

## OUTCOME AFTER SMALL INCISION CATARACT SURGERY (SICS) AND PHACOEMULSIFICATION AT KIGALI UNIVERSITY TEACHING HOSPITAL

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### ABSTRACT

**Purpose:** To determine the visual outcome and complications related to small incision cataract surgery and phacoemulsification at Kigali University Teaching Hospital.

**Methods:** A retrospective study carried out on 644 eyes of 390 patients from January 2008 to January 2014 at KUTH. All patients with senile cataract operated with SICS or phacoemulsification at KUTH were included. Records on all examinations including visual acuity, refraction, biometry, slit lamp biomicroscopy and funduscopy from the period before surgery up to 6 months post-operatively were obtained.

**Results:** The final BCVA of 6/18 or more at 6-months after surgery was 90% on the RE and 82.6% on LE as compared to the pre-operative BCVA of 14.2% on the RE and 12.5% on the LE. Both types of surgery had similar post-operative outcome, respectively at 1, 3 and 6 months post-operatively ( $p=0.09$ ,  $0.19$  and  $0.12$ ). The most common treatable complications were minimal hyphema and corneal edema, with a complete healing during the first week of steroid treatment. There was no statistically significant difference in the complications rate between both types of surgery ( $P=0.28$ ).

**Conclusion:** Small incision cataract surgery and phacoemulsification had similar visual outcomes post-operatively; however phacoemulsification provided better UCVA at 3 months after surgery. Hyphema and corneal edema were the most common treatable complications that healed at the first week after cataract surgery.

**Keywords:** Outcome - SICS - Phacoemulsification

### RESUME

**Objectifs:** Apprécier les résultats visuels de la phacoemulsification par rapport à ceux de la chirurgie de la cataracte à petite incision au Centre Hospitalier et Universitaire de Kigali.

**Méthodes:** C'est une étude rétrospective comparative sur 644 yeux de 390 patients avec cataracte sénile opérés de janvier 2008 à janvier 2014 au CHUK. Tous les patients opérés par la chirurgie à petite incision ou avec phacoemulsification étaient inclus dans cette étude. Les données de l'examen ophtalmologique incluant l'acuité visuelle, la réfraction, l'examen à la lampe à fente et le fond d'œil depuis la période préopératoire jusqu'à 6 mois après la chirurgie étaient relevées.

**Résultats:** L'acuité visuelle corrigée de 6/18 et plus, à 6 mois après la chirurgie représentait 90% de cas à l'œil droit et 82.6% à l'œil gauche; alors qu'avant la chirurgie elle n'était que de 14.2% à l'œil droit et 12.5% à l'œil gauche. Les résultats visuels post-opératoires de 2 types de chirurgie de la cataracte étaient similaires à 1, 3 et 6 mois après la chirurgie ( $p=0.09$ ,  $0.19$  and  $0.12$ ). Les complications curables les plus présentes étaient l'hyphéma et l'œdème cornéen; mais ces complications n'étaient plus présentes après une semaine de corticothérapie. Les complications oculaires étaient similaires dans les 2 types de chirurgie de la cataracte ( $P=0.28$ ).

**Conclusion:** La chirurgie de la cataracte à petite incision et la phacoemulsification ont eu des résultats visuels similaires; cependant la phacoemulsification a révélé une meilleure acuité visuelle non corrigée à 3 mois après la chirurgie. Les complications curables les plus présentes étaient l'hyphéma et l'œdème cornéen; néanmoins elles n'étaient plus présentes après une semaine de corticothérapie.

**Mots Clés :** Résultat - CCPI - Phacoemulsification

### INTRODUCTION

Cataract represents the leading cause of blindness worldwide, accounting for nearly half of the 37 million of blind people. The majority of these people live in developing countries with reduced number of eye care professionals and facilities [1]. In these countries, blindness is associated with considerable disability and excess mortality, resulting in large economic and social consequences [2]. The number of cataract blind is expected to increase dramatically in coming decades as the number of elderly peoples will increase worldwide [3]. In the absence of more widespread availability of cataract surgery in the developing world, or the

identification of interventions that retard the development or progression of cataracts, population projections suggest that the number of cataract blind could reach close to 40 million by the year 2025 [2]. Senile cataract is an age related, visionimpairing disease characterized by gradual, progressive thickening of the lens of the eye. It is one of the world's leading causes of blindness [4]. It usually begins to appear after 50 years of age, and about half of people aged 75 are affected. While we are all at risk of developing cataract as we age, some things make cataracts more likely, including smoking, lack of vitamins, sun exposure, certain medications and malnutrition [3]. Senile cataract is responsible for half of world blindness which represent about 18 million people; according to the World Health Organization [1]. In the USA; age related lenticular changes reported in 42% of these between the

