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Interventions for asymptomatic retinal breaks and lattice degeneration for preventing retinal detachment

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Abstract

Background—Asymptomatic retinal breaks and lattice degeneration are visible lesions that are risk factors for later retinal detachment. Retinal detachments occur when fluid in the vitreous cavity passes through tears or holes in the retina and separates the retina from the underlying retinal pigment epithelium. Creation of an adhesion surrounding retinal breaks and lattice degeneration, with laser photocoagulation or cryotherapy, has been recommended as an effective means of preventing retinal detachment. This therapy is of value in the management of retinal tears associated with the symptoms of flashes and floaters and persistent vitreous traction upon the retina in the region of the retinal break, because such symptomatic retinal tears are associated with a high rate of progression to retinal detachment. Retinal tears and holes unassociated with acute symptoms and lattice degeneration are significantly less likely to be the sites of retinal breaks that are responsible for later retinal detachment. Nevertheless, treatment of these problems is frequently recommended, in spite of the fact that the effectiveness of this therapy is unproven.

Objectives—The purpose of this review was to evaluate the effectiveness of interventions for asymptomatic retinal breaks and lattice degeneration.

Search methods—We searched CENTRAL (which contains the Cochrane Eyes and Vision Group Trials Register) (*The Cochrane Library* 2012, Issue 1), MEDLINE (January 1950 to January 2012), EMBASE (January 1980 to January 2012), the metaRegister of Controlled Trials (mRCT) (www.controlled-trials.com), ClinicalTrials.gov (www.clinicaltrials.gov) and the WHO International Clinical Trials Registry Platform (ICTRP) (www.who.int/ictcp/search/en). There were no date or language restrictions in the electronic searches for trials. The electronic databases were last searched on 28 January 2012. Textbooks regarding retinal detachment and the reference

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CONTRIBUTIONS OF AUTHORS

CPW screened the search results, graded selected trials and wrote the review. CPW is the guarantor for the review. The Cochrane Eyes and Vision Group editorial team developed the search strategies and undertook the electronic searches. Richard Wormald (Co-ordinating Editor for CEVG) acknowledges financial support for his CEVG research sessions from the Department of Health through the award made by the National Institute for Health Research to Moorfields Eye Hospital NHS Foundation Trust and UCL Institute of Ophthalmology for a Specialist Biomedical Research Centre for Ophthalmology. The views expressed in this publication are those of the authors and not necessarily those of the Department of Health.

DECLARATIONS OF INTEREST

None known.

DATA AND ANALYSES

This review has no analyses.

lists of relevant reports were reviewed for additional study reports. Experts in the field were contacted for details of other published and unpublished studies.

Selection criteria—This review was designed to include randomized controlled trials in which one treatment for asymptomatic retinal breaks and lattice degeneration was compared to another treatment or to no treatment.

Data collection and analysis—Initially one author assessed the search results and collected relevant studies. Since no studies met the inclusion criteria, no studies were assessed for methodological quality. No data were extracted and no meta-analysis could be performed.

Main results—No trials were found that met the inclusion criteria for this review.

Authors' conclusions—No conclusions could be reached about the effectiveness of surgical interventions to prevent retinal detachment in eyes with asymptomatic retinal breaks and/or lattice degeneration. Some current recommendations for treatment, based upon a consensus of expert opinion, are contradicted by the best available evidence.

INDEX TERMS: Medical Subject Headings (MeSH)

Retinal Degeneration [*therapy]; Retinal Detachment [*prevention & control]; Retinal Perforations [*therapy]

MeSH check words

Humans

PLAIN LANGUAGE SUMMARY

Interventions for asymptomatic retinal breaks and lattice degeneration for preventing retinal detachment

A rhegmatogenous retinal detachment develops when a break (tear, hole) occurs in the sensory retina and allows fluid from the vitreous cavity to separate the sensory retina from the underlying retinal pigment epithelium. When retinal breaks occur they may be associated with symptoms such as dark floaters or flashing lights or they may develop without symptoms, in which case they are termed “asymptomatic”. Because asymptomatic retinal breaks and lattice degeneration are associated statistically with retinal detachment at variable periods later on, treatment of the lesions with laser or cryotherapy has been proposed to prevent the latter problem. This review discovered no prospective and/or randomized trials comparing treatment and controls, and there is therefore insufficient evidence to demonstrate any benefit of prophylactic therapy for the problems that were studied.

