

The Increasing Frequency of Surgery for Cataract

JEFFREY L. JAY and MARK L. DEVLIN

Glasgow

Summary

The increasing frequency of cataract operation was investigated by examining the age related cataract extraction rates for Glasgow. Detailed analysis of case records of sample patients over the past decade was carried out to characterise trends in frequency of intraocular lens implantation, age of the patient at operation, pre-operative visual acuity and rate of operation on the second eye. Between 1980 and 1987 the rate of cataract operation per thousand increased from 7.1 to 10.5 for patients aged 75 years and over and from 3.6 to 4.2 for those aged 65 to 74 years. There was a marked rise in the number of cataract operations relative to other eye operations between 1977 and 1988, from 19.3% to 37% and this increase was greatest in patients of 70 years and over. The same decade has seen intraocular lens implantation rise from 0% to 94.6% of cataract extractions. Visual acuity data show a significant trend towards operation at a better level of acuity in patients aged 70 years and over ($p=0.028$) but not in younger age groups. There was no change in the visual acuity of the fellow eyes and no change in the frequency of operation on the second eye. It appears that cataract surgery is increasing more than can be predicted from the age of the population and this must be recognised in planning the future level of ophthalmology services.

The increasing frequency of surgery for cataract has been recognised both in the United Kingdom¹ and the United States of America.² It is now difficult to satisfy the demand for such operations in the United Kingdom despite the trend towards shorter hospital stay and the introduction of day case surgery. There seems to be no convincing evidence that cataract is becoming a more frequent or more severe disease although there is much recent work on its causes.^{3,4} Most cataracts are age related and the increasing average age of the population will create an increasing demand for cataract operations but it seems that it is increasing more than might be predicted by age alone. In Glasgow we have quantified the increase and attempted to iden-

tify the underlying causes as part of a policy review to predict the future requirements for ophthalmic services.

Methods

Information was obtained from three sources:

- (a) The statistical returns for cataract operations in all ophthalmology units in the Greater Glasgow Health Board area were examined and compared with the age profile of the local population to obtain a rate per thousand for residents of Glasgow treated in Glasgow. Information was available between 1980 and 1987.
- (b) Details of all eye operations carried out in the single operating theatre of the Tennent Institute of Ophthalmology between

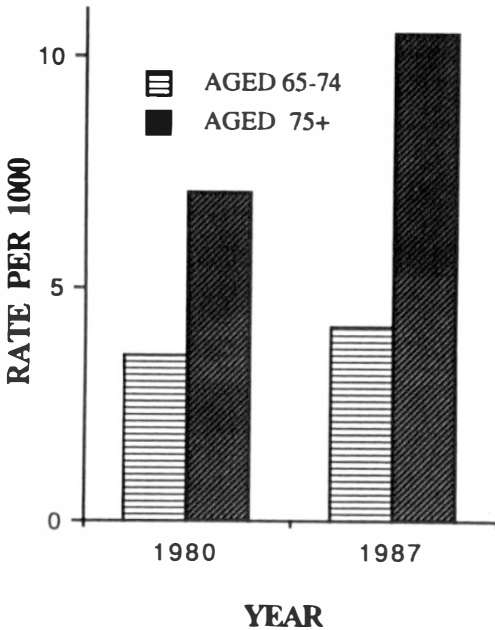


Fig. 1. Age related cataract operation rates for residents of Glasgow treated in Glasgow. There is a more marked rise in the older age group of 75 years and over.

1977 and 1988 were obtained from the theatre records. For each year the total number of operations and the number of cataract extractions in patients over 40 years of age with and without intraocular lens implantation were recorded. Extractions combined with trabeculectomy or keratoplasty were excluded from the cataract figures but remained in the total operation numbers. The age of the cataract patients at the time of operation was noted but was not available for 1985.

