Eye infections after refractive keratotomy

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Authors' objectives
To analyse the published literature to obtain the best possible perspective on ocular infections following refractive keratotomy.

Searching
MEDLINE was searched from 1976 to 1994 for all articles describing refractive keratotomy, using the MeSH term 'radial keratotomy' and the textword 'keratotomy'. Additional published and unpublished studies were identified by manually searching bibliographies of retrieved articles and abstracts from two major annual ophthalmology meetings (the Association for Research in Vision and Ophthalmology and the American Academy of Ophthalmology; 1976 to 1994), and by handsearching all identified journals up to and including the July 1994 issue. Only English language articles were included.

Study selection
Study designs of evaluations included in the review
Case reports, clinical series, surveys and reviews were included.

Specific interventions included in the review
The specific intervention included was refractive keratotomy.

Participants included in the review
Patients (aged 18 to 58 years) who had undergone refractive keratotomy were included.

Outcomes assessed in the review
The outcomes assessed included: post-operative onset and frequency of infection; location of corneal infiltrate (determined with respect to the incisions of a standard eight-incision radial keratotomy); cultured microorganisms; potential associations; and visual outcome after treatment.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection, although articles reporting previously published cases were excluded.

Assessment of study quality
The authors do not state that they assessed quality.

Data extraction
Each included article was examined independently by two ophthalmologists. Data were extracted on to a spreadsheet programme (Microsoft Excel 4.0).

Methods of synthesis
How were the studies combined?
The results were combined in a narrative review.

How were differences between studies investigated?
No statistical test of heterogeneity was undertaken.
Results of the review
Twenty-six articles (n=43) satisfied all inclusion criteria: 24 case reports and 2 clinical series.

The 26 studies included in the review reported 47 episodes of infection (42 keratitis and 5 endophthalmitis) occurring in 43 patients. The frequency of infections ranged from 0.25 to 0.70%. In 22 (47%) eyes, infection occurred before 2 weeks. Thirty-five (74%) infections were located in the inferior half of the cornea, and 22 (62%) were located in the inferotemporal quadrant. Thirty-one (66%) infections were bacterial, whilst 5% were fungal, 6% viral, 19% sterile, and 4% of unknown origin. Spectacle-corrected visual acuity after conservative treatment was 20/40 or better in 70% of eyes. Penetrating keratoplasty was performed in 6 cases. Potential associations included reoperations in 12 (26%) eyes, post-operative contact lens wear in 7 (15%), and intra-operative perforation in 7 (15%).

Authors' conclusions
The review indicated that infections after refractive keratotomy were a relatively rare event. This may be due, in part, to under-reporting of this complication. The occurrence of such infections may compromise visual function. Risk factors may include reoperations, post-operative contact lens wear and intra-operative perforations. Suitable precautions during surgery and post-operative care, and prompt and effective intervention, may provide the potential for further reduction in the frequency of infection and visual compromise.

CRD commentary
A thorough search strategy that could have been enhanced by including non-English language papers. No assessment of the quality of the included articles was reported. The results of the review may be biased due to under-reporting of such complications, as mentioned by the authors.

Funding
Research to Prevent Blindness; National Eye Institute, grant number R-29 EY10101.

Bibliographic details

PubMedID
8963804

Indexing Status
Subject indexing assigned by NLM

MeSH
Contact Lenses; Eye Infections /etiology /microbiology /therapy; Humans; Incidence; Intraoperative Complications; Lasers, Excimer; Photorefractive Keratectomy; Postoperative Complications; Postoperative Period; Reoperation; Time Factors; Vision, Ocular

AccessionNumber
11996000363

Date bibliographic record published
30/09/1997

Date abstract record published
30/09/1997

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract
contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.