RETINAL DETACHMENT*† WITH BREAKS IN THE PARS PLANA

BY

WILLIAM TASMAN

From the Retina Service, Wills Eye Hospital, Philadelphia, Pa.

RETINAL detachment is sometimes due to retinal breaks anterior to the ora serrata in the pars plana ciliaris. This clinical feature has previously been reported by Schepens and Bahn (1950), Schepens (1951), Dobbie and Phillips (1962), and Cox, Schepens, and Freeman (1966) in relation to retinal detachment. Weidenthal and Schepens (1966), who were able to produce retinal breaks at the pars plana in enucleated pigs' eyes, have observed that in ocular contusion the sclera expands and oscillates with a greater amplitude than the vitreous. As a result the vitreous base and attached ciliary epithelium pull away from the pigment epithelium of the pars plana.

This single layer of non-pigmented epithelium is anterior to the ora serrata where the multilayered sensory retina is abruptly transformed into one layer. The internal limiting membrane, however, passes without interruption onto the pars plana while the non-pigmented and pigmented epithelium become firmly attached to each other at the ora serrata (Fine and Zimmerman, 1963). Straddling the ora is the firm attachment of the vitreous base. Clinically, peripheral retinal damage as a result of ocular contusion is most liable to occur either as a temporally located dialysis or as breaks in the upper nasal area caused by tearing of the vitreous base from its attachment. The non-pigmented epithelium of the pars plana ciliaris may be avulsed with the vitreous base, in which case it can occasionally be seen suspended in the vitreous cavity. A variant of these two types of peripheral damage is extensive detachment of the ora serrata with retinal breaks in the detached non-pigmented epithelium of the pars plana ciliaris along the anterior border of the vitreous base. This report describes the clinical features and incidence of traumatic detachments due to breaks anterior to the ora serrata in a series of 243 primary retinal detachments.

Material

During a 24-month period from January 1, 1964, to December 31, 1965, eighteen eyes with traumatic retinal detachment were treated by surgery. These were among a series of 243 primary operations for retinal detachment, so that those due to trauma formed 7 per cent. of the total. Three of the eighteen detachments (16 per cent.) were due to retinal breaks in the pars plana ciliaris.

The criteria for establishing the diagnosis of traumatic rather than idiopathic detachment included a unilateral detachment preceded by ocular contusion. The absence of visible vitreo-retinal degeneration of the types known to cause retinal breaks often helped to establish a traumatic aetiology. Finally, a careful search for objective signs of ocular contusion was made. Of importance were such findings as lid laceration and ecchymosis, subconjunctival and intra-ocular haemorrhage, corneal abrasion and scarring, iridodialysis, angle recession, cataract and lens subluxation, and traumatic chorioretinal atrophy or pigmentation.

* Read at a meeting of the New York Academy of Medicine, November 21, 1966. Received for publication November 28, 1966.
† Address for reprints: Dr. William Tasman, M.D., 626 Four Penn Center Plaza, Philadelphia, Pennsylvania, U.S.A.

As in all traumatic retinal detachments, there was a great predominance of males (16 males to 2 females). The average age of the patients was 25 years. Two of the three detachments due to a retinal break in the pars plana were located temporally (one inferior and one superior) and one nasally. The retinal breaks occurred as dialyses along the anterior border of the vitreous base or as a round break adjacent to a meridional fold (Figs 1 and 2). The fifteen detachments due to breaks posterior to the ora serrata showed retinal dialyses which were located as follows: superior temporal 8, superior nasal 8, inferior temporal 1, inferior nasal 1 (one patient had two dialyses in the same eye).

FIG. 1.—Inferior temporal dialysis along anterior border of vitreous base in the right eye. The ora serrata is delineated by pigment which has been pulled free from the underlying pigment epithelium.

FIG. 2.—Superior temporal dialysis along anterior border of vitreous base in the left eye. A prominent demarcation line delimits the detachment nasally and an intraretinal cyst is present at 8.30 o'clock.