(c) Fifty case records, selected at random from the operation lists, were examined for each of five sample years: 1977 and 1978, immediately before the introduction of regular intraocular lens insertion; 1984, when lens implantation was carried out in about 50% of cataract operations and 1987 and 1988, the latest years available, when lens implantation was performed in over 90% of cases. From these samples we recorded the age at operation, the best corrected Snellen visual acuity in each eye when the patient was listed for surgery and whether it was the first or second eye to

have a cataract operation. Throughout this period the waiting time for cataract extraction has remained steady at a few weeks and therefore the decision to place a patient on the list was based on the immediate requirements of the patient and not distorted by the knowledge that there would be a prolonged wait for operation.

Again, operations combined with trabeculectomy or keratoplasty were excluded, as were patients with other ocular diagnoses which might have affected the pre-operative visual acuity such as: diabetic retinopathy, macular degeneration or amblyopia. A few patients having operations for cosmetic reasons or to facilitate the management of retinal problems were also excluded.

The age distribution of each sample was compared with that for the whole year and to simplify statistical analysis Snellen visual acuities were transformed to a simple linear code increasing with declining acuity; thus 6/6 became 1, 6/9 became 2, 6/12 became 3, etc. χ^2 , Kruskal-Wallis and Mann-Whitney tests were applied to age and acuity data as appropriate.

Results

Figure 1 shows the rise in the rate of cataract

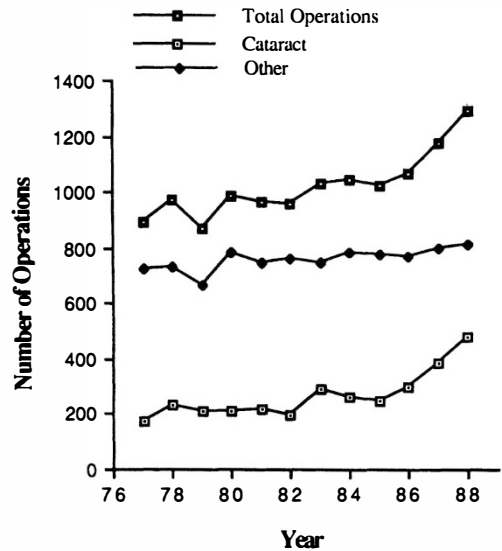


Fig. 2. The rise in the total number of operations is caused mainly by an increase in cataract operations. The increase accelerates after 1986.

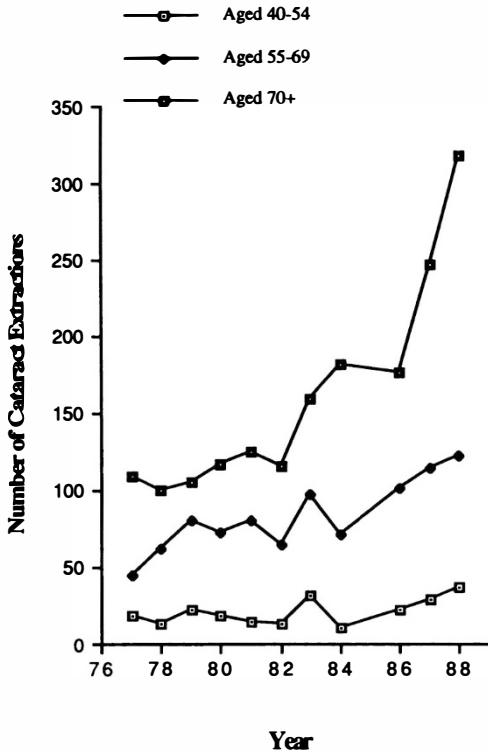


Fig. 3. The increase in cataract operations is progressively more marked with increasing age and the more rapid rise in numbers after 1986 (Figure 2) seems to consist mainly of patients of 70 years and over.

operations per thousand in the age ranges 65–74 years and 75 years and over in Glasgow between 1980 and 1987. The increase was more marked in patients 75 years and over, from 7.1 per thousand in 1980 to 10.5 per thousand in 1987, than in those between 65

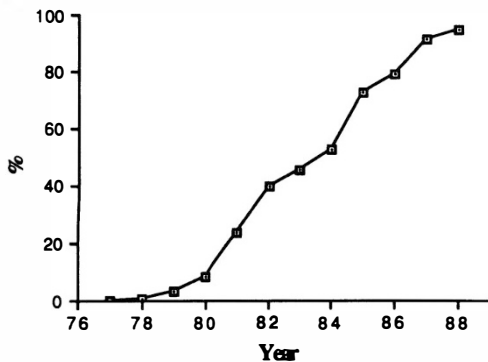


Fig. 4. Primary intraocular lens insertions as a percentage of all cataract operations.

and 74 years, 3.6 per thousand in 1980 to 4.2 per thousand in 1987.

