

# Low complications with higher volumes of cataract surgery

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in Toronto

SURGEONS who perform high volumes of cataract surgery have significantly lower rates of adverse outcomes than their colleagues who do a smaller number of the procedures, according to a Canadian study.

The study, by researchers from the Institute for Clinical and Evaluative Sciences (ICES), shows that adverse event rates ranged from one in 125 (0.8 per cent) among surgeons who perform 50 to 250 cataract removals annually to only one in 1,000 (0.1 per cent) among those who perform more than 1,000 surgeries per year. The findings were published in the March issue of *Ophthalmology*.

The field of ophthalmology has very few volume-related outcome studies, said Dr Chaim Bell, MD, assistant professor of medicine at the University of Toronto and lead author. He spoke to *EuroTimes* in an interview. He believes this study is the largest of its kind ever done in ophthalmology. The study is population-based and includes almost all of the surgeons (well over 200) who perform cataract removals in the province of Ontario.

To do the study, researchers used data from the Ontario Health Insurance Plan physician claims database for the period from April 1, 2000 to March 31 2004. The province has a universal insurance programme that covers all 12 million residents, and billing outside of this public programme is not allowed.

Cataract removal in a private setting is not allowed, although some Canadians opt to travel to the US to avoid waiting lists in Canada.

Researchers used the number of claims submitted each year by surgeons, and from this were able to calculate the number of cataract removals performed by each surgeon annually.

Data were also extracted for specific procedures typically associated with cataract-related adverse events shortly after the surgery times. These included vitrectomy, vitreous aspiration, injection of medication, vitreous air or fluid exchange,

and dislocated lens extraction performed by any ophthalmologist between one and 14 days after cataract surgery. These were then correlated to the volume of surgeries.

The number of surgeries was divided into four categories based on the number of surgeries performed each year. These categories were 50 to 250 surgeries annually; 251 to 500; 501 to 1,000; and more than 1,000. Surgeons who performed 251 to 500 cataract surgeries annually were the largest group. Anybody who performed fewer than 50 surgeries annually was excluded from the analysis.

During the study period, the number of surgeries in the province increased from 89,556 in 2001 to 99,333 in 2003. Between

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**editorial in *Ophthalmology* by Paul Lee MD et al**

231 and 243 ophthalmologists performed a minimum of 50 cataract surgeries annually during the study period and were included in the analysis.

When adverse event rates were correlated to surgical volume, it was found that the highest adverse event rate was in the 50 to 250 surgeries per year group at 0.8 per cent. The rate dropped to 0.4 per cent in the group who performed 251 to 500 annually; 0.2 per cent in the 501 to

1,000 group; and down to 0.1 per cent in the group who performed more than 1,000 surgeries per year.

Dr Bell pointed out these were averages, and there would be individual variation within each group. Some individual surgeons likely had higher adverse event rates than others, he said.

During the study period, there were only about half a dozen surgeons performing more than 1,000 surgeries each year. However, now there are likely more practising that level of volume because near the end of the study the Canadian federal and Ontario provincial governments allocated more funds to go toward cataract surgery, Dr Bell said.

Findings from the study could be used to help policy makers and professional organisations make decisions pertaining to the number of cataract surgeries surgeons should do to maintain a high level of quality, he said.

The study “is a significant one, demonstrating a relationship between volume and postoperative complications in a representative population. It thus creates the need for additional study to assess the impact of such differences on patient-centred outcomes such as vision and visual functioning,” according to an accompanying editorial in *Ophthalmology* by Paul Lee MD et al.

The editorial authors note a few limitations of the study, including the fact that administrative data doesn't contain a lot about patients – such as whether patients had a secondary eye problem such as glaucoma or a cataract in the other eye that could account for some of the post-cataract surgery treatments.

Also, they point out that the findings are somewhat different from those of the cataract Patient Outcomes Research Team (PORT) study, which was published in the 1990s and found no significant difference in surgical outcomes.

However, there were several differences between PORT and this new Canadian study. One is that PORT study researchers used the medical charts of patients for information, while the Canadian study used claims data. Also, PORT was done during a

transition period in the technology used by cataract surgeons – many performed extracapsular surgery with corneal incisions, while in the Canadian study phaco-emulsification was the common practice. Finally, PORT evaluated 75 ophthalmologists for surgical outcomes of less than 800 patients while the new Canadian study evaluated over 230 ophthalmologists for surgical outcomes of more than 250,000 patients.

There were also differences in how the two studies defined high and low volume surgery, and there are differences between the Canadian and US (PORT study) healthcare systems that might have some impact on results.

Changes to cataract surgery delivery patterns shouldn't be changed based on findings from the Canadian study alone, and more research needs to be done addressing issues such as patient access to care facilities, the editorial said.

Another Canadian researcher not involved in the study also provided comments. According to Carolyn De Coster, PhD, from the University of Manitoba, the volume-complication association was quite strong. She is an assistant professor at the Manitoba Centre for Health Policy, Department of Community Health Sciences, University of Manitoba and has done research on cataract surgical waiting times in Manitoba, Canada.

There are still a number of unknowns when it comes to volume and adverse events in relation to cataracts, but this study is a good start, she said.

“I wonder if the surgeons doing very high volumes of surgery would avoid the patients who have more complex problems... it seems that speed would be of the essence in the super high-volume surgeons,” she said.

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