Late retinal reattachment

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SUMMARY Six cases are described in which late reattachment of detached retina occurred 9-16 months after what had been considered to be failed retinal detachment surgery. In all cases reattachment had been associated with partial restoration of vision. No cause for such reattachment can be clearly established, but it is felt that spontaneous separation of the posterior vitreous face with subsequent release of traction from the surface of the retina may be a contributory factor.

The behaviour of subretinal fluid (SRF) after retinal detachment surgery is the criterion on which the success or failure of the operation is judged. If a nondrained or partially drained procedure (with residual operative SRF) has been performed, closure of the retinal hole usually results in prompt absorption of SRF in the postoperative period. In cases in which the SRF has been completely drained at the time of surgery success is confirmed by the non-reappearance of the SRF in the postoperative period. Even though the reabsorption of SRF may be slow on occasions, and sometimes take weeks or even months,¹⁻³ unchanged or increased SRF in the postoperative period usually indicates failure. In most of these cases a careful search will eventually reveal either a missed retinal hole or one that has been inadequately buckled. In either case reoperation will be necessary to achieve success.

The following cases show that an apparently hopelessly detached retina may become occasionally reattached many months after detachment surgery was judged to have failed. Possible mechanisms for such late reattachment are considered.

Case reports

The cases described are from a series of 500 consecutive retinal detachment cases operated upon at St Thomas's Hospital, London. In all cases the method of surgery was similar. Thus, full-thickness scleral buckles were used consisting either of Silastic sponge implants for local procedures or silicone rubber bands for encircling operations. Cryotherapy was applied to achieve intraretinal adhesion. SRF was drained according to criteria described previously.⁴

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CASE 1

A 60-year-old man was referred with a left retinal detachment in August 1975. In 1970 he had had a left intracapsular lens extraction with vitreous loss. Prior to referral 2 unsuccessful retinal detachment operations had been performed on the affected eye. When examined the visual acuity was reduced to hand movements, and the eye showed evidence of the previous cataract extraction, with vitreous strands adherent to the corneal wound. There was no evidence of uveitis, and examination of the posterior segment revealed a subtotal retinal detachment extending from the 1 o'clock to the 11 o'clock positions. Two unsealed retinal holes were found in the 3 and 4 o'clock positions. There was no associated periretinal fibrosis. At least partial posterior vitreous detachment was present. The appearance of subretinal fluid was unremarkable, and it did not shift. Examination of the right eye was normal apart from some degree of cataract formation. At the time of retinal surgery to the affected eye the previously placed encircling band was mobilised and positioned in a slightly more posterior position underneath the retinal holes. SRF was drained. In the postoperative period there was some settling of superior retina, but the lower half of the retina remained completely detached. This appearance remained the same for approximately 8 weeks, and it was then thought that the hole in the 3 o'clock position remained unsealed; further detachment surgery was advised and duly carried out 9 weeks from the previous procedure. At this operation a radial sponge was placed under the 3 o'clock position. Subretinal fluid was not drained. In the postoperative period the inferior retinal detachment persisted unchanged, and a careful search did not reveal any sign of a further retinal hole. The clinical picture persisted for 10 months

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without sign of uveitis or choroidal detachment, and although reoperation was advised the patient was not anxious for further surgery. Six months later, however (16 months from the last detachment procedure), the retina became completely reattached and there was spontaneous improvement in the visual acuity to 6/60. The retina has remained reattached from that time. When recently reassessed the appearance of the reattached retina was unremarkable, and a total posterior vitreous detachment was found.