BACKGROUND

Description of the condition

A retinal detachment is a separation of the sensory retina from the retinal pigment epithelium, with an accumulation of fluid in the potential space between them. Retinal detachments can be rhegmatogenous (caused by a break in the retina) or non-rhegmatogenous (caused by leakage from beneath the retina or by traction (pulling) on the

retina). This review is concerned with the prophylactic treatment of the asymptomatic retinal breaks and areas of degeneration that might cause rhegmatogenous retinal detachment. A Cochrane systematic review evaluating surgical interventions for rhegmatogenous retinal detachments is in preparation. A break in the retina can be categorized as a tear or a hole. The break may be associated with symptoms or may be asymptomatic. Acute retinal breaks associated with the sudden onset of symptoms of dark floaters and/or flashing lights are a common cause of retinal detachment. Asymptomatic retinal breaks are much more common but much less likely to lead to retinal detachment. Therefore most retinal breaks do not lead to retinal detachment.

Lattice degeneration is a vitreoretinal disorder characterized by focal lesions which are associated with asymptomatic retinal holes and an increased likelihood of future retinal tears. Because asymptomatic retinal breaks and lattice degeneration are visible, common, and associated with retinal detachment, they have frequently been considered for prophylactic therapy.

Non-traumatic, phakic retinal detachments occur in approximately 1/10,000 persons/year (Haimann 1982; Wilkes 1982). The incidence is slightly greater if traumatic cases are included, but approximately one to two per cent of patients who undergo cataract surgery will ultimately develop a retinal detachment (Rowe 1999; Tielsch 1996). Myopia is a major risk factor for retinal detachment, and there is a direct relationship between the amount of myopia and the chances of detachment (EDCSG 1993). The chances of retinal detachment are greater in the second eye of a person who has had a retinal detachment in one eye (AAO 2003).

Lattice degeneration is present in six to eight per cent of the general population and in approximately 30 per cent of phakic retinal detachments (Byer 1992). The chances of a retinal detachment developing in an eye with lattice degeneration were less than one per cent over an average of 11 years if retinal detachment had not occurred in the other eye (Byer 1989). In people with lattice degeneration in both eyes and a history of detachment in the first eye, the incidence of detachment in the second eye over seven years was from two to five per cent (Folk 1989).

Asymptomatic retinal breaks are present in approximately six per cent of eyes in both clinical and autopsy studies (Wilkinson 1997). The chances of retinal detachment due to an asymptomatic retinal break in people in which a retinal detachment has not occurred in either eye were approximately 0.5 per cent over a follow-up period averaging 11 years (Byer 1998). If a retinal detachment has occurred in one eye of a person with an asymptomatic retinal break in the second eye, the chances of retinal detachment in the latter eye appear to be higher, with incidence figures ranging from 0 to 15 per cent (Wilkinson 1997). However, data regarding such cases are incomplete, and the relationship between the asymptomatic breaks, new retinal breaks, and retinal detachment remains unclear. Asymptomatic retinal breaks are frequently observed within the lesions of lattice degeneration. These are usually small atrophic holes, and retinal detachments due to these breaks are usually slowly progressive and are most frequent in myopic eyes of patients less than 60 years of age.

Asymptomatic retinal breaks and lattice degeneration are usually diagnosed during routine evaluations of the peripheral retina following dilatation of the pupil. The lesions are usually present at the equator of the retina or more anteriorly, and the technique of scleral depression may be required for pathology to be visualized.

Description of the intervention

Asymptomatic retinal breaks and lattice degeneration are usually treated with transconjunctival cryotherapy or with laser photocoagulation. With cryotherapy, a probe shaped like a pen whose tip is cooled to very low temperatures is applied on the conjunctiva to freeze the retina through the coats of the eyeball. With laser photocoagulation, a high-energy beam is delivered through the ocular media to the affected area.