Data from the Tennent Institute operating theatre records for the period 1977 to 1988 are shown in Figure 2 and show an increase in all operations from 895 in 1977 to 1293 in 1988. The numbers increase gradually to 1986 after which there is a sharp rise. The increase in operations for cataract follows a similar curve from 173 in 1977 to 479 in 1988 with a marked increase after 1986. Fifty of the cataract operations in 1988 were performed as part of an initiative to reduce the waiting list at another hospital but it can be seen that reducing the 1988 numbers by this amount would have little effect on the overall trend. In the same period there is a relatively small rise in the number of other operations performed, from 722 to 814. Thus in 1977 cataract operations made up 19.3% of the total and in 1988 this figure had risen to 37%. The number of cataract operations per year for each of three age bands, 40–54 years, 55–69 years, and 70 years and over is plotted in Figure 3. There is an increase in all age groups but the gradient of the slopes increases with increasing age with a very marked rise in the group 70 years and over.

In the same decade intraocular lens implantation in the Tennent Institute has risen steadily from 0% to 94.6% of cataract operations (Fig. 4). Almost all were performed by the extracapsular technique using a posterior

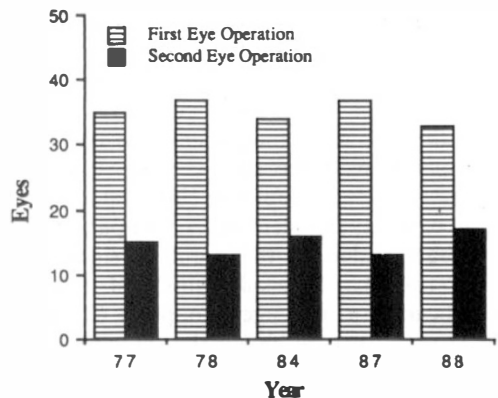


Fig. 5. Fifty operations from each sample year. The number of first cataract operations has remained constant relative to the number of operations carried out on the second eye of a patient who had previously had a cataract operation.

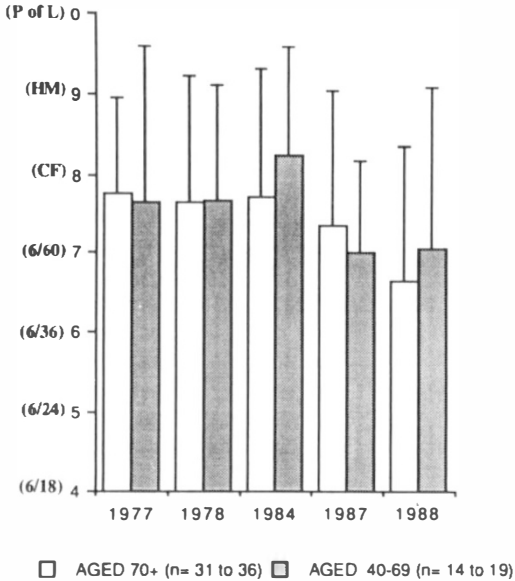


Fig. 6. Eyes listed for cataract operation. Mean pre-operative visual acuity (+1 SD). The trend towards earlier operation in recent years is statistically significant only in the group aged 70 years and over.

chamber lens, usually of the Rayner-Pearce tripod design. The introduction of intraocular lens implantation has however had no effect on the ratio of first eye to second eye cataract extractions. Figure 5 shows this data for the 50 operations in each of the sample years. No patients had operations on both eyes on the same day.

