



RELATIONSHIP BETWEEN VISUAL ACUITY AFTER TRAUMATIC CATARACT SURGERY AND THE EFFECTED FACTORS AT HAJI ADAM MALIK HOSPITAL, MEDAN

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ABSTRACT

Traumatic cataract most commonly caused by foreign body injury in the lens or blunt injury to the eyeballs. Cataract can occur as a injury either a perforated injury, or blunt to the eyeballs. Decreasing of visual acuity may affected by traumatic eye, especially cataract traumatic. Trauma become the most common cause monocular blindness in people aged under 45 years. Only 85% of patients who have experienced trauma in the anterior segment oculi achieve 20/40 or better visual acuity, while the posterior segment trauma occurs only about 40%. Effected factors may also contribute to the decreasing of visual acuity prior traumatic eye. This study is a retrospective descriptive analytic study, conducted by obtaining secondary data from medical record of patients with traumatic cataract who had undergone cataract surgery at Haji Adam Malik Hospital Medan, including demographic data such as age, gender, and occupation as the affected factors. From 42 patients with traumatic cataract surgery has been found to be the largest age 7-18 years is 28 people (66.7%), males 34 (81.0%). There is no relationship between visual acuity after cataract surgery and affected factors such as age, gender, type and duration of injury, comorbid disorders, but significant relationship with surgical techniques.

KEYWORDS :

1. Introduction

Traumatic cataract are most commonly caused by foreign body injury in the lens or blunt injury to the eyeballs.¹ Cataract can occur as a injury either a perforated injury, or blunt to the eyeballs that may occur acutely, subacute or later. Can not read because of ocular traumatic. Only 85% of patients suffering from ocular injury in the anterior segment achieve a sharp vision of 20/40 or more, as in the injury of posterior scarring only about 40% achieve the same sharp vision. Men have four times more risk than women. The scentara's most effected age is children and adulthood.^{1,2,3} Need to know, how is the sharp relation of vision due to the traumatic cataract with age, gender, occupation, type of injury, duration of injury, accompanying disorder and surgical technique done on 2011-2015.

2. Methods

This study is a retrospective analytic descriptive study, conducted by obtaining secondary data from medical record of patients with traumatic cataract who had undergron surgery at Dr. Haji Adam Malik Hospital Medan for January 2011- December 2015 period, including demographic data of patients such as age, gender, and occupation which are the factors that will be sought to relate to sharp eyesight after surgery (as dependent variables). So is type of injury, duration of the injury, the accompanying abnormalities and surgery. In this study, sharp eyesight was recorded 4 weeks after surgery. To further facilitate the sharp assessment of vision, we only record in patients aged 7 years and above, because it is considered to have been able to read the snellen chart well. Than the data obtained is tabulated and process by computere statistical calculation using chi-square test for correlation test. And the data obtained were analyzed.

3. Results

During the 5 years period (January 2011-December 2015) a total of 42 traumatic cataract patients who had undergone surgery were found to be 7-8 years old, 28 person (66.7%), male 34(81.0%), female 8 patients (19.0%) Status not working 31 patients (73.8%), which is dominated school age followed by casual and housewife. Exposed to blunt objects 34 person (81.0%). Duration of injury ≤ 1 month 27 patients (64.3%). The position of the eye that is more often involved, occurs in the right eye which is 30 patients (71.4%), corneal laceration is most often found that there are 8 patients (19.0%). The most widely used operating technique is ECCE of 45.2% followed by Extra Capsular Cataract Extraction (ECCE) + Intra Ocular Lens (IOL) of 28.6%. The best visual acuity after surgery was found at intervals <

6/60, especially in the right eye were 28 patients (66.7%), and 12 in the left eye (28.6%), and after surgery at interval 6/6-6/36 were 10 (23.8%) in the right eye and 3 patients (7.2%) in the left eye.

Table 1. Clinical Characteristic of Subject Based on Age, Gender and Type of Injury

Subject of study	Visual acuity after cataract surgery			P
	6/6-6/12	6/18-6/36	< 6/60	
Age				0.825
7-18	2	7	17	
>18	2	4	8	
Gender				0.223
Male	3	9	22	
Female	1	2	5	
Type of injury				0.302
Blunt injury	3	10	21	
Perforated injury	1	1	6	

Table 2. Clinical Charateristic of Subject Based on Duration Of Surgery, Comorbid Disorder and Surgical Technique

Subject of study	Visual acuity after cataract surgery			P
	6/6-6/12	6/18-6/36	< 6/60	
Duration of surgery				0.926
≤1 month	2	6	19	
>1 month	2	5	8	
Comorbid disorder				0.170
Corneal laceration	1	2	5	
Conjunctival /scleral laceration	0	0	3	
Infection	1	2	1	
Iridodialysis	0	0	4	
Corneal cicatrical	1	4	2	
Iris sinechia	1	1	5	
Luxatio lentis	1	0	0	
Vitreous opacity	0	2	5	
Secunder glaucoma	0	0	1	
Surgical Technique				0.000
ECCE	0	2	17	
ECCE + IOL	3	10	0	
Phacoemulsification	1	0	0	
Lensectomy + Vitrectomy	0	0	10	

4. Discussions

Traumatic cataract are cataract that appear as a result of eye injury that may be perforated or blunded in the eyeball seen after several days or years. Trauma is the leading cause of monocular blindness in people under 45 years. According to research conducted by *National Eye Trauma System* between 1985-1991, the mean age of patients with traumatic cataracts is 28 years of age from 648 cases associated with eye injury.^{2,4}