CASE 2

A highly myopic (−10.0 dioptre) woman aged 56 presented with a retinal detachment in the left eye of 2 weeks' duration. Visual acuity was reduced to hand movements. On examination the anterior segment was unremarkable, but the posterior segment showed the presence of a subtotal retinal detachment involving the nasal half of the retina and extending from the 12 o'clock to the 3 o'clock position. Subretinal fluid was unremarkable and was not shifting, nor was there any sign of preretinal fibrosis or of uveitis. No positive retinal hole could be identified. The posterior vitreous was considered to be detached at least in the upper half, but it was not possible to establish whether this detachment was complete. The fellow eye was highly myopic but otherwise normal. On 10 June 1975 a nondrainage procedure was performed and a 4 mm circumferential sponge was applied between the 4 and 10 o'clock positions. In the postoperative period there was no detectable change in the volume of subretinal fluid. Further surgery was advised and duly carried out 6 weeks later on 22 July 1975. At this procedure the circumferential sponge was replaced by a 5 mm circumferential sponge, extended above and below, so that it covered the 10 to 5 o'clock meridians of the detached retina. On this occasion SRF was drained. In the postoperative period the upper half of the retina was initially flat but the inferior half remained detached. Over the next few weeks the detached retina was complicated by periretinal fibrosis leading to the formation of fixed folds in the inferior retina. The detachment gradually got worse and became total. Five months from the time of the operation further surgery was advised, though another careful search had not revealed the presence of a retinal hole. On 3 December 1975 a further buckling procedure was carried out. The previous sponges were removed, and this time an encirclement operation was performed. Cryotherapy was applied to all suspicious areas and SRF drained. In the postoperative period SRF rapidly reaccumulated to produce the appearance of a total retinal detachment. The case was considered hopeless, and further retinal

surgery was not considered advisable. For 9 months following the last procedure the distribution and depth of SRF remained unchanged, but the case was uncomplicated by either uveitis or choroidal detachment. However, 14 months after the last operation and 21 months from the time that the retinal detachment first appeared the volume of SRF suddenly started to become less, and within 2 months complete reattachment of the retina occurred. When assessed at this time the appearance of the reattached retina was unremarkable. There was complete regression of the inferior retinal fibrosis, and a total posterior vitreous detachment was noted. The visual acuity had improved to counting fingers, but there was by now some degree of posterior cortical lens opacity. The retina has remained fully reattached since that time.

CASE 3

A 74-year-old emmetropic woman presented with a retinal detachment of 2 months' duration. On examination vision was reduced to counting fingers. The anterior segment was unremarkable apart from a slight degree of cataract formation. The posterior segment revealed a subtotal retinal detachment associated with a round hole in an area of lattice degeneration in the 2 o'clock position. The macula was detached, and there were several early areas of preretinal star-shaped fold formation, particularly in the posterior pole of the eye. SRF was of a moderate depth and was not shifting. Details of the posterior vitreous face were not clearly established, but it was not thought that a posterior vitreous detachment was present. There was no sign of anterior or posterior uveitis. The fellow eye was normal apart from a small hole in the 10 o'clock position of the retina. On 5 January 1977 a non-drainage procedure on the left eye was performed, with the use of a 5 mm radial sponge. Postoperatively the retina did not become reattached and further examination revealed a further round hole in the 5 o'clock position. Accordingly on 18 January 1977 further surgery was performed and the second hole sealed with a 4 mm circumferential sponge. However, in spite of the fact that the retinal holes were adequately sealed, the appearance of the detached retina remained almost unchanged, with detachment involving the temporal half of the retina, and this was associated with an increase in the degree of preretinal membrane formation. The postoperative period was not complicated by uveitis or choroidal detachment. This situation remained the same for the next few months, and the patient's poor general condition precluded further surgery. However, 11 months after surgery the detachment started to become progressively less, and the retina

became completely reattached over a 2-month period. When the eye was re-examined at this time there was quite a dense macular pucker but no evidence of the preretinal star-shaped folds. A total posterior vitreous detachment was present. The retina has remained flat and there has been considerable subjective improvement in the field of vision, though central vision has not improved.