The pre-operative visual acuity for the 50 eyes from each sample year according to the age of the patient is shown in Figure 6. There was no significant difference in the age distribution of the 50 patient sample compared with the ages of all the patients having cataract operations in the same year ($p > 0.2$; χ^2). There is a trend to operate earlier at a better level of acuity in recent years. For patients of 70 years and over this trend is significant ($0.02 < p < 0.05$; Kruskal-Wallis) but it is not significant for the age group 40–69 years ($0.1 < p < 0.2$). Combining the data for 1977 and 1978 and comparing it with 1987/88 by the Mann-Whitney test yielded similar statistical results ($p = 0.028$ for 70 years and over; $p = 0.98$ for 40–69 years). There was no change in the visual acuity in the fellow eyes over the period of the study (Fig. 7). For 70 years and

over, $0.2 < p < 0.5$, Kruskal-Wallis and $p = 0.98$, Mann-Whitney. For ages 40–69 years, $p > 0.5$, Kruskal-Wallis and $p = 0.56$, Mann-Whitney.

Discussion

The results given in Figure 1 confirm that there has been a rise in the frequency of cataract operations in Glasgow greater than can be predicted by the increasing age of the local population and that both in relative and absolute terms the most marked increase has occurred in the very elderly. The more detailed information from the Tennent Institute data supports these observations (Figs. 2 and 3). The improved optical results and low complication rate of modern techniques, especially extracapsular extraction with posterior chamber intraocular lens insertion, are probably the main reasons for the more frequent operations.⁵ It can be seen that the most marked rise in cataract operations corresponds to the rate of intraocular lens implantation reaching about 75% of all cataract extractions (Fig. 4). The changing frequency cannot be explained by a change in the number of patients having operations on both eyes (Fig. 5) as the relative number of ‘second eyes’ operated on has remained constant. It is

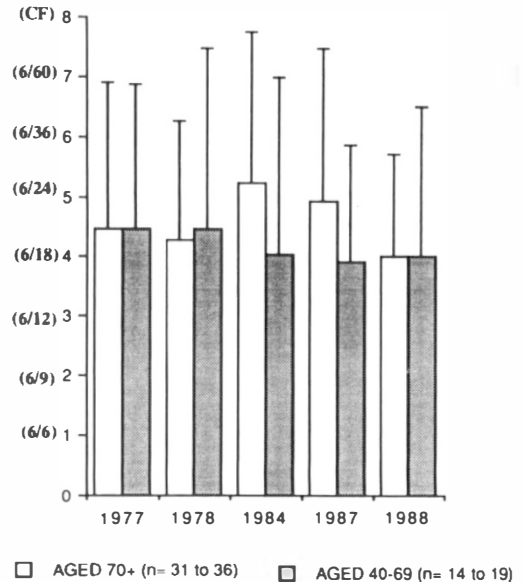


Fig. 7. Mean visual acuity (+1 SD) for the fellow eyes of those displayed in Figure 6. There is no significant change with time.

not possible from the available data to comment on the possibility of a change in the prevalence of cataract affecting the operation rates but it is clear that surgery is being carried out at a better level of visual acuity than before (Fig. 6). The relative significance of the change in pre-operative acuity in the operated eye in the older age group compared with the younger patients may indicate that before the introduction of intraocular lenses the disadvantages of aphakic spectacles was considered to be more of a handicap in the oldest patients. Removal of this optical disadvantage may therefore influence the rate of surgery more in the older age groups. The eventual rate of cataract operation in the population is as yet impossible to predict but it is clearly seen that we are in a phase of rapid increase which is at least partly caused by earlier intervention justified by improved techniques. A similar technical breakthrough for operations for arthritis of the hip led to a detailed analysis of the facilities which would be required to meet potential demand for prosthetic replacement of this and other joints.⁶ This type of national assessment is now required to plan the future requirements for cataract surgery.

The elderly may also be more fit and active and therefore seek relief from relatively minor visual problems which they find inhibiting. The overall results of all types of surgery in the very elderly suggest that post-operative mortality and morbidity have improved⁷ perhaps indicating an improved level of fitness. If

part of the increasing demand for cataract surgery is related to a more active life in old age then we may have pressure on facilities similar to that created by the increased incidence of fractures of neck of femur in the elderly.^{8,9} Thus for cataracts there may be an element of increasing patient expectation to add to the effects of the technical breakthrough.

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