Clinical Features

Like retinal detachments due to dialysis, those due to breaks in the pars plana produce mild symptoms and the time of onset is often difficult to establish, but many patients have one or more demarcation lines indicating that the detachment has been present at least 6 months (Fig. 2). Frequently it is only after the detachment has broken through a demarcation line and involved the macula that the patient seeks help; this and the fact that young patients are loath to complain account for the long interval between injury and diagnosis in many cases. Cox and others (1966) found that 30 per cent. of their traumatic detachments were diagnosed within a month and only 50 per cent. within 8 months of the injury.

Retinal detachments due to breaks in the pars plana are seldom bullous, but tend to be smooth and flat. Fixed star folds are rare and intraretinal cysts may be present if the detachment is old (Fig. 2). A multiplicity of demarcation lines indicates successive increases in size of the detachment and is strong evidence that chorioretinal adhesions from spontaneous demarcation lines cannot be relied upon to contain a detachment.

Breaks in the pars plana cannot usually be seen without scleral depression. Although the epithelium of the pars plana ciliaris is thin and may appear more translucent than the retina posterior to the ora serrata, this difference in thickness may not be striking enough to identify the latter. Its position however, may be made more obvious by a variable amount of pigment outlining the ora serrata which has been dragged from the underlying pigment epithelium (Fig. 1). Another clue to the position of the ora serrata is the presence of cystoid degeneration which differentiates the extreme periphery of the retina from the epithelium of the pars plana. The contrast between retina and thin pars plana is more marked in the folds of the often tented ora

serrata, so that light reflected from the uveal blood vessels gives a reddish colour to the thin tented areas which can easily be mistaken for triangular holes.

Breaks in the pars plana along the anterior border of the vitreous base appear as small or large dialyses and less commonly as round holes. In the detached epithelium of the pars plana the anterior limit of the vitreous base attachment is often identified as a low fold which tends to run parallel to the ora serrata.

Treatment

Traumatic retinal detachments due to a break in the pars plana have a favourable surgical prognosis. They will not usually flatten simply by keeping the patient in bed, but they settle nicely when the subretinal fluid is drained. This is characteristically more viscous than in other forms of retinal detachment, but usually drains completely and easily.

I personally prefer scleral buckling procedures with an encircling element for these patients since most of them are quite young and will therefore lead longer and more active lives than older patients with idiopathic detachments. Where possible I attempt to place the buckle beyond the ora serrata to close the break, rather than to wall it off with a posteriorly-placed implant.

In this series all three of the retinæ became reattached, and thirteen of the fifteen other traumatic detachments were successfully repaired. One patient was a failure and one refused surgery, giving a total of sixteen favourable results out of eighteen.

Summary

Ocular contusion can cause a retinal detachment due to a break in the non-pigmented epithelium of the pars plana ciliaris. These retinal breaks are usually located along the anterior border of the vitreous base and cannot be seen without scleral depression. Sometimes it is difficult to identify the ora serrata when the pars plana is detached. Helpful clues are pigmentation at the ora and peripheral cystoid degeneration which help to differentiate the retina from the non-pigmented epithelium of the pars plana ciliaris.

The retinal detachments are not bullous and demarcation lines indicating long-standing detachment are a frequent finding. The retina does not settle if the patient is merely made to rest in bed, but drainage of the subretinal fluid is usually complete in spite of its viscosity, and the prognosis for successful reattachment of the retina is excellent.

REFERENCES

- COX, M. S., SCHEPENS, C. L., and FREEMAN, H. MCKENZIE (1966). *Arch. Ophthalm. (Chicago)*, **76**, 678.
DOBBIE, J. G., and PHILLIPS, C. I. (1962). *Ibid.*, **68**, 610.
FINE, B. S., and ZIMMERMAN, L. E. (1963). *Invest. Ophthalm.*, **2**, 105.
SCHEPENS, C. L. (1951). "XVI Conc. Ophthalm. 1950 Britannia Acta", vol. 2, p. 1384. B.M.A., London.
——— and BAHN, G. C. (1950). *Arch. Ophthalm. (Chicago)*, **44**, 677.
WEIDENTHAL, D. T., and SCHEPENS, C. L. (1966). *Amer. J. Ophthalm.*, **62**, 465.