American Academy of Ophthalmology
The Eye M.D. Association

Incidence and Characteristics of Cataract Surgery in France from 2009 to 2012

A National Population Study

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Purpose: To report age- and sex-specific incidence rates of cataract surgery in France and evaluate the trends of cataract surgery from 2009 to 2012.

Design: Cohort study.

Subjects: Data for all patients who underwent primary cataract surgery in France between January 2009 and December 2012 were collected from the national database.

Methods: Annual incidence rates were calculated and adjusted to the corresponding-year national population data from the French National Institute of Statistics. Kaplan–Meier analysis was used to assess the time between surgeries for both eyes.

Main Outcome Measures: Age- and sex-specific incidence of cataract surgery.

Results: Over the 4 years, 2 717 203 eyes in 1 817 865 patients (59.1% were women; mean age, 73.5±0.015 years) underwent cataract surgery. Between 2009 and 2012, the total number of operated eyes per year increased, from 634 070 to 723 172 (+14.0%), and the number of patients with 1 or both eyes undergoing cataract surgery decreased, from 475 301 to 449 318 (−5.5%). The incidence of cataract surgery increased from 9.86 to 11.08/1000 person-years and that of operated patients (1 or both eyes) decreased from 7.39 to 6.89/1000 person-years. The incidence of cataract surgery ranged from 1.06/1000 person-years for patients aged 40 to 49 years to 65.94/1000 person-years for those aged 80 to 89 years. Between 2009 and 2012, the probability of second-eye surgery 12 months after the first-eye surgery increased from 40.6% to 51.2% ($P < 0.0001$). The median interval for surgery between eyes was 29 (interquartile range, 14–86) days. The rate of posterior capsular tear was 0.20%, with a higher proportion from extracapsular extraction than phacoemulsification (7.9% vs. 0.15%; $P < 0.0001$). The proportion of patients who underwent cataract surgery with a history of high myopia, eye trauma, or retinal detachment was 0.49%, 0.21%, and 0.80%, respectively.

Conclusions: This study documented the incidence and trends in cataract surgery in the overall population in France. Between 2009 and 2012, the number of people undergoing cataract surgery slightly decreased, but the total number of operated eyes increased because the proportion of surgeries on the second eye increased. *Ophthalmology 2015;■:1–6 © 2015 by the American Academy of Ophthalmology.*

Cataract is the most common eye disease in older adults and is a major cause of vision impairment and blindness worldwide.[1] Cataract surgery is the most commonly performed procedure in people older than 65 years of age in the developed world.[2] In addition, with the aging of the population in Western countries, the number of people with cataract surgery is increasing.[3]

Two studies based on general population data reported on the incidence of cataract surgery: The Swedish National Cataract Register reported an incidence of 9.0/1000 person-years in 2009,[4] and the Rochester Epidemiology Project, performed in Olmsted County, Minnesota, reported an incidence of 11.0/1000 person-years in 2011.[5] A few reports of the incidence of cataract lens opacities were based on a limited cohort of patients.[6,7]

Detailed incidence data regarding cataract surgery are important for determining community surgical needs and assessing the potential impact of intervention strategies. An efficient source of incidence data on cataract surgery in France is the national administrative database of hospitalizations (Programme de Médicalisation des Systèmes d'Information [PMSI]), which reports all cataract surgeries performed in France. The PMSI database has provided accurate population-based data.[8,9]

The purpose of this study was to assess the incidence of cataract surgery in France between 2009 and 2012. Secondary objectives were to determine the characteristics of patients

http://dx.doi.org/10.1016/j.ophtha.2015.04.017
ISSN 0161-6420/15

who underwent cataract surgery, the surgical techniques used, the perioperative complication incidence, the time between surgeries for both eyes, and the relationship with age.

Methods

The study protocol was approved by the National Health Authority in France.

Data Source

The data for all patients who underwent cataract surgery in France between January 2009 and December 2012 were collected from the PMSI, similar to the US Medicare system. Since 2004, each hospital's budget depends on the medical activity described in the PMSI, which compiles discharge abstracts related to all admissions in the 1546 French healthcare facilities, public or private. Information in these abstracts covers both medical and administrative data, including identification number, date of birth, and gender of patients. These data are rendered anonymous, and discharge abstracts related to a given patient can be linked, as is usually done with Medicare data. Routinely collected medical data include the principal diagnosis, secondary diagnoses, and procedures performed. Diagnoses identified during the hospital stay are coded according to the International Classification of Diseases, 10th Revision. The French data from the national institute of statistics was used to obtain population census data between 2009 and 2012 by sex and age group.[10]

Data Extraction

For each patient, cataract surgery was identified by the PMSI code BFGA004 corresponding to cataract extraction performed by phacoemulsification with intraocular lens implantation in a capsular bag, or by BFGA002, BFGA006, BFGA008, or BFGA009, corresponding to manual extracapsular extraction. Patients with previous retinal surgery were not included. The perioperative vitrectomy procedure used for posterior capsular rupture was recorded if the code BGFA008 was associated with the surgical care.

