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Safety and efficacy in the cataract surgery process

Inger Westborg

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Fakultetsopponent: Docent Björn Johansson
Institutionen för Klinisk och Experimentell Medicin
IKE/Avdelningen för neuro- och inflammationsvetenskap
Linköpings Universitet, 581 85 Linköping

Department of Clinical Sciences/Ophthalmology

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Author

Inger Westborg

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Abstract**Background**

Cataract and age-related macular degeneration (AMD) are two major causes for visual impairment in the elderly. Cataract surgery is one of the most common surgical interventions performed in the western world. As a consequence of the increasing number of operations performed, postoperative visits are a large workload for surgical units. It is important that all parts of the cataract surgery procedure are appropriate and cost-effective. During the last 20 years the trend is towards fewer visits both pre- as well as postoperatively. The number and timing of postoperative visits are also a subject of an ongoing debate. Few studies have previously evaluated safety perspectives concerning the number and timing of post-operative visits.

The last decade, new treatments for wet AMD have evolved and the number of patients receiving treatment has increased. It has been debated if blue-blocking intraocular lenses (IOL) have a protective effect on the development of wet AMD and decreasing the need for AMD-treatment after cataract surgery.

Aims

To analyse parts of the modern cataract surgery process including peri- and post-operative routines from a safety and efficacy perspective.

To analyse pre- and perioperative risk factors as well as protective factors associated with the need for wet AMD-treatment after cataract surgery.

Methods

I, II. These prospective, observational cohort studies included all cataract surgery cases (n=1249) during a 1-year period, at one institution. The cohort was analysed regarding the use of a standardized anaesthetic regimen and the safety perspectives, when the standard routine is no planned postoperative visit in uncomplicated cases without ocular comorbidity.

III. The above-mentioned cohort (study group), was compared with a cohort from another clinic (control group) with a different follow-up routine, i.e. each case with first eye cataract surgery had a planned postoperative visit. In the control group all patients (n= 1162 cases) had surgery during the same 1-year period. The number of planned and unplanned visits was recorded, and the surgical outcome from the two institutions was compared.

IV. A register-based cohort study included all patients registered in the Swedish National Cataract Register and the Swedish Macula Register in 2010 - 2017, to find all eyes with past cataract surgery that were subsequently treated for wet AMD. Complete registry data was used for comparisons and analyses of pre- and peri-operative risk- and protective factors for wet AMD treatment after cataract surgery.

Results

I. A standardized anaesthetic method with topical and intracameral anaesthetics without sedation was used in most cases (90%). Median pain score after surgery was 0.7 (VAS 0-10) and most patients (97%) would choose the same anaesthetic method again.

II, III. Evaluation of all medical records 2 years after the cataract surgery procedure, found no report of missed adverse events. Significantly less patients in the study group (9% vs 16%; p=0.000036) initiated a postoperative unplanned contact compared with the control group. Patients with 70 km or longer to the hospital were less inclined to seek unplanned care (p=0.016).

IV. Female gender and high age are associated with an increased risk of needing treatment for wet AMD ≥ 1 year after cataract surgery. Eyes with a diagnosis of AMD preoperatively, and subsequently treated for wet AMD, had a significantly (p=0.023) lower degree of blue-blocking IOLs implanted at their previous cataract surgery.

Conclusion

I. A standardized anaesthetic method with topical and intracameral anaesthetics without sedation seems well tolerated by the patients, and is effective at cataract surgery, also in cases when complications/adverse events occur.

II, III. Without compromising patient safety, it is possible to refrain from standard postoperative visits after cataract surgery in patients with uncomplicated surgery and no ocular comorbidity. A significant reduction in postoperative visits is only obtained if the standard routine applies to both first and second eye surgery.

IV. Patients without preoperative AMD have no benefit from the use of blue-blocking IOLs. In patients with preoperatively diagnosed AMD, blue-blocking IOLs may offer some protection from the subsequent development of AMD.

Keywords

Cataract, prospective cohort study, patient safety, age-related macular degeneration

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