How the intervention might work

With either technique, a thermal burn is created to surround the lesion and any subretinal fluid associated with it. The burn becomes an adhesion between the retina and retinal pigment epithelium, and this limits potential flow of fluid from the vitreous cavity through an asymptomatic break, retinal hole associated with lattice degeneration, or retinal break that occurs later at a site of lattice degeneration.

Why it is important to do this review

An evidence-based approach to the practice of medicine has become more important in the face of increasing pressures to maintain quality care in the context of significant cost containment. In making a decision to treat vitreoretinal lesions that are relatively unlikely to cause retinal detachment, the risks that treatment will be unnecessary, ineffective, or even harmful must be weighed against the possible benefit of reducing the rate of subsequent retinal detachment. Therefore, a systematic review of the literature is indicated in an effort to evaluate the effectiveness of prophylactic therapy of asymptomatic retinal breaks and lattice degeneration. This Cochrane review was preceded by a review of the literature for the production of an updated American Academy of Ophthalmology Preferred Practice Pattern (AAO 2003; Wilkinson 2000). For this Cochrane review, the searches have been extended to include articles from non-English literature and concentrate on the discovery of randomized controlled trials.

OBJECTIVES

The objective of this review was to assess the effectiveness of techniques used to treat asymptomatic retinal breaks and lattice degeneration for the prevention of retinal detachment.

METHODS

Criteria for considering studies for this review

Types of studies—This review included randomized controlled trials.

Types of participants—Trials included in this review included people with asymptomatic retinal breaks and lattice degeneration. These were divided into:

- those in which no retinal detachments had occurred;
- those in which a retinal detachment had occurred in one eye and asymptomatic breaks and/or lattice degeneration were present in the second (fellow) eye.

Trials in which participants had acute symptoms of floaters and flashes were not included in this review.

Types of interventions—Trials were included in which one treatment of asymptomatic retinal breaks and lattice degeneration was compared to control or to another form of treatment. This included transconjunctival cryotherapy and laser photocoagulation.

Types of outcome measures

Primary outcomes: The primary outcome for this review was the rate of retinal detachment following the intervention.

Secondary outcomes: Secondary outcomes include changes in visual acuity and socioeconomic implications (cost of intervention, morbidity).

Search methods for identification of studies

Electronic searches—We searched the Cochrane Central Register of Controlled Trials (CENTRAL) 2012, Issue 1, part of *The Cochrane Library*. www.thecochranelibrary.com (accessed 28 January 2012), MEDLINE (January 1950 to January 2012), EMBASE (January 1980 to January 2012), the *metaRegister* of Controlled Trials (*mRCT*) (www.controlled-trials.com), ClinicalTrials.gov (www.clinicaltrials.gov), and the WHO International Clinical Trials Registry Platform (ICTRP) (www.who.int/ictip/search/en). There were no date or language restrictions in the electronic searches for trials. The electronic databases were last searched on 28 January 2012.

See: Appendices for details of search strategies for CENTRAL (Appendix 1), MEDLINE (Appendix 2), EMBASE (Appendix 3), *mRCT* (Appendix 4), ClinicalTrials.gov (Appendix 5) and the ICTRP (Appendix 6).

Searching other resources—For the original American Academy of Ophthalmology report (AAO 1998), experts in the field were contacted for information on further published and unpublished trials. These experts consisted of members of the American Academy of Ophthalmology Preferred Practice Pattern Retina Panel (including Dennis M. Robertson MD, Michael A. Bloome MD, Emily Y. Chew MD, Louis A. Lobes Jr. MD, David W. Parke II MD, Marco A. Zarbin MD PhD, Paul P. Lee MD, JD and Flora Lum MD). In the more recent Academy report (AAO 2003), a similar process was conducted by a different panel (composed of Emily Y. Chew MD, William E. Benson MD, H. Culver Boldt MD, Tom S. Chang MD, Louis A. Lobes MD, Joan W. Miller MD, Timothy G. Murray MD, Marco A. Zarbin MD PhD, and Leslie Hyman PhD).

