Comparison of conjunctival autograft transplantation and amniotic membrane transplantation for pterygium: a meta-analysis

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CRD summary
The review concluded that conjunctival autograft transplantation had lower risks of recurrence and unacceptable appearance than amniotic membrane transplantation for primary pterygium (a growth of the conjunctiva in the eye). The review was generally well conducted, but the uncertain quality of the evidence means that caution is advised when interpreting the authors’ conclusions.

Authors’ objectives
To evaluate the effectiveness and safety of conjunctival autograft transplantation versus amniotic membrane transplantation for the treatment of pterygium (a growth of the conjunctiva in the eye).

Searching
EMBASE, PubMed, and Web of Knowledge were searched to January 2010. Search terms were reported and the reference lists of retrieved reports and reviews were handsearched.

Study selection
Studies of conjunctival autograft transplantation versus amniotic membrane transplantation for the treatment of pterygium were eligible for inclusion if they reported recurrence. Studies had to describe how each surgery was conducted and to define recurrence and unacceptable appearance. They had to report summary statistics that could be extracted. Case reports, reviews, letters and abstracts were excluded. Studies of concurrent treatments, such as beta radiation or mitomycin C, were excluded.

The included studies were conducted in patients from Turkey, Asia, and the USA. In most studies, over half the patients were male and the mean patient age ranged from 39.8 to 57.3 years.

Two reviewers independently selected studies.

Assessment of study quality
The authors did not state if they assessed study quality.

Data extraction
Two reviewers independently extracted data on recurrence, unacceptable appearance, and adverse events, to calculate log hazard ratios and Peto odds ratios, with 95% confidence intervals. Disagreements between reviewers were resolved by discussion with another reviewer.

Methods of synthesis
Fixed-effect meta-analysis was undertaken to calculate pooled hazard ratios and odds ratios, with 95% confidence intervals. Statistical heterogeneity was assessed using $I^2$ and Cochran Q. When $I^2$ was greater than 50% a random-effects model was used. Where numerical data were not available, attempts were made to use any Kaplan-Meier curves presented in the studies. Publication bias was assessed using funnel plots, the Egger test and the Begg test. Sensitivity analysis was conducted by excluding one study at a time.

Results of the review
Five studies were included in the review, with 463 first eye treatments and 75 recurrent eye treatments. There were three randomised controlled trials (RCTs) and two retrospective cohort studies. Sample size ranged from 55 (23 recurrent) to 136 primary eyes. Mean group follow-up ranged from 10.4 to 24.4 months.

Compared with amniotic membrane transplantation, conjunctival autograft transplantation was associated with a statistically significant lower risk of recurrence (HR 0.30, 95% CI 0.16 to 0.59; $I^2=25.6%$; five studies), and a lower
risk of unacceptable appearance (HR 0.33, 95% CI 0.16 to 0.66; I²=0; two studies). There was no statistically significant difference in the overall rates of adverse events.

Sensitivity analysis did not indicate that any single study was unduly influencing the results. There was no evidence of publication bias.

Authors’ conclusions
Conjunctival autograft transplantation had lower risks of recurrence and unacceptable appearance than amniotic membrane transplantation for primary pterygium.

CRD commentary
The inclusion criteria were clearly defined and three relevant databases were searched. Publication bias was assessed and not detected, but the analysis of less than 10 studies has limited meaning. Attempts were made to reduce error and bias throughout the review. Quality does not appear to have been assessed, which leaves the quality of the evidence unknown. Trials were pooled using suitable meta-analytical techniques and statistical heterogeneity was reported.

The review was generally well conducted, but the uncertain quality of the evidence means that caution is advised when interpreting the authors’ conclusions.

Implications of the review for practice and research
Practice: The authors stated that conjunctival autograft transplantation should be used rather than amniotic membrane transplantation, unless the conjunctiva is not available or might be needed for future glaucoma surgery.

Research: The authors stated that randomised controlled trials with larger samples, longer follow-up, and standardised, unbiased methods were needed.

Funding
None.

Bibliographic details

PubMedID
21935607

DOI
10.1007/s00417-011-1820-8

Original Paper URL
http://www.springerlink.com/content/k6r0u9wnk1468604/?MUD=MP

Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Amnion /transplantation; Conjunctiva /transplantation; Humans; Middle Aged; Pterygium /diagnosis /surgery; Secondary Prevention; Transplantation, Autologous; Treatment Outcome

AccessionNumber
12012025405

Date bibliographic record published
07/07/2012
Date abstract record published
02/11/2012

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.