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age 52 up to 64 and 60% of those between the age of 65 up to 74 and 91% of those between the age of 75 up to 85. In sub-Saharan Africa; the prevalence of cataract was 0.4% in Uganda in 2002; 9.0% in Eritrea in 2011; 21% in Cameroon in 2007 [5]. Several studies have compared the outcome of cataract surgery using phaco versus manual small incision surgery. Gogate PM et al noticed that both phaco and SICS are safe and effective for visual rehabilitation of cataract patients, although phaco gives better uncorrected visual acuity in a larger proportion of patients at 6 weeks [6]. SandukRuit et al described similar outcome for phaco and SICS [7]. A study performed by Venkatesh et al found similar results for both surgeries, however mentioned the advantages of SICS being faster, less expensive and less technology dependent [8]. He recommended SICS as more appropriate for low income countries. A study performed in Rwanda in 2007 showed that 98% of examined patients aged above 50 years had senile cataract [9]. Many cases of cataract surgery are being performed in Rwanda, however no study have been done to assess the visual outcome after surgery. Both phacoemulsification and manual small incision cataract surgery achieve excellent visual outcomes with low complication rates, but manual small incision cataract surgery which is mostly used at KUTH is significantly faster, less expensive and requires less technology. This study expects to give a global view about the outcome after cataract surgery at KUTH as well as provide baseline data with which future developments on cataract surgery can be based on.

## Objectif

To determine the visual outcome and complications related to Small Incision Cataract Surgery and Phacoemulsification at KUTH.

Specific objectives included :

- To determine the visual outcome of Small Incision Cataract Surgery and Phacoemulsification at KUTH.
- To compare the visual outcome in relation to the 2 types of cataract surgery at KUTH.
- To determine intraoperative and postoperative complications related to these 2 types of cataract surgery at KUTH.

## METHODS

This is a retrospective study carried out on 644 eyes of 390 patients from January 2008 to January 2014 at the Ophthalmology Department, KUTH. All patients with senile cataract operated with SICS or phacoemulsification at KUTH from January 2008 to January 2014. A follow up of 6 months after surgery was recorded. Were included in this study all patients operated using SICS and phacoemulsification at KUTH during the study period. Were excluded from this study all patients with traumatic, congenital, developmental or post inflammatory cataract. Other associated blinding ocular diseases and lack for follow up for the first postoperative week were the other exclusion criteria.

After obtaining approval from the Research and Ethical Committee of KUTH, all theatre registries from the ophthalmology department were reviewed. Data were obtained from files at KUTH/ Record department from January 2008 to January 2014. These data included the patient's age, gender, complaints, type of

cataract diagnosed, type of surgery performed, visual acuity before and after surgery from day one up to six months; ocular complications during and after SICS and phacoemulsification. These data were put into questionnaires, entered using Microsoft excel and analyzed by SPSS 16.0 version.

## RESULTS

We reviewed 644 operated eyes of 430 patients that fullfilled the inclusion criteria. The most affected age group ranged from 50 to 79 years, counting for 73 % of total patients peaking at 60 to 69 age groups. The mean age at surgery was respectively 57.8 years for phaco group and 63.4 years for SICS. (p 0.08). It was found almost an equal number of affected male and female with a ratio of 1.07. It was observed an increased number of cataracts with the patient's age.