CASE 4

A 76-year-old emmetropic woman presented with an upper temporal detachment of the right eye. Visual acuity was reduced to counting fingers. There was no sign of anterior or posterior uveitis. The anterior segment was normal. In the posterior segment the retinal detachment was found to be associated with a retinal dialysis and also 4 small round holes in the immediate vicinity of the dialysis. There was no evidence of periretinal fibrosis and, the SRF was not shifting. Operation was performed on 4 June 1975, at which a 4 mm circumferential sponge was used to buckle the retinal holes between the 10 and 1 o'clock positions. SRF was not drained. The postoperative progress was satisfactory, with progressive absorption of subretinal fluid, so that one month after operation only a small amount of SRF was present behind the buckle. This picture was maintained until the end of the second postoperative month, when there was a rapid increase in the amount of SRF which extended not only behind the buckle but had spread downwards into the inferior temporal quadrant. There was progressive and steady increase in the amount of SRF in the next 2 months. There was no postoperative uveitis or choroidal detachment. Although we were suspicious of a missed or incompletely sealed retinal hole, frequent examinations did not reveal such a hole, and the original hole appeared to be adequately sealed by the buckling procedure. Further surgery was considered but not advised, the decision being influenced by her poor state of general health due to advanced cardiovascular disease. The situation remained unchanged for 8 months from the time of operation, but shortly after this SRF decreased, and within a period of 1 month the retina had become completely reattached. The appearance of the retina at this time remained unremarkable, only the presence of a total posterior vitreous detachment at this time representing any change in the physical signs. Visual acuity eventually improved to 6/18.

CASE 5

A 69-year-old highly myopic (-15.0 dioptres) man was admitted for routine cataract surgery to the left eye. A preoperative examination revealed a total

retinal detachment. It was not possible to be sure how long this detachment had been present, as vision had been poor in this eye for some years. At the time of examination visual acuity was reduced to hand movements. Examination of the retina did not reveal the presence of a retinal hole, though there were suspicious areas in the upper temporal quadrant, and the view of the peripheral retina was partially obscured by lens opacity. The SRF did not shift. There was no periretinal fibrosis. The presence of the lens opacities also precluded a detailed examination of the vitreous cavity and details of the posterior vitreous attachments were obscured. Uveitis was not present. The fellow eye was also highly myopic and contained lens opacities. Retinal detachment surgery to the affected eye was advised and duly performed on 4 August 1978. An equatorial encircling procedure was performed and cryotherapy applied to all suspicious areas of the peripheral retina, but no retinal hole could clearly be established at the time of surgery. SRF was not drained. Postoperatively a satisfactory encircling ridge could be seen, and, although the retina was completely reattached anteriorly to the ridge, the posterior retina remained totally detached. The condition of this detachment remained unchanged over the next 6 weeks and further surgery was advised. At the reoperation the encircling band was moved slightly posteriorly, SRF was drained, and an air/SF6 mixture was injected into the vitreous cavity to encourage retinal tamponade. Within a few days of the operation fluid had reaccumulated so that the retina was again totally detached. The situation remained the same over the next 3 months, and since vision was deteriorating further in the other eye (because of macular degeneration) it was felt that further surgery should be attempted to the left eye. The lens opacities in this left eye had increased sufficiently to make good visualisation of the detached retina impossible, and cataract surgery was therefore advised. It was duly performed on 30 March 1979. At this operation an uneventful intracapsular extraction with a broad iridectomy was performed. In the postoperative period the detached retina was once again completely reassessed, and again a retinal hole could not be found. There was no uveitis or choroidal detachment. Unfortunately the patient's general condition deteriorated and he was also reluctant to undergo further surgery. However, after a few months the vision in the left eye started to improve spontaneously (6 months after the cataract surgery and 1 year after the second retinal detachment operation). When he was examined on 20 September 1979, the retina was found to be completely flat. At this examination, a total posterior vitreous detachment was noted, but other-

wise the ocular examination was unremarkable. Visual acuity has improved subjectively, though central vision remains at counting fingers and the retina has remained reattached since that time.

