CHANGING TRENDS IN TECHNIQUES OF CATARACT SURGERY IN ADULTS OVER A PERIOD OF FIVE YEARS

Nazullah, Mushtaq Ahmad, Ashfaq ur Rehman, Israr, Abdul Aziz, Asadullah, Shahid Abdur Rauf, Usman Attique

ABSTRACT

Introduction: Cataract remains the leading cause of blindness worldwide, accounting for nearly half (47.8% or 17.7 million) of all blindness cases.[1] In Pakistan, there are estimated to be 570,000 adults (225,000 men, 345,000 women) who are blind due to cataract, which is the most common cause (51.5%) of avoidable blindness in the country.

Objective: To evaluate and describe the changing trends in techniques of cataract surgery over a period of five years in adult population.

Methodology: A retrospective descriptive study was conducted in Hayatabad Medical Complex, Peshawar.The total sample size was 6927.The data was collected from theatre registers and coding software and was then compared and analyzed retrospectively on yearly basis, with emphasis on the changing surgical techniques that were opted and preferred by both patients and surgeons respectively.

Results: Our study data revealed a significant increase in cataract surgeries from 1240 in 2012 to 1602 in 2016.There were changing trends in various cataract surgical techniques with substantial increase in frequency of Phacoemulsification procedure followed by MSICS over the recent years. The percentage of eyes operated with Phacoemulsification technique was increased by 7.86 % and that of MSICS was increased by 3.27 % in a time period of 5 years.

Conclusion: The 5 years trend showed that the graph of new surgical techniques of cataract surgery ascended over the time because of the availability of latest surgical equipment, more expertise in surgical skills and increasing awareness and demand on part of the patients in terms of early visual rehabilitation and less postoperative complications.

Key Words: cataract surgery techniques, adult population.

INTRODUCTION

Cataract remains the leading cause of blindness worldwide, accounting for nearly half (47.8% or 17.7 million) of all blindness cases.[1] In Pakistan, there are estimated to be 570,000 adults (225,000 men, 345,000 women) who are blind due to cataract, which is the most common cause (51.5%) of avoidable blindness in the country.[2] Although cataract services have grown substantially in Pakistan in past 10 years, many parts of the country still do not have these services.[3]

Initially, Intra capsular cataract surgery was performed, however with the invent and introduction of intraocular lenses extra capsular cataract surgery with lens implantation with various techniques became popular in practice. Currently, conventional extra capsular cataract surgery (ECCE), Manual small incision cataract surgery (MSICS), and phacoemulsification are the three common and popular forms of cataract surgery techniques being performed in Pakistan. In more developed areas, phacoemulsification has become the preferred and popular method of performing extra capsular cataract surgery. Nonetheless, the obvious advantages of phacoemulsification, along with advanced instruments and better Intraocular lens (IOL) designs, made it the method of choice among cataract surgeons in the 1980s, and is now commonly performed in developing countries as well.[4] These changing trends in surgical techniques are however governed by multiple factors such as affordability, patient's awareness, surgeon's caliber and skills and the cataract backlog.

New advancements in technologies, expertise in surgical skills and improvement in literacy rate and awareness has changed the approach towards the cataract surgery, aiming to improve vision related quality of life rather than to address blindness. To achieve perfection and desired results, surgeons keep on moving towards latest techniques and technologies. The WHO suggests that 85% of eyes undergoing cataract surgery should have good outcome (6/6–6/18), 10% have borderline outcome (<6/18–6/60), while less than 5% have poor outcome (<6/60).[5] Despite the rapid increase in technology-driven cataract surgery such as femtosecond Laser assisted technique in the developed world, it is still awaited in the developing countries.

To my knowledge there is no local or national study available on this topic. Therefore this study was designed to describe the change in trends in various cataract surgical techniques in our setup. The study results will help us particularly the young ophthalmologists

Department of Opthalmology HMC Peshawar

Address for correspondence:
Dr. Nazullah
Assistant Professor Eye Unit HMC Peshawar
Email: dr.naz40@yahoo.com
Cell: 0333-5858978

to develop expertise and skills in new latest techniques.

METHODOLOGY

A retrospective descriptive study was conducted in Hayatabad Medical Complex, Peshawar.The total sample size was 6927 in which 5 years postoperative data of adult patients with age above 18 years, who had undergone cataract extraction surgeries through various techniques from 1st January 2012 to 30th December 2016, was collected from theatre registers and coding software and then compared and analyzed retrospectively on yearly basis, with emphasis on the changing surgical techniques which were opted and preferred by both patients and surgeons respectively. Data record included general information of patients, type of surgery and implanted IOL types and operating surgeon name.

RESULTS

A total of 6927 cases of cataract surgeries were performed with an increase of total 362 cases from first year data, over a 5 year time. Out of these 6927 cases, ICCE procedure was performed in 2.10 %, ECCE in 29.32 %, MSICS in 31.90 %, and phacoemulsification technique was performed in 36.66 % of cases in 5 years period.

There was a substantial increase in frequency of phacoemulsification and MSICS techniques over time as compared to other techniques. The percentage of eyes operated with phacoemulsification technique was increased by 7.86 %, MSICS by 3.27 % while that of ECCE was reduced by 10.21 % over this 5 years period.

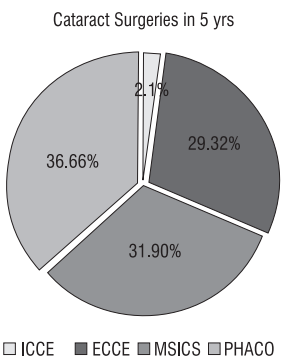
Patients above 60 years were the most common age group. The age of the patients ranged from 18 years to 83 years with a median of 60, with male to female ratio of 1.3:1.