Data collection and analysis

Assessment of risk of bias in included studies—The assessment of sources of systematic bias was planned according to the guidelines in Chapter 8 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). Five parameters were to be considered:

1. Sequence generation and allocation concealment;
2. Masking (blinding) of providers, recipients of care, and outcome assessors;
3. Incomplete outcome data;
4. Selective outcome reporting;
5. Other sources of bias.

Each parameter of trial quality was to be reported as 'Low risk of bias', 'High risk of bias', or 'Unclear risk of bias (information is insufficient to assess).'

Data extraction and synthesis—We planned to summarize data from studies collecting similar outcomes and using similar follow-up times after testing for heterogeneity between trial results using a standard chi square test.

For dichotomous data, results were to be expressed as odds ratio estimates or risk ratio estimates (95% confidence interval). For continuous data, the mean and standard deviations were to be obtained. Standard errors were to be converted to standard deviations. We planned to summarize these results using weighted mean differences (95% confidence intervals).

RESULTS

Description of studies

See: Characteristics of excluded studies.

The original searches in 2001 found 154 citations but these were all excluded by the author as none of them met the inclusion criteria.

Updated searches—In February 2005, the electronic searches were re-run and the author plus a member of the Cochrane Eyes and Vision Group screened the titles and abstracts of 160 citations. Four studies were found to be relevant to this review but none fulfilled the criteria for inclusion in this review. The excluded studies are mentioned in the 'Characteristics of excluded studies' table.

In November 2006, the electronic searches were re-run and 26 new reports of trials were identified but none met the inclusion criteria.

In November 2008, the electronic searches were updated and 23 new reports were identified. One study was found to be relevant to this review, but did not fulfill the criteria for inclusion (Ang 2008).

In January 2012, the electronic searches identified 34 citations along with eight potentially relevant ongoing or completed studies, but none met the inclusion criteria.

Risk of bias in included studies

No studies met the criteria for inclusion in this review, therefore no assessment of quality was undertaken.

Effects of interventions

There were no studies that met the inclusion criteria for this review therefore no meta-analysis was performed.

DISCUSSION

This review has revealed no prospective randomized trials of therapy to prevent retinal detachment. The most frequently cited reports demonstrated many flaws and described treatment outcomes that were not compared to an appropriate control group.

An initial review of the literature regarding prevention of retinal detachment was performed by members of the American Academy of Ophthalmology Preferred Practice Pattern Retina Panel (AAO 2003). An electronic review of MEDLINE articles and a manual review of references from relevant textbooks was performed. Each article was assigned a 'level' relevant to the strength of evidence. Level I indicated a properly conducted, well-designed randomized controlled trial (or meta-analysis of these). Level II included evidence from well-designed controlled trials without randomization, cohort or case-control analytic studies, or multiple-time series with or without the intervention. Level III included evidence from descriptive studies, case reports and consensus reports of expert committees.

In the previous review process (AAO 1998), one retrospective analysis (Folk 1989) had been considered to constitute Level II evidence. However, in the more recent review (AAO 2003), these data were considered to provide insufficient evidence to guide management. This study evaluated a large number of eyes in which lattice degeneration was present in the fellow eye of people with a retinal detachment associated with lattice degeneration in the first eye. Although treated eyes were compared to a control series, the method of allocation to treatment or observation was unclear, and a treatment benefit in eyes at highest risk was not demonstrated.

Most reports regarding prophylactic therapy have discussed treatment of lesions believed to be associated with an increased risk of retinal tears and detachments. Although there are definite risk factors associated with the development of retinal detachment, evidence of a benefit of prophylactic therapy in eyes without symptoms is lacking, and the risk of retinal detachment appears to persist in spite of preventative treatment.

The primary limitation of prophylactic therapy is related to the fact that most retinal detachments are due to retinal tears that develop in areas of the retina that appear normal prior to vitreous detachment (Byer 1992; Chauhan 2006). Thus treatment of visible lesions

associated with retinal detachment may prevent a tear at those sites, but not a tear in normal-appearing retina.