**Table 1:** Distribution of patients by age and sex

| Age group   | Male       | Female     | Number of patients<br>N (%) |
|-------------|------------|------------|-----------------------------|
|             | N (%)      | N (%)      |                             |
| <40 years   | 17 (3.9)   | 9 (2.9)    | 26 (6)                      |
| 40-49 years | 22 (5.1)   | 34 (7.9)   | 56 (13)                     |
| 50-59 years | 52 (12)    | 53 (12.3)  | 105 (24.4)                  |
| 60-69 years | 68 (15.8)  | 51 (11.8)  | 119 (27.7)                  |
| 70-79 years | 42 (9.8)   | 48 (11.2)  | 90 (20.9)                   |
| >80 years   | 21 (4.9)   | 13 (3)     | 34 (7.9)                    |
|             | 222 (51.6) | 208 (48.4) | 430 (100)                   |

**Table 2:** Distribution of patients according to their province of origin

| Province of origin | Number of patients | Percentage |
|--------------------|--------------------|------------|
| Kigali Town        | 230                | 53.5       |
| Northern Province  | 31                 | 7.2        |
| Southern Province  | 24                 | 5.6        |
| Eastern Province   | 90                 | 20.9       |
| Western Province   | 15                 | 3.5        |
| Unknown            | 40                 | 9.3        |
| <b>TOTAL</b>       | <b>430</b>         | <b>100</b> |

Majority of patients were coming from Kigali Town. However patients were also coming from all provinces of Rwanda.

**Table 3:** Distribution of visual acuity before and after surgery/ UCVA

| Visual acuity after surgery      | Day 1 post operative |           | Week 1 post operative |         | Month 1 post operative |           | Month 3 post operative |           | Month 6 post operative |           |
|----------------------------------|----------------------|-----------|-----------------------|---------|------------------------|-----------|------------------------|-----------|------------------------|-----------|
|                                  | RE                   | LE        | RE                    | LE      | RE                     | LE        | RE                     | LE        | RE                     | LE        |
| Visual acuity before surgery (%) | n(%)                 | n(%)      | n(%)                  | n(%)    | n(%)                   | n(%)      | n(%)                   | n(%)      | n(%)                   | n(%)      |
| RE: n:300/325                    | 300(92.3)            | 280(87.7) | 291(89.5)             | 268(84) | 223(68.6)              | 215(67.4) | 183(56.3)              | 171(53.6) | 167(51.4)              | 143(44.8) |
| LE: n:280/319                    |                      |           |                       |         |                        |           |                        |           |                        |           |
| <3/60                            | 48.3                 | 50        | 0                     | 0       | 0                      | 0         | 0                      | 0         | 0                      | 0         |
| <6/60-3/60                       | 32.3                 | 32.8      | 7.2                   | 6.2     | 7.7                    | 3.4       | 13.7                   | 10.5      | 4.3                    | 3.2       |
| <6/18-6/60                       | 0.3                  | 1.4       | 24.9                  | 27.5    | 25.1                   | 28.1      | 19                     | 21.8      | 28.8                   | 33.3      |
| 6/18-6/6                         | 19                   | 15.7      | 67.9                  | 66.3    | 67.2                   | 68.5      | 67.3                   | 67.7      | 66.9                   | 63.5      |

Three quarter of eyes (80.6% of RE and 82.8 of LE) had poor VA (<3/60 and <6/60 to 3/60) before surgery. On the day1 after surgery, majority of them (67.9% of RE and 66.3% of LE) had VA of 6/18 and more. On post-operative day1, both types of surgery had comparable uncorrected VA (P 0.18). At 1 month after surgery, two third of eyes (68.6% of RE and 67.4% of LE) came for follow up, with respectively 67.2% of RE and 68.5% of LE having UCVA of 6/18 or more. They had also similar UCVA at 1 month after surgery (P 0.16). On the 3rd month after surgery, 56.3% of RE and 53.6% of LE came for follow up, with respectively 66.9% of RE and 63.5% of LE having UCVA of 6/18 or more. The UCVA for both types of surgery was good for the phaco group at 3 months after surgery (P 0.03). At 6 month post-operative, only half of eyes (51.4% of RE and 44.8% of LE) came for follow up. Two third of them (67.1% of RE and 68% LE) had UCVA of 6/18 and more. Both types of surgery had comparable UCVA at 6 months after surgery (P 0.18).

