Should we patch corneal abrasions: a meta-analysis
Flynn C A, D'Amico F, Smith G

Authors' objectives
To determine if eye patching is effective in improving healing rates and decreasing symptoms of corneal abrasions.

Searching
MEDLINE was searched from 1966 to 1997 by one author using the following keywords: 'cornea', 'corneal disease', and 'wounds and injuries' or 'abrasion' or 'trauma'. This was combined with a search strategy to comprehensively identify RCT (see Other Publications Of Related Interest). Using the identified studies as the reference a citation search was performed using the Science Citation Index. Bibliographies of identified studies and ophthalmology and primary care textbooks were reviewed. A second author independently searched for relevant articles and results from the two searches were compared. Authors and local ophthalmologists were contacted to help identify unpublished data. Only papers written in English were included and those presenting previously published data were excluded.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) that compared eye patch intervention of at least 24 hours intended use with no eye patch were included if the study's primary outcome was time to resolution of the abrasion and pain with secondary outcome being complication rate. Trials could be conducted in any setting. Reasons were given for exclusion of identified studies.

Specific interventions included in the review
The following methods of eye patching were studied and compared with no patching: cotton wool covered with a net held with tape; gauze with enough bulk to exert pressure over closed eye; double eye patch with bandage; firm padding; one pad folded with second placed atop and bandaged in place; one pad vertical, second horizontal covered with tape; and eye pads taped to lids to prevent opening. Treatment always included topical antibiotics (including sulphacetam, chloramphenicol, erythromycin, polysporin, tobramycin, and sulfacetamide), with or without cycloplegics (including atropine, homatropine, cyclopentolate, and phenylephrine with tropicamide) and with or without analgesics (including acetylsalicylic acid, paracetamol, acetaminophen with and without codeine, ibuprofen, and ketoprofen). Eye patching interventions were for at least 24 hours intended use.

Participants included in the review
Patients aged 6 years of age or more who had an acute corneal abrasion due to either traumatic injury or removal of a foreign body were studied. The abrasion was diagnosed using fluorescein or slit lamp. Patients typically presented to an emergency department affiliated with an ophthalmology hospital. Patients with abrasions related to infection or contact lens use were excluded.

Outcomes assessed in the review
The primary outcome was healing rates at 1 and 2 days post abrasion with ascertainment of healing performed using fluorescein or slit lamp. Other outcomes included qualitative healing, pain and complications. Methods used to assess pain included: 0-100 pain score; visual analogue scale; 0-10 pain scale; analgesia use; and insomnia.

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.

Assessment of study quality
Validity was assessed using the following criteria as recommend by Guyatt et al (see Other Publications Of Related Interest): method of randomisation; follow-up; intention to treat analysis; outcome assessment blinded; and
comparability of patch/no patch groups. One author, not blinded to publication information, assessed each study using the validity criteria.

**Data extraction**
Data were extracted and entered into RevMan 3.0. Where dichotomous outcome data (healing vs not healing) was not presented, authors were contacted for original data. The authors do not state who or how many reviewers extracted the data.

**Methods of synthesis**
How were the studies combined?
Summary relative risk estimates (RR) and 95% confidence limits were calculated using the fixed-effect model provided by RevMan 3.0.

How were differences between studies investigated?
Homogeneity was assessed using Woolf's method (see Other Publications of Related Interest).

**Results of the review**
Seven studies (N = 550 patients) were included with the meta-analysis restricted to 5 studies (N = 309 patients).

Validity: only 1 study had less than 80% follow up, all had good baseline comparability between treatment groups, 2 studies identified method of randomisation, one specified intention to treat analysis and 6 of the 7 lacked masking in outcome assessment.

Healing at day one: 1 study reported 0% healing rates at day 1 for both groups and was omitted from the meta-analysis. RR based on 4 studies (147 patients) = 0.87 (95% CI: 0.68, 1.13). Homogeneity P = 0.21.

Healing at day two: 1 study reported complete resolution at day 2 for both groups and was omitted from the meta-analysis. RR based on 3 studies (241 patients) = 1.01 (0.65, 1.55). Homogeneity P = 0.33.

Qualitative healing: 2 of 7 studies reported faster healing in the no-patch group and 5 found no difference. 4 of 7 studies found no difference in pain between groups and 2 studies found statistically less pain in the no-patch group. One study did not evaluate pain. No difference was reported between groups in complications in the 4 studies following patients beyond the acute phase.

Including results from a RCT with 64 patients published after the literature search gave RR at day one = 0.90 (95% CI: 0.75, 1.24).

**Authors' conclusions**
Eye patching was not found to improve healing rates or reduce pain in patients with corneal abrasions. Given the theoretical harm of loss of binocular vision and possible increased pain the authors recommend no-patching in treating corneal abrasion.

**CRD commentary**
This review was clearly written and presented. Aims and inclusion criteria were stated. Results from two independent literature searches were compared. Relevant information on the included studies was presented in tabular format. Validity criteria were defined and results from the validity assessment and the meta-analysis clearly tabulated. Details were given of methods used to assess validity and statistical heterogeneity assessed and clinical heterogeneity reviewed. The discussion includes consideration of the following limitations of the review: small number of studies with small number of participants; the inability to combine all studies statistically; potential for publication bias; and inter study variations including cause and size of abrasion, setting, and methods used for evaluation of healing.
By limiting the search to English language studies identified in one database, albeit with advice sought from experts, some other relevant studies may have been omitted. No details were given of methods used to select primary studies or extract data and validity was assessed by only one reviewer.

The authors conclusions were supported by the evidence presented, though more details of methods used in the review and the use of more than one researcher to assess validity would improve the quality of the review.

Implications of the review for practice and research
Practice: The authors consider that until there is evidence that demonstrates a benefit from eye patching, they advise against eye patching as a treatment for corneal abrasions.

Research: The authors do not suggest any implications for research. Flynne et al., commenting on the review, point out the review did not examine the role of antibiotics and cycloplegics in treating corneal abrasions.

Bibliographic details

PubMedID
9789511

Other publications of related interest


Indexing Status
Subject indexing assigned by NLM

MeSH
Bandages; Cornea /physiopathology; Corneal Injuries; Eye Injuries /complications /physiopathology /therapy; Humans; Pain /classification; Reproducibility of Results; Wound Healing

AccessionNumber
11998001808

Date bibliographic record published
31/08/2000

Date abstract record published
31/08/2000

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.