Sociodemographic variables including age and gender were recorded. Eye characteristics, including high myopia and a history of eye trauma, were collected with International Classification of Diseases, Tenth Revision diagnostic codes H44.2 or H52.1 and S05, respectively. Before extraction of the cohort, 0.26% of persons were not included because of presumed coding errors. Excluded persons were younger ($P < 0.01$) and the proportion of women was lower ($P < 0.01$) compared with the study population.

Statistical Analysis

Characteristics of patients who underwent cataract surgery in France are presented with mean ± standard error and relative frequencies. Annual incidence rates by age group were adjusted to the corresponding year population data from the National Institute of Statistics in France. Kaplan–Meier analysis was used to assess the interval between surgeries for both eyes and the relationship between age and interval for bilateral surgery. The duration of follow-up after cataract extraction was based on the patient's last registration in the database, which was December 2012 for all patients. Differences in intervals between surgeries for both eyes were investigated by the log-rank test. Significance was set at $P < 0.01$. Analysis involved use of SAS v9.3 (SAS Inc, Cary, NC).

Results

Overall and Age- and Sex-Specific Incidence of Cataract Surgery

Between 2009 and 2012, 2 717 203 eyes in 1 817 865 patients (59.1% were women; mean age, 73.5±0.015 years) underwent cataract surgery in France (Table 1).

The total number of operated eyes per year increased, from 634 070 to 723 172 (+14.0%), but the number of patients with 1 or both eyes undergoing cataract surgery decreased, from 475 301 to 449 318 (−5.5%) (Table 1). The corresponding incidence of cataract surgery increased from 9.86 to 11.08/1000 person-years and the number of operated patients (1 or both eyes) decreased from 7.39 to 6.89/1000 person-years (Fig 1, Table 1).

The incidence of cataract surgery ranged from 1.06/1000 person-years for people aged 40 to 49 years to 5.04, 20.57, 59.33, and 65.94, and 26.38/1000 person-years for those aged 50 to 59 years, 60 to 69 years, 70 to 79 years, 80 to 89 years, and ≥90 years, respectively (Table 1). The proportion of operated women increased among age groups, from 46.7% for those aged 40 to 49 years to 49.7%, 54.5%, 60.4%, 63.3%, and 67.0% for those aged 50 to 59 years, 60 to 69 years, 70 to 79 years, 80 to 89 years, and ≥90 years, respectively. The incidence was higher for women in the age group 60 to 79 years and higher for men in the age group ≥80 years (Fig 2).

Characteristics of Cataract Surgery in France between 2009 and 2012

Phacoemulsification was used in 99.3% of surgeries (Table 2). Use of extracapsular lens extraction decreased between 2009 and 2012 (0.83% vs. 0.58%, respectively; $P < 0.0001$). The proportion of patients who underwent cataract surgery with a history of high myopia, eye trauma, or retinal detachment was 0.49%, 0.21%, and 0.80%, respectively (Table 2). The rate of anterior vitrectomy for posterior capsular tear was 0.20% overall, with a higher occurrence from extracapsular extraction than phacoemulsification (7.9% vs. 0.15%, $P < 0.0001$) (Table 2).

The Time between Surgeries for Both Eyes Decreased between 2009 and 2012

Between 2009 and 2012, the probability of second-eye surgery 12 months after the first-eye surgery increased from 40.6% to 51.2% ($P < 0.0001$) (Table 3). The probability of second-eye surgery increased within 7, 15, 30, or 60 days after surgery for the first eye ($P < 0.0001$) (Table 3).

The median (interquartile range) number of days for surgery between eyes was 29 (14–86) and decreased over the study period ($P < 0.0001$) (Fig 3). The probability of second-eye surgery within 15 days after first-eye surgery was higher for younger than older patients (log-rank $P < 0.0001$) (Fig 4).

Discussion

The PMSI program, with its exhaustive national database from the 1546 French healthcare facilities, public or private, has allowed for assessing the characteristics and trends of cataract surgery in France. This study documented