A major flaw in the vast majority of reports discussing prophylactic therapy was an absence of a discussion of the state of the vitreous gel before treatment. A prospective natural course trial of aphakic fellow eyes of patients who had had a prior retinal detachment in their first eye demonstrated that eyes without a posterior vitreous detachment had a tenfold higher chance of experiencing a later retinal detachment than did eyes in which a posterior vitreous detachment was present at the onset of the observation (Hovland 1978). No known prospective or retrospective non-controlled treatment trials to date have been stratified for the presence or absence of a posterior vitreous detachment.

AUTHORS' CONCLUSIONS

Implications for practice

There are no randomized controlled trials to support conclusions regarding the value of treating asymptomatic retinal breaks.

Implications for research

Prospective randomized trials of treatment for eyes with a relatively high risk of later detachment should offer the best opportunity to provide outcome data that are statistically meaningful. Such cases may include highly myopic fellow eyes with lattice degeneration and no posterior vitreous detachment, which are also pseudophakic or scheduled for cataract surgery. Such a prospective trial of treatment versus observation should include appropriate numbers of participants observed over a long follow-up period to ensure that the questions regarding outcomes of therapy versus no therapy are answered in a satisfactory statistical fashion.

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External sources

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APPENDICES

Appendix 1. CENTRAL search strategy

#1 MeSH descriptor Retinal Detachment

- #2 MeSH descriptor Retinal Perforations
- #3 MeSH descriptor Vitreous Detachment
- #4 (retina* near (detach* or break* or perforat* or tear* or hole*))
- #5 vitreoretinal near degenerat*
- #6 vitreo retinal near degenerat*
- #7 lattice near degenerat*
- #8 vitreo* near detach* near posterior
- #9 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8)
- #10 MeSH descriptor Light Coagulation
- #11 MeSH descriptor Cryotherapy
- #12 (coagulat* near (light or lasers))
- #13 laser* near photocoagulat*
- #14 laser* near photo coagulat*
- #15 cryotherap*
- #16 (#10 OR #11 OR #12 OR #13 OR #14 OR #15)
- #17 prophyla*
- #18 prevent*
- #19 (#17 OR #18)
- #20 (#9 AND #16 AND #19)

Appendix 2. MEDLINE (OVID) search strategy

1. randomized controlled trial. pt.
2. (randomized or randomised).ab,ti.
3. placebo.ab,ti.
4. dt.fs.
5. randomly.ab,ti.
6. trial.ab,ti.
7. groups.ab,ti.
8. or/1-7
9. exp animals/
10. exp humans/
11. 9 not (9 and 10)

12. 8 not 11
13. exp retinal detachment/
14. exp retinal perforations/
15. exp vitreous detachment/
16. (retina\$ adj3 (detach\$ or break\$ or perforat\$ or tear\$ or hole\$)).tw.
17. (vitreo?retinal adj3 degenerat\$).tw.
18. (lattice adj3 degenerat\$).tw.
19. (vitreo\$ adj3 detach\$ adj3 posterior).tw.
20. or/13–19
21. exp light coagulation/
22. exp cryotherapy/
23. (coagulat\$ adj3 (light or laser\$)).tw.
24. (laser\$ adj3 photo?coagulat\$).tw.
25. cryotherap\$.tw.
26. or/21–25
27. prophyla\$.tw.
28. prevent\$.tw.
29. or/27–28
30. 20 and 26 and 28
31. 12 and 30

The search filter for trials at the beginning of the MEDLINE strategy was from the published paper by Glanville et al (Glanville 2006).

Appendix 3. EMBASE (OVID) search strategy

1. exp randomized controlled trial/
2. exp randomization/
3. exp double blind procedure/
4. exp single blind procedure/
5. random\$.tw.
6. or/1–5
7. (animal or animal experiment).sh.
8. human.sh.