IOLs were implanted in 97 % of cases. Hard PMMA lenses were implanted in ECCE and MSICS mostly while acrylic foldable IOLs were implanted in 95 % of Phacoemulsification cases. The phacoemulsification was mostly performed by consultants while ECCE and MSICS were performed by trainee residents. Table:1 documents the yearly data with percentages of cataract surgery.

DISCUSSION

The first phacoemulsification procedure was performed in 1967, and in developed countries it gained popularity in the 1980s. In a recent survey (1998) on the practice styles of American Society of Cataract and Refractive Surgeons (ASCRS) members, it was found that only 3% of the cataract surgeons did not use the phacoemulsification (phaco) technique at all. About 65% of cataract surgeons perform phaco alone (from 58% in 1996 and 63% in 1997).[6] In one study conducted locally in 1999, type of cataract surgery routinely performed were; ECCE without IOL 91 (50%); ECCE with IOL 31 (17%); phaco without IOL 20 (11%); phaco with IOL 39 (22%). [7]

In our study phacoemulsification with IOL implantation was the most common type of cataract surgery followed by MSICS, showing progressive increase in frequency by 7.86 % and 3.27 % respectively over 5 years time. The frequency of phacoemulsification with IOL implantation was 32.33 % in 2012 that increased to 40.19 % in 2016, while that of MSICS with IOL was 30.24 % and 33.52 % in 2012 and 2016 respectively, indicating the popularity of this procedure among surgeons and patients. In one study conducted by Nisha et al.[8] there



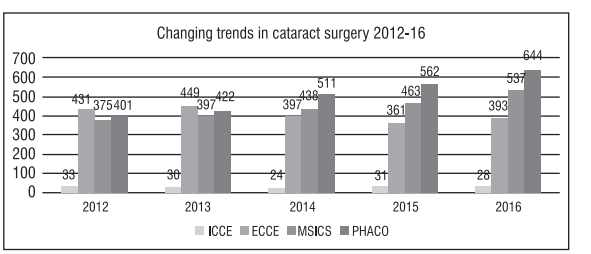


Table 1: Frequency of Surgical Procedures over 5 years

Calendar Years	ICCE	ECCE	MSICS	Phacoemulsification	Total
2012	33 (2.66 %)	431 (34.75 %)	375 (30.24%)	401 (32.33%)	1240
2013	30 (2.31 %)	449 (34.59 %)	397 (30.58 %)	422 (32.51 %)	1298
2014	24 (1.75 %)	397 (28.97 %)	438 (31.97 %)	511 (37.29 %)	1370
2015	31 (2.18 %)	361 (25.47 %)	463 (32.67 %)	562 (39.66 %)	1417
2016	28 (1.74%)	393 (24.53%)	537 (33.52%)	644 (40.19%)	1602
Total	146 (2.10%)	2031 (29.32%)	2210 (31.90%)	2540 (36.66%)	6927

was an increase in average cases of phacoemulsification cataract surgery with a decline in average cases of non phacoemulsification cataract surgery. In anotherstudy, there was a steep rise in phacoemulsification cataract surgery from 39.7% in 2002 to 78.0% in 2011 with a corresponding fall in extracapsular cataract extraction from 54.0% to 17.3% in the respective years.[9]

The reasons for changing trends towards the phacoemulsification and MSICS techniques include, an exquisite intraoperative control, consistent closed-chamber removal of cataract, early and improved visual rehabilitation, minimum surgical trauma and postoperative astigmatism.These techniques have brought cataract surgery results as close to anatomical perfection as possible with the current technology and skills. In the constant struggle to keep the incision size to minimum, foldable lenses are liked and welcomed everywhere with a complementary injector system which allows a surgeon to keep his phaco incision size only marginally. In quest for perfection and excellence, cataract surgeons are still looking into the probable advantages of other available more sophisticated options like LASER-assisted cataract removal.

Manual small incision cataract surgery (MSICS) is an alternative surgical procedure to phacoemulsification, as safe and effective, yet faster and less expensive for hypermature or dense cataracts that are more prevalent in developing countries. Both phacoemulsification and MSICS give excellent visual outcomes with low complication rates, but MSICS is cheaper and less technology dependent.[10] Though our study shows a change of ascending trend towards phacoemulsification and MSICS techniques with descending aptitude to conventional technique, still a significant proportion of cataracts were operated with conventional extracapsular cataract extraction technique because of various factors like hypermature cataracts, lack of expertise, limited access to phacoemulsification machines and affordability issues. In underdeveloped countries like Pakistan, a large number of people cannot afford the cost of the foldable lenses and the Phacoemulsification procedure.[11]

In our study IOLs were used in 97 % of cataract surgeries. Irrespective of the type of cataract surgery, the Vision 2020 initiative recommends IOLs to be implanted in every case, unless contraindicated. Leaving the patient dependent upon aphakic spectacles often results in image magnification, physical discomfort, and limited visual field and noncompliance. Although IOL implantation is one of the most successful surgical procedures and complication free in the majority of cases, opacification may occur during the postoperative period. Thus further improvements in IOL design and material are required to achieve good visual outcome.

Since the goal of our study was to review the general trends of surgical techniques in our set up, not evaluation of short or long-term results of different techniques. Therefore, future studies are suggested to address the limitations of this study.

CONCLUSION

Although new in developing countries, Phacoemulsification with IOL implantation has become the most commonly opted technique for cataract surgery worldwide. To achieve the goals of the Vision 2020 initiative in terms of service quality, postoperative visual outcomes and the quality of vision, phacoemulsification and MSICS techniques have to be expertized, affording and all necessary equipments be made available at eye health care centers.

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