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Recommended Citation

Chaudhry, T., Shahzad Shamim, M., Khan, S., Ahmad, K. (2007). Postoperative wound leak and anterior chamber reaction in patients undergoing phacoemulsification cataract surgery with sutured and sutureless corneal incisions. *Pak J Ophthalmol*, 23(3), 114-116.
Available at: http://ecommons.aku.edu/pakistan_fhs_mc_surg_surg/376

Postoperative wound leak and anterior chamber reaction in patients undergoing phacoemulsification cataract surgery with sutured and sutureless corneal incisions

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Pak J Ophthalmol 2007, Vol. 23 No. 3

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Received for publication
August' 2006

Purpose: To compare the rates of significant post operative wound leak and anterior chamber (AC) reaction in patients undergoing phacoemulsification cataract surgery with sutured and sutureless corneal incisions.

Material and Methods: All eyes scheduled to have phacoemulsification surgery by two surgeons at two centers were selected. The first group of eyes underwent phacoemulsification surgery with 3.25 mm superior and superior-temporal clear corneal incisions. The incision was sutured using a single 10/0 nylon suture. The second group of eyes underwent an identical surgery, but the incision was not sutured. Patients were followed up at 24 hours, and 1 week and evaluated by slit lamp for wound leak (using Seidel's Test) and AC cells and flare.

Results: Forty eight eyes underwent surgery with sutured corneal incisions and 50 eyes underwent sutureless surgery. The mean age of patients in groups I and II were 61.2 years and 63.3 years, respectively. Following surgery, none of the patients in two groups showed wound leak at 1 day and 1 week. At the first post-op day, only 14.6% of eyes in group 1 showed AC reaction, compared to 32.0 % in group II ($p = 0.04$). At one week post-op, 16.7% and 20.0% of eyes in Groups I and II showed AC reaction, respectively. However, the difference was not statistically significant ($p = 0.67$).

Conclusions: The rates of postoperative wound leak and anterior chamber reaction in patients undergoing phacoemulsification cataract surgery with sutured and sutureless corneal incisions are not different. Thus sutured surgery offers no added advantages.

The World Health Organization (WHO) estimates that 161 million people worldwide have visual impairment, including 37 million blind and 124 million with visual impairment. Cataract is the leading cause of worldwide blindness. Globally, it accounts for almost 16 million cases of blindness and 50 million cases of low vision¹. In South Asian countries like

India and Nepal around 70% of cases of blindness are due to cataract. In Pakistan, 66% of the blindness is due to cataract². An estimated 2.5 million people are blind due to cataract in one eye and 1.5 million in both eyes³. The treatment for cataract is surgical removal, usually followed by replacement of the cataractous lens with an intraocular lens (IOL) implant. There are

several techniques for cataract extraction⁴. Out of these, phacoemulsification is now the gold standard. As compared to conventional extracapsular cataract extraction (ECCE), phacoemulsification offers the advantages of faster, more predictable wound healing, reduced discomfort to patients, and fewer wound complications and less chances of post-operative astigmatism. These advantages are mainly due to the smaller incision (usually 3.5 mm or less) that is used in phacoemulsification.

The sutureless clear corneal incision was first described 1992 and is currently the preferred incision for phacoemulsification cataract surgery. The wound generally does not require any stitch as it is watertight. Sutureless surgery has generally been shown to be associated with less astigmatism compared with conventional ECCE. Larger incisions made to insert non foldable IOLs are likely to require at least one stitch. In addition, some surgeons simply prefer the safety of having the incision sutured, even if the incision is already watertight. Wound instability is associated with wound leak, endophthalmitis, and other feared complications of cataract surgery⁵. We report the findings of a study which compared the rates of significant post operative wound leak and anterior chamber (AC) reaction in patients undergoing phacoemulsification cataract surgery with sutured and sutureless corneal incisions.

MATERIALS AND METHODS

All eyes that were scheduled to have phacoemulsification surgery by TAG at the Agha Khan University Hospital and by MHS at Shahzad Eye Hospital were included in the study. Eyes with very dark brown cataracts were excluded because of a likelihood of converting to ECCE or prolonged phacoemulsification time. Eyes with phacoemulsification time greater than 1.5 minutes were also excluded. Post-operatively, eyes with corneal edema were excluded as this interfered with the evaluation of anterior chamber reaction.

The first group of eyes underwent uncomplicated phacoemulsification surgery with 3.25 mm superior and superior-temporal clear corneal incisions. The incision was sutured using a single 10/0 nylon suture. The second group of eyes underwent an identical surgery, but the incision was not sutured.

Patients were followed up at 24 hours, and 1 week and evaluated by slit lamp for the presence of wound leak (using Seidel's test), and AC cells and flare. A Seidel's test includes application of a fluorescein strip

with local anesthetic into the conjunctival sac and then examination of the wound using a cobalt blue filter. If fluid appears to flow from the wound, there's a leak. Anterior chamber (AC) reaction was assessed using slit lamp to determine the number of cells and the amount of flare in the anterior chamber.

AC reaction was called significant if the number of cells in one field, with any amount of flare, were > 10. Surgeons who operated, assessed the patients postoperatively and recorded the findings.

The data were entered and analyzed using SPSS software (version 11.5; SPSS Inc., Chicago, USA). Means (\pm SD) were calculated for continuous variables and frequencies and proportions for categorical variables. Chi-square test was used to compare the rates of wound leak and AC reaction in the two groups.

RESULTS

48 eyes of 42 patients, 28 men and 14 women, underwent surgery with sutured corneal incisions and 50 eyes of 44 patients, 25 men and 19 women, underwent sutureless surgery. The mean ages of patients in groups 1 and II were 61.2 years and 63.3 years, respectively. Following surgery, none of the patients in two groups showed wound leak at 24 hours and 1 week. In addition, at 24 hours only 14.6% of eyes in group 1 showed AC reaction, compared to 32.0 % in group II ($p = 0.04$). At one week post-op, 16.7% and 20.0% of eyes in Groups I and II showed AC reaction, respectively. However, the difference was not statistically significant ($p = 0.67$).

DISCUSSION

To the best of our knowledge, this is the first study in Pakistan to compare the rates of postoperative wound leak and anterior chamber reaction in patients undergoing phacoemulsification cataract surgery with sutured and sutureless corneal incisions. We found that there were no statistically significant differences in the rates of postoperative wound leak and anterior chamber reaction in the two groups at 24 hours and one week. These findings may have important implications. For example, unsutured surgery is less time-consuming than sutured surgery. In addition it is cost effective because no suture is required.

Some surgeons may still prefer to suture the incision after phacoemulsification for their own satisfaction although our study showed no added advantage of this practice.

Comparison with other studies

An extensive review of national and international literature revealed there were no studies that directly compared the rates of postoperative wound leak and anterior chamber reaction in the two groups we studied. However, there were several studies that compared postoperative astigmatism between sutured and unsutured phaco surgery. We plan to address these in our future studies.

Our study had the following limitations:

First, the sample size was small, especially for the assessment of wound leak which is a relatively rare outcome. Second, participants were not assigned to the two interventions randomly. Randomization eliminates selection biases.

We conclude that the rates of postoperative wound leak and anterior chamber reaction in sutured and suture less phacoemulsification are not different. Thus sutured surgery offers no added advantages.

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