equator (usually in the inferior temporal quadrant). The dialyses are associated with disinsertion of the vitreous base and splotchy depigmentation of the ora and pars plana, where the pigment epithelium has been torn free. The large round breaks in the inferior temporal quadrant are associated with gliosis and scarring in the surrounding retina, as well as disorganization of the underlying choroid. The mechanism causing these breaks has been well described by Weidenthal and Schepens (1966).

MATERIAL

In a consecutive series of 325 retinal detachments, eleven patients (nine men and two women) were selected because of a history of significant trauma and typical retinal breaks due to contusion. All eleven patients were below age 40, and eight were below age 20.

The time lapse between the injury and diagnosis was 1 to 6 weeks (2 cases), 2 to 7 months (6 cases) and 3 to 4 years (3 cases).

In seven cases there was a single dialysis, in two cases multiple dialyses, and in 2 round breaks. The dialyses tended to be large, and in six of the nine cases they were greater than 2 hours of the clock in size.

TREATMENT

This varied considerably, but basically achieved closure of the retinal breaks. In some cases, diathermy, scleral dissection, and solid silicone implants were used, in others, cryopexy and soft silicone sponge on the surface of the sclera. In eight cases no circling element was used, in two a circling element was used, and in one photocoagulation alone.

One operation was sufficient for re-attachment in seven cases, two operations were necessary in one case, and operation followed by photocoagulation was required in three. All eleven retinæ were successfully reattached. They were followed for a minimum of 6 months.

COMMENT (Contusion)

Contusion to the eye is more likely to occur in young males. After a significant contusion, adequate management demands visualization of the ora serrata region to rule out trau-

matic dialysis. The use of the indirect ophthalmoscope and scleral depression is indispensable. Although the interval between injury and diagnosis does not necessarily coincide with the onset of retinal detachment, it would seem to indicate that there may be a significant delay between injury and onset of detachment. The retinal dialysis, of course, occurs at the time of injury and adequate visualization of the peripheral retina will allow early diagnosis and treatment. In the young and uncooperative patient general anaesthesia may be necessary. Repeated examinations may be needed if vitreous haemorrhage or pre-retinal blood obscure the view. Particular attention should be given to the superior nasal and inferior temporal quadrants, as the retina is most likely to be torn in these areas. Prognosis with adequate surgery is good, but postoperative photocoagulation is often necessary because the large size of the breaks makes them tend to leak easily.

Detachment and perforation of the posterior segment

MATERIAL

In this same series of 325 consecutive retinal detachments, eleven male patients first suffered perforation of the posterior segment of the globe. Laceration by glass, perforation by fishhook, and intra-ocular foreign body were included in the types of injury.

Ten of these patients were less than 40 and over half were less than 30 years of age.

The intervals between injury and diagnosis of retinal detachment were within 1 month (2 cases), 1 to 2 months (1 case), 2 to 6 months (6 cases), and over 6 months (2 cases).

There were dialyses in three cases, horseshoe tears in four, round holes with opercula in two, and linear breaks in two.

The breaks either coincided with the perforation sites or tended to be on the opposite side of the retina from the perforation sites (Table).

Table Location of retinal tears and perforation sites in eleven cases

Location of tear	Hours of the clock										
	12	10	2	8	10	1	3	12	5	4	6
Location of perforation	8	10	8	2 and 8	6	7	9	6	5	6	10 and

TREATMENT

The operative procedures consisted of scleral buckling without circling element in three cases, scleral buckling with circling element in six, and photocoagulation alone in two.

COMMENT (Perforation)

Any eye which suffers a perforating injury to the posterior segment is thereafter predisposed to retinal detachment. The retina can detach from linear breaks caused by the perforation itself and treatment should therefore be carried out around the injury site at the time of diagnosis. The perforation site should be widely surrounded by chorioretinal adhesion created by diathermy, photocoagulation, or cryopexy.

Retinal breaks may occur because of vitreous traction bands which have resulted from the disturbance of the vitreous; these breaks tend to occur on the opposite side of the retina from the perforation site. The formation of the retinal breaks may be delayed for months or even years. Repeated fundus examination for a period of at least one year should be carried out to allow early diagnosis of the retinal breaks before retinal detachment occurs. Follow-up retinal examination should continue at yearly intervals indefinitely and long-

term prognosis should remain guarded owing to vitreous traction. Because of the tendency for the breaks to occur away from the injury site, a 360° search of the retina is necessary. There is no substitute for the indirect ophthalmoscope and scleral depression in this examination.

Summary

Traumatic retinal detachments are of two types: those due to blunt contusion and those due to perforation of the posterior segment of the eye. Both types tend to occur in young males. The retinal breaks are characteristic in the blunt type and appear in the superior nasal and inferior temporal quadrants. Onset of detachment may be long delayed. Adequate fundus examination is essential for early diagnosis. Prognosis with surgery is good.

Retinal breaks after perforation are of two main types: those at the perforation site and those which occur as a result of vitreous traction. Treatment should be given to the retina surrounding the perforation site at the time of injury. Repeated 360° fundus examination is necessary to detect delayed breaks due to vitreous traction. Long-term prognosis should remain guarded and follow-up fundus examination should continue indefinitely.

Reference

WEIDENTHAL, D. T., and SCHEPENS, C. L. (1966) *Amer. J. Ophthalm.*, **62**, 465