9. 7 and 8
10. 7 not 9
11. 6 not 10
12. exp clinical trial/
13. (clin\$ adj3 trial\$).tw.
14. ((singl\$ or doubl\$ or trebl\$ or tripl\$) adj3 (blind\$ or mask\$)).tw.
15. exp placebo/
16. placebo\$.tw.
17. random\$.tw.
18. exp experimental design/
19. exp crossover procedure/
20. exp control group/
21. exp latin square design/
22. or/12–21
23. 22 not 10
24. 23 not 11
25. exp comparative study/
26. exp evaluation/
27. exp prospective study/
28. (control\$ or prospectiv\$ or volunteer\$).tw.
29. or/25–28
30. 29 not 10
31. 30 not (11 or 23)
32. 11 or 24 or 31
33. exp retinal detachment/
34. exp vitreoretinal degeneration/
35. exp vitreous body detachment/
36. (retina\$ adj3 (detach\$ or break\$ or perforat\$ or tear\$ or hole\$)).tw.
37. (vitreo?retinal adj3 degenerat\$).tw.
38. (lattice adj3 degenerat\$).tw.
39. (vitreo\$ adj3 detach\$ adj3 posterior).tw.
40. or/33–39

41. exp laser coagulation/
42. exp cryotherapy/
43. (coagulat\$ adj3 (light or laser\$)).tw.
44. (laser\$ adj3 photo?coagulat\$).tw.
45. cryotherap\$.tw.
46. or/41–45
47. exp prophylaxis/
48. prophyla\$.tw.
49. prevent\$.tw.
50. or/47–49
51. 40 and 46 and 50
52. 32 and 51

Appendix 4. metaRegister of Controlled Trials search strategy

(prevention or prophylaxis or prophylatic) and retinal detachment

Appendix 5. ClinicalTrials.gov search strategy

(Prevention OR Prophylaxis OR Prophylatic) AND Retinal Detachment

Appendix 6. ICTRP search strategy

retinal detachment = Condition AND prevention or prophylaxis or prophylatic = Interventions

REFERENCES

* Indicates the major publication for the study

References to studies excluded from this review

- Ang 2008 {published data only}. Ang A, Poulson AV, Goodburn SF, Richards AJ, Scott JD, Snead MP. Retinal detachment and prophylaxis in type 1 Stickler syndrome. *Ophthalmology*. 2008; 115(1):164–8. [PubMed: 17675240]
- Avitabile 2004 {published data only}. Avitabile T, Bonfiglio V, Reibaldi M, Torrisi B, Reibaldi A. Prophylactic treatment of the fellow eye of patients with retinal detachment: A retrospective study. *Graefes Archive for Clinical & Experimental Ophthalmology*. 2004; 242(3):191–6.
- Isola 2001 {published data only}. Isola V, Spinelli G, Misefari W. Transpupillary retinopexy of chorioretinal lesions predisposing to retinal detachment with the use of diode (810 nm) microlaser. *Retina*. 2001; 21(5):453–9. [PubMed: 11642373]
- Saracco 1980 {published data only}. Saracco JB, Estachy GM, Gastaud P, Maymard I. Prophylactic treatment of aphakic retinal detachment by argon laser photocoagulation. Study on 600 cases. *Ophthalmologica*. 1980; 181(3–4):142–8. [PubMed: 7194995]

Wolfensberger 2003 {published data only}. Wolfensberger TJ, Aylward GW, Leaver PK. Prophylactic 360 degrees cryotherapy in fellow eyes of patients with spontaneous giant retinal tears. *Ophthalmology*. 2003; 110(6):1175–7. [PubMed: 12799244]