Males are four times more likely than woman in this case. Eye injuries caused by the work (industrial workers whose work strikes steel in to other steels) and athletes most often occur in children and adulthood.^{1,2}

In the research in Germany 15 patients undergoing traumatic cataract surgery only 53% who had visual outcome postoperative $\geq 6/12$, this reason is related to abnormalities in macular turbidity of central corneal of *Posterior Capsular Opacity (PCO)* and *Retinal Detachment (RD)*.⁵

Greven et al getting only 30% eyes suffering from *contusio* injury had a normal posterior segment before surgery.⁶

Bekibelle et al states visual outcome after traumatic cataract surgery 35.6% $> 6/18$ approximately 35.6%, $< 6/18$ 32.2% approximately and the remaining 32.2% stated remain blind or visual outcome $< 3/60$. And the cause of poor vision $< 6/18$ is caused by corneal oedem 64.4%, PCO 12.5%, RD 4.9% dan glaucoma 6.9%.⁶

Memon et al in Jamshoro obtained the most common causes of injury to the eye include wood spines 31.7%, thorns 22.2% dan stone 17.1% which visual outcome $\geq 6/18$.⁷

According Shah et al in Gujarat-India *visual outcome* from traumatic cataract in children where are 287 eyes caused by open injury, and 67 eyes caused by closed injury, than 6 weeks after surgery obtained visual outcome $\geq 20/200$ in 181 eyes (63%) and $20/40$ in 106 eyes (38%) in open eye injury, $> 20/200$ in 36 eyes (53%) in $20/40$ 16 eyes (22.4%) closed eye injury. From all case 125 eyes (35.3%) obtained visual outcome after 6 weeks post operative $20/40$ and $20/200$ in 214 eyes (61.3%).⁸

According Brar et al in India (2001) states comparison between penetrating injury and blunt injury there is higher complication of penetrating injury in causing traumatic cataract in children. Where visual outcome in penetrating injury obtained $\geq 6/12$ (38.8%) and $\geq 6/12$ (86.36%) and ECCE + IOL (*Intra Okular Lens*) surgery in blunt injury obtained better visual acuity if the posterior segment is not involved.⁹

From the result of research within a period of 5 years obtained a sample 42 person with traumatic cataract who had undergone surgery, involve 30 right eyes and 12 left eyes. Based on more age in age 7-18 years (66.7%). This case is in line with the research undertaken by Ahmed et al in Kharaci (2011), more at age 16-35 years are 68.3%.¹⁰ This case because the age is still a productive age in doing physical activity.⁶ But age factor in this study is no significant in influence visual acuity after traumatic cataract surgery ($p > 0.05$). Total of traumatic cataract surgery based on gender are more in male 81.0%. This case because males are more doing physical activity than woman. Beside that man generally do activity/job that are more at risk for injury than women.^{10,11,12,13} But gender is no significant to influence visual acuity after traumatic cataract surgery ($p > 0.05$). Total of traumatic cataract based on occupation status obtained are more on a status that does not work generally in this case in is children equal to 73.8%. Total of traumatic cataract based on eye that involve in the right eyes are 71.4%. This case because due to most patients using the right hand while on the move.¹⁰ But total of traumatic cataract which type of injury is more commonly found because more encountered blunt object is 81.0%. This case according to the literature where the most frequent cause by the a foreign object injury in the lens that is blunt object

injury. But not significantly significant with visual acuity after cataract surgery. Total of traumatic cataract based on from duration of injury was obtained more over time ≤ 1 month is 27 person (64.3%). And this case is in line who was undertaken Memon et al which duration of injury with to the surgery who undertaken was not influences to visual outcome in traumatic cataract. But duration of injury factor is not significantly significant with visual acuity after cataract surgery ($p > 0.05$ in the both eyes). Not significant relationship between both eyes statistically with comorbid disorder ($p > 0.05$ in the both eyes). Obtained corneal laceration was more found 8 person (19%) followed by corneal cicatrical 7 person (16.7%) and *vitreous opacity* 7 person (16.7%). Surgical technique more found in ECCE 45.2% followed by ECCE + IOL is 28.6% and obtained relationship that significant between visual acuity with the tehnieque of surgery after cataract surgery ($p < 0.05$).

If the patients with traumatic cataract in the appropriate management are likely to achieve better visual acuity so that required education and protective equipment for athletes and workers in preventing injury of the eyes. Highest number of visual acuity before surgery at interval $< 6/60$ especially in the right eyes is 28 person (66.7%) and 12 person in the left eyes (28.6%) and after cataract surgery at interval $6-6/36$ is 10 person (23.8%) in the right eyes 5 person (11.9%) in the left eyes.

Additional treatment included *YAG laser*, capsulotomy, pars plana vitrectomy and keratoplasty can add *visual outcome* to $6/24 \pm 80\%$.⁵ According Brar et al in the Candigarh India (2001) with ECCE + PCIOL tehnieque that caused by blunt injury had *visual outcome* better than that caused by penetrating injury which posterior segment not involve.⁸ According by Shah et al in Gujarat India (2011) *visual outcome* is no significantly between open injury and closed injury of the eyes in each group.⁷

5. Conclusion

No significant relationship with visual acuity with age, gender, type of injury, duration of injury, and comorbid disorders, but there is significant relationship between tehnieque of surgery and visual outcome post operative especially ECCE obtained approximately 45.2% especially in the right eyes with visual outcome reached $< 6/60$ and followed dan by ECCE + IOL obtained approximately 28.6% with visual outcome reached $\geq 6/18-6/36$ on both eyes.

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