CASE 6

An 80-year-old aphakic man presented in May 1978 with a total retinal detachment. The same eye had previously had a lamellar keratoplasty in 1954, cataract extraction with broad iridectomy in November 1977, and an unsuccessful operation for retinal detachment (cryotherapy, encirclement, and drainage of SRF by the referring ophthalmologist) in March 1978. The other eye had previously been removed many years ago after operations for congenital glaucoma. Although the examination of the affected eye was impaired by the presence of a partially opaque corneal graft and retrocorneal membrane, a totally detached retina could be seen. An ultrasonic B scan examination confirmed the presence of an aphakic retinal detachment in a very long eye, and although a detached vitreous gel could be seen, with dense scattered vitreous opacities, there was marked vitreoretinal adhesion posteriorly. Since the cornea was so opaque, a further corneal graft operation was advised and duly performed in June 1978. This was successful in restoring corneal clarity and revealed details of the retinal detachment. The detachment showed the presence of considerable preretinal membrane formation with fixed folds in the inferior retina and associated with large and distorted horseshoe shaped tears in the 5, 7, and 9 o'clock positions. Fibrotic vitreous strands were present. At retinal surgery all of these horseshoe shaped tears were buckled by separate radial sponges, and an encircling band was placed in position and SRF drained. One month postoperatively the retina was still totally detached, with increase in the periretinal and intravitreal fibrosis, though the retinal holes did appear to be adequately sealed. There was progressive deterioration in the appearance of the retina, so that 2 months after surgery the retina was totally detached and appeared to be on the verge of massive periretinal proliferation. Uveitis was absent, as was choroidal detachment. Further surgery was being considered, but 6 months after the detachment operation, there was spontaneous improvement in the patient's vision, and this improvement was matched by the ophthalmoscopic findings. The retina had become attached in the upper 180°, though inferior SRF persisted in association with previously noted periretinal fibrosis. Over the next 6 months the retina became completely reattached, and there was no sign of the previously noted fibrosis in relationship to the retina. When the eye was examined again after the retina had become

completely reattached, a total posterior vitreous detachment was noted. The retina has remained flat.

Discussion

In attempting to offer an explanation for why unexpected late reattachment occurred in these cases their characteristics were noted. There was nothing remarkable in the age of the patients (between 56–80), their sex (3 men and 3 women), or their refractive errors (2 aphakics, 2 myopes, and 2 emmetropes). In 3 cases there was no sign of periretinal fibrosis, in 2 cases there was marked preoperative periretinal fibrosis, and in a further case fibrosis appeared after a failed operation for retinal detachment.

The possibility that we were dealing with an exudative phenomenon was considered. Exudative detachments may be seen either as primary events—for example, as part of a generalised uveitis, such as Harada's disease—or in cases of primary rhegmatogenous detachment which have had an exudative response to the retinal detachment surgery that had been performed. We had no clinical evidence that any of our cases were exudative in origin. In 4 cases retinal holes could clearly be established, and there was no sign of uveitis in the same or the fellow eye or of shifting SRF in any of the 6 cases. None of the cases suffered from any systemic or intraocular disease known to be associated with nonrhegmatogenous detachment. Similarly it was not felt that the patients had suffered an exudative response to the detachment surgery that had been performed. Although such response has been described following surgery,⁶ our cases did not suffer anterior or posterior uveitis with vitreous haze in the postoperative period, shifting SRF, or choroidal detachment.

It was not considered that these cases represented simply slow absorption of SRF in the postoperative period, because, with the exception of partial reabsorption in case 1, after the initial operation the volume of SRF remained either unchanged or actually increased in extent before reabsorption took place.

The possible role of the posterior vitreous face in contributing to reattachment was considered. Exact attachments of the posterior vitreous face in cases of retinal detachment are not always easy to establish, particularly when there are opacities in the media. It is usually possible to be sure of the presence of at least a partial posterior vitreous detachment, but it is hard to establish if this detachment is in fact complete. In 2 cases (2 and 5) the posterior vitreous attachments were not clear, in 3 cases (1, 3, and 6) it was considered that the preoperative vitreous detachment was incomplete. In case 6 marked

posterior vitreal retinal adhesion was confirmed on a preoperative B scan examination, and in case 4 no vitreous detachment was found. In all cases total posterior vitreous detachment was clearly seen when reattachment of the retina had eventually occurred—though we were not able to be sure exactly when this vitreous detachment had happened. In the 3 cases in which there was periretinal fibrosis (cases 2, 3, and 6) the apparent separation of the posterior hyaloid face resulted in peeling of the preretinal membrane from the surface of the retina and resulted in reattachment by releasing surface traction. Spontaneous separation of preretinal membranes has been noted by others.⁶ It is felt that in spite of what appeared to be an adequate buckling procedure in these 6 cases retinal detachment had been maintained by vitreoretinal traction, that is, traction that was spontaneously relieved by the separation of the posterior vitreous face from the surface of the retina. In cases in which fibrotic membranes were absent the presence of significant vitreoretinal traction is hard to be sure of and the benefit of

spontaneous separation of the posterior hyaloid face less certain.

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