Additional references

- AAO 1998. American Academy of Ophthalmology. Preferred Practice Patterns: Management of posterior vitreous detachment, retinal breaks and lattice degeneration. San Francisco: American Academy of Ophthalmology; 1998.
- AAO 2003. American Academy of Ophthalmology. Preferred Practice Patterns: Management of posterior vitreous detachment, retinal breaks, and lattice degeneration. San Francisco: American Academy of Ophthalmology; 2003. p. 1-20.
- Byer 1989. Byer NE. Long-term natural history of lattice degeneration of the retina. *Ophthalmology*. 1989; 96(9):1396–401. [PubMed: 2780007]
- Byer 1992. Byer, NE. Rethinking prophylactic therapy of retinal detachment. In: Stirpe, M., editor. *Advances in Vitreoretinal Surgery*. New York: Ophthalmic Communications Society; 1992. p. 399-411.
- Byer 1998. Byer NE. What happens to untreated asymptomatic retinal breaks, and are they affected by posterior vitreous detachment? *Ophthalmology*. 1998; 105(6):1045–9. [PubMed: 9627655]
- Chauhan 2006. Chauhan DS, Downie JA, Eckstein M, Aylward GW. Failure of prophylactic retinopexy in fellow eyes without a posterior vitreous detachment. *Archives of Ophthalmology*. 2006; 124(7):968–71. [PubMed: 16832019]
- EDCSG 1993. Anonymous. Risk factors for idiopathic rhegmatogenous retinal detachment. The Eye Disease Case-Control Study Group. *American Journal of Epidemiology*. 1993; 137(7):749–57. [PubMed: 8484366]
- Folk 1989. Folk JC, Arrindell EL, Klugman MR. The fellow eye of patients with phakic lattice retinal detachment. *Ophthalmology*. 1989; 96(1):72–9. [PubMed: 2919051]
- Glanville 2006. Glanville JM, Lefebvre C, Miles JN, Camosso-Stefinovic J. How to identify randomized controlled trials in MEDLINE: ten years on. *Journal of the Medical Library Association*. 2006; 94(2):130–6. [PubMed: 16636704]
- Haimann 1982. Haimann MH, Burton TC, Brown CK. Epidemiology of retinal detachment. *Archives of Ophthalmology*. 1982; 100(2):289–92. [PubMed: 7065947]
- Higgins 2011. Higgins, JPT.; Altman, DG.; Sterne, JAC.; Higgins, JPT.; Green, S., editors. *Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0* (updated March 2011). The Cochrane Collaboration; 2011. Chapter 8: Assessing risk of bias in included studies. Available from www.cochrane-handbook.org
- Hovland 1978. Hovland KR. Vitreous findings in fellow eyes of aphakic retinal detachment. *American Journal of Ophthalmology*. 1978; 86(3):350–3. [PubMed: 717499]
- Rowe 1999. Rowe JA, Erie JC, Baratz KH, Hodge DO, Gray DT, Butterfield L, et al. Retinal detachment in Olmsted County, Minnesota, 1976 through 1995. *Ophthalmology*. 1999; 106(1): 154–9. [PubMed: 9917797]
- Tielsch 1996. Tielsch JM, Legro MW, Cassard SD, Schein OD, Javitt JC, Singer AE, et al. Risk factors for retinal detachment after cataract surgery. A population-based case-control study. *Ophthalmology*. 1996; 103(10):1537–45. [PubMed: 8874424]
- Wilkes 1982. Wilkes SR, Beard CM, Kurland LT, Robertson DM, O'Fallon WM. The incidence of retinal detachment in Rochester, Minnesota, 1970–1978. *American Journal of Ophthalmology*. 1982; 94(5):670–3. [PubMed: 7148948]
- Wilkinson 1997. Wilkinson, CP.; Rice, TA. *Michels Retinal Detachment*. St Louis: Mosby-Year Book; 1997.
- Wilkinson 2000. Wilkinson CP. Evidence-based analysis of prophylactic treatment of asymptomatic retinal breaks and lattice degeneration. *Ophthalmology*. 2000; 107(1):12–5. [PubMed: 10647712]

References to other published versions of this review

Wilkinson 2005. Wilkinson CP. Interventions for asymptomatic retinal breaks and lattice degeneration for preventing retinal detachment. Cochrane Database of Systematic Reviews. 2005; (Issue 1)10.1002/14651858.CD003170.pub2

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Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Ang 2008	Not a randomized controlled trial
Avitabile 2004	Compared intervention group with historical controls
Isola 2001	No control group
Saracco 1980	No control group
Wolfensberger 2003	No control group