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Differences In The Occurrence Of Posterior Capsule Opacification After Polymethylmethacrylate And Foldable Acrylic Cataract Surgery

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Abstract
Post-surgical complications include posterior capsular opacification, which reduces visual acuity. This study aims to analyze the difference in the occurrence of posterior capsular opacification after cataract surgery when installing polymethyl methacrylate and foldable acrylic intraocular lenses. The design of this study was analytical observation with a retrospective cohort comparative type. The population in this study were cataract sufferers who underwent surgery with the installation of polymethyl methacrylate and foldable acrylic lenses at the Undaan Eye Hospital, Surabaya. The sample of 119 people was selected using non-probability sampling with a purposive sampling approach. The instrument in this research used an observational sheet. Data were analyzed using the Mann-Whitney test. The results showed that the majority of Posterior Capsular Opacification using the Polymethyl Methacrylate method was mostly normal, namely 11 respondents (61.1%), while most of the Posterior Capsular Opacification using the Foldable Acrylic Cataract Surgery method was almost normal, namely 7 respondents (38.9%) . The results of further analysis showed that there was no significant difference in Posterior Capsular Opacification between the Polymethyl Methacrylate and Foldable Acrylic Cataract Surgery methods (p-value = 0.748; α <0.05). Cataract surgery methods with Polymethyl Methacrylate and Foldable Acrylic Cataract Surgery do not affect the results of post-operative visual acuity even though the incisions caused by the method are different. Postoperative visual acuity can be influenced by many things, both intrinsic and extrinsic.
Keywords : *Cataracts, Posterior Capsular Opacification, polymethyl methacrylate, foldable acrylic*

INTRODUCTION

Cataract is a degenerative process in the form of clouding in the lens of the eye thus causing a decrease in visual ability up to blindness (P2TM Ministry of Health of the Republic of Indonesia, 2016). The Association of Indonesian Ophthalmologists (PERDAMI) records that sufferers Cataracts in Indonesia are quite high, in 2012 reaching 2.4 million people with an increase of around 240 thousand per year. Prevalence of cataracts in Indonesia The results of the enumerator's examination in the 2013 Riskesdas were: 1.8%, the highest in North Sulawesi Province and the lowest in DKI Jakarta. Java East as much as 1.6% and ranks 22nd (Riskesdas, 2013). Amount cataract surgery visits at Undaan Eye Hospital, Surabaya in 2021 was 3135 patients. The incidence of posterior capsule opacification is decreasing with the phacoemulsification technique, the use of intra-ocular lens material 2 is more biocompatible and the design of the intraocular lens can hinder it proliferation 2 lens epithelial cells. Schaumberg et al reported that the incidence of PCO was equal to 11.8% at 1 year, 20.7% after 2 years and 28.5% after 3 years surgery (Nashrul, 2018). Visit a patient with posterior capsule opacification in Undaan Eye Hospital had 978 patients. Based on initial data taken at the Undaan Eye Hospital of 20 patients after cataract surgery in January 2020 with each – 10 people each used polymethylmetacrylate lenses and 10 people using foldable acrylic lenses, there is a time span since cataract surgery by implanting an intraocular lens, it is carried out until the posterior capsule occurs opacification . According to preliminary data, 10 patients with polymethylmetacrylate lenses has a time span of 2 months in 3 people (30%), 3 months in 2 people (20%),

10 months 2 people (20%), 12 months 3 people (30%). In 10 patients with lenses foldable acrylic has a time span of 3 months for 2 people (20%), 9 months for 3 people (30%), 12 months for 1 person (10%), 24 months for 2 people (20%), and 26 months for 2 people (20%)

Good cataract surgery results will certainly improve visual acuity after surgery and it is hoped that this will last a long time. However, this is sometimes not achieved due to the formation of posterior capsule opacification (PCO: Posterior Capsule Opacification) or often called secondary cataract. According to research journals Apple, Nishi, Linolla and others state that PCO occurs because the remaining lens epithelial cells at the equator migrate to the equator. the central part of the visual axis which causes pearl-like turbidity (elschnig pearl).

Use of intra lens Oculars that have good design and material can prevent this from happening posterior capsule opacification . To obtain optimal vision results in the long term, lenses intra-ocular foldable with optical components made of acrylic and other materials using a sharp-angled design on the edge of the optics is more preferred, in cataract patients undergoing surgery and with lens implantation intra-ocular (Nasrul, 2018). but it's still there It is possible that at some point posterior capsule opacification will definitely occur in both types of lenses, but the time of occurrence is different posteriorly capsule opacification still cannot be predicted with certainty so Due to this background, researchers want to research about Differences in time to occurrence of posterior capsule opacification in cataract patients who underwent surgery using the phacoemulsification technique and installation of polymethyl methacrylate and foldable acrylic intra-ocular lenses at the Undaan Eye Hospital, Surabaya.

METHODS

Study This use method *analytical observational* with type comparative *Retrospective cohort* type research that studies the connectionbetween factor risks and effects that already happened in the past, with chosen group studies based on different factor risk in which the variable be measured based on notes history. The research location is at Eye Hospital Medical Support Unit Invitation Surabaya, date 20 April until 30 April 2021.

RESULTS AND DISCUSSION

Table 1 Respondent's Characteristics

Variable		n	%
Age (years old)	40-50	8	22.8
	51-60	9	25.0
	61-70	9	25.0
	71-80	10	27.8
	>80	0	0.0
Gender	Man	18	50.0
	Women	18	50.0

The results of the analysis based on table 1 showed that the majority of respondents' age range was 71-80 years, namely 10 respondents (27.8%), while the gender prevalence between men and women was the same, namely 50%.

Table 2 Posterior Capsular Opacification, Polymethyl Methacrylate, and Foldable Acrylic Cataract Surgery

Variable	Low		Almost Normal		Normal	
	n	%	n	%	n	%
Polymethyl Methacrylate	2	11.1	5	27.8	11	61.1
Foldable Acrylic Cataract Surgery	5	27.8	7	38.9	6	33.3
p-value = 0.748; α <0.05						

The results of the analysis based on table 2 showed that the majority of Posterior Capsular Opacification using the Polymethyl Methacrylate method was mostly normal, namely 11 respondents (61.1%), while most of the Posterior Capsular Opacification using the Foldable Acrylic Cataract Surgery method was almost normal, namely 7 respondents (38.9%) . The results of further analysis showed that there was no significant difference in Posterior Capsular Opacification between the Polymethyl Methacrylate and Foldable Acrylic Cataract Surgery methods (p-value = 0.748; α <0.05).

DISCUSSION

The results of the study showed that there was no significant difference in Posterior Capsular Opacification between the Polymethyl Methacrylate and Foldable Acrylic Cataract Surgery methods (p-value = 0.748; α <0.05). The surgical method cannot affect the visual outcomes after cataract surgery. The Polymethyl Methacrylate method is the procedure of choice in cataract surgery. This technique involves an opening procedure of the anterior part of the lens capsule, then the lens is emulsified using ultrasonic waves and then aspiration is carried out through the incision that has been made. The Foldable Acrylic Cataract Surgery method has twice the surgical incision of the Polymethyl Methacrylate method, namely 6 mm for Foldable Acrylic Cataract Surgery wounds and 2-3 mm for Polymethyl Methacrylate wounds. However, these two methods do not affect post-operative visual outcomes.

CONCLUSION

Cataract surgery methods with Polymethyl Methacrylate and Foldable Acrylic Cataract Surgery do not affect the results of post-operative visual acuity even though the incisions caused by the method are different. Postoperative visual acuity can be influenced by many things, both intrinsic and extrinsic.

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