Face-down posturing after macular hole surgery: a meta-analysis

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CRD summary
This review found no significant differences in outcomes between patients instructed to maintain face-down posturing for different durations after macular hole surgery. Methodological flaws, including not evaluating all the evidence identified, made the reliability of the authors’ conclusions unclear.

Authors' objectives
To assess the effect of duration of face-down posturing on surgical outcomes after macular hole surgery.

Searching
MEDLINE, EMBASE and Cochrane Central Register of Controlled Trials (CENTRAL) were searched to August 2008 for relevant studies using the search term "macular hole surgery".

Study selection
Studies that evaluated postural duration on surgical outcomes after macular hole surgery were eligible for inclusion.

There were several differences between patients in the included studies, such as macular hole size, stage of hole and duration of face-down posturing. Periods of face-down posturing varied from one to 21 days. In some studies patients received a range of instructions related to avoiding supine posturing and sitting upright for specified time periods. Surgical techniques differed between studies with differences in use of internal limiting membrane (ILM) peeling, adjunctive treatments and combined cataract surgery. The primary outcomes were macular hole closure rates and changes in visual acuity post-surgery.

The authors did not state how many reviewers performed the study selection.

Assessment of study quality
The methodological quality of the studies was assessed using criteria developed from the Cochrane Collaboration study monitoring group for non-randomised studies.

The authors did not state how many reviewers assessed study quality.

Data extraction
The two authors extracted data to calculate relative risks (RR) and 95% confidence intervals (CI) of anatomical failure. Macular hole closure was measured by risk of anatomical failure. Visual acuity was measured by using the numbers of patients who recorded an improvement of two or more lines of vision.

Methods of synthesis
Where the studies were judged to be similar, pooled relative risks and 95% CIs were calculated using a Mantel-Haenszel fixed-effect model. Statistical heterogeneity was evaluated using the $X^2$ test and $I^2$ statistic. The included case series were tabulated.

Results of the review
Seventeen studies (n=930 eyes) were included in the review. Hole closure rates in the studies ranged from 67% to 100%. Follow-up periods ranged from 1.5 to six months. All studies included in the meta-analysis (nine studies) were non-randomised or quasi-randomised. In general, patients were not closely observed to ensure compliance.

There were no significant differences between the group that engaged in face-down posturing for 24 hours or less in risk of anatomical failure compared to the group with face-down posturing for five to 10 days in hole closure (RR 1.34, 95% CI 0.66 to 2.72; five studies, n=307 eyes, $I^2=0\%$) and visual acuity (RR 0.91, 95% CI 0.34 to 2.46; two studies,}
n=61 eyes, I²=64%).

**Authors’ conclusions**
There was insufficient evidence to draw firm conclusions on the role of face-down posturing following macular hole surgery on hole closure rates. The analyses were limited by the relatively low quality of the included studies.

**CRD commentary**
The review addressed a question that was broad in scope. Inclusion criteria were not clearly stipulated, particularly for study type. Appropriate electronic databases were searched. Only one search term was used, which may have limited the number of studies identified. There were few attempts to identify unpublished literature, so there was a risk of publication bias. It was unclear whether there were any language restrictions. No steps to minimise reviewer errors and biases were reported for study selection and the assessment of methodological quality. There was substantial clinical heterogeneity in macular hole size, surgical techniques used and durations of face-down posturing. A number of biases in the studies that were combined in the meta-analysis were noted, particularly non-randomisation of patients to study groups and selection bias that arose from allocation techniques. Given the substantial clinical heterogeneity and biases inherent in the results of non-randomised studies, it may have been inappropriate to combine the studies statistically using a fixed-effect model.

Methodological flaws, which included not evaluating all the evidence identified, made the reliability of the authors’ conclusions unclear.

**Implications of the review for practice and research**

**Practice:** The authors stated that patients should not feel unable to have macular hole surgery due to problems in maintaining face-down posturing.

**Research:** The authors stated that a well-designed randomised controlled trial was necessary to ascertain the role of face-down posturing after macular hole surgery. Research was required to evaluate the role of combined cataract surgery and macular hole closure, particularly given that cataracts are a frequently occurring complication following macular hole closure surgery, and that cataract surgery may allow a more complete vitrectomy and superior gas fill.

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