**Table 4:** Distribution of visual acuity before and after surgery/ BCVA

| Visual acuity before surgery | Visual acuity after surgery |           | Day 1 post operative |         | Week 1 post operative |           | Month 1 post operative |           | Month 3 post operative |           | Month 6 post operative |      |
|------------------------------|-----------------------------|-----------|----------------------|---------|-----------------------|-----------|------------------------|-----------|------------------------|-----------|------------------------|------|
|                              | RE                          | LE        | RE                   | LE      | RE                    | LE        | RE                     | LE        | RE                     | LE        | RE                     | LE   |
|                              | n(%)                        | n(%)      | n(%)                 | n(%)    | n(%)                  | n(%)      | n(%)                   | n(%)      | n(%)                   | n(%)      | n(%)                   | n(%) |
|                              | 278(85.5)                   | 271(84.9) | 285(87.7)            | 268(84) | 223(68.6)             | 212(66.5) | 183(56.3)              | 171(53.6) | 167(51.4)              | 143(44.8) |                        |      |
|                              | RE                          | LE        |                      |         |                       |           |                        |           |                        |           |                        |      |
|                              | n:66/325                    | n:70/319  |                      |         |                       |           |                        |           |                        |           |                        |      |
| <3/60                        | 50.1                        | 51.5      | 0                    | 0       | 0                     | 0         | 0                      | 0         | 0                      | 0         | 0                      | 0    |
| <6/60-3/60                   | 33.3                        | 33.5      | 0                    | 2.3     | 0                     | 0         | 0                      | 0         | 0                      | 0         | 0                      | 0    |
| <6/18-6/60                   | 2.4                         | 2.5       | 22.3                 | 14.8    | 21.9                  | 18.6      | 13                     | 19.1      | 11.4                   | 9         | 10                     | 17.4 |
| 6/18-6/6                     | 14.2                        | 12.5      | 77.7                 | 82.9    | 78                    | 81.4      | 86.9                   | 80.9      | 88.6                   | 91        | 90                     | 82.6 |

The BCVA before surgery was not improved, with a median of 6/60. Median BCVA was 6/9 by the final scheduled follow-up examination. Majority of eyes had BCVA of 6/18 or more on the day1 after surgery (77.7% of RE and 82.9% of LE). At 1st month after surgery, two third of eyes came for follow up and majority of them had the BCVA of 6/18 or more (86.9% of RE and 80.9% of LE). The BCVA at month1 was similar in both types of surgery (p 0,09). It was also noticed an improvement of the BCVA at 3 months after surgery with respectively 88.6% of RE and 91% of LE having 6/18 or more. The BCVA at 3 month was similar in both types of cataract surgery (p 0.19). At 6 months after surgery, 90% of RE and 82.6% of LE had BCVA of 6/18 or better. The BCVA was similar in both types of surgery (p 0.12).

**Table 5:** Surgical techniques and intra-operative complications.

| Surgical technique | Intra-operative complications (RE) |          |                             |               |            | Intra-operative complications (LE) |          |                             |               |            |
|--------------------|------------------------------------|----------|-----------------------------|---------------|------------|------------------------------------|----------|-----------------------------|---------------|------------|
|                    | None                               | Hyphe    | Posterior lens capsule tear | Vitreous loss | Total      | None                               | Hyphe    | Posterior lens capsule tear | Vitreous loss | Total      |
| SICS               | 168                                | 1        | 3                           | 1             | 173        | 163                                | 2        | 3                           | 0             | 168        |
| PHACO              | 149                                | 1        | 1                           | 1             | 152        | 148                                | 1        | 2                           | 0             | 151        |
| <b>TOTAL:</b>      | <b>317</b>                         | <b>2</b> | <b>4</b>                    | <b>2</b>      | <b>325</b> | <b>311</b>                         | <b>3</b> | <b>5</b>                    | <b>0</b>      | <b>319</b> |

It was observed few intra-operative complications.

**Table 6:** Surgical techniques and early post-operative complications.

| Surgical technique | Early post-operative complications (RE) |               |          |                  |            | Early post-operative complications (LE) |          |               |          |                  |            |
|--------------------|---|---------------|----------|------------------|------------|---|----------|---------------|----------|------------------|------------|
|                    | None                                    | Corneal edema | Hyphe    | Anterior uveitis | Total      | None                                    | Hyphe    | Corneal edema | Endoph   | Anterior uveitis | Total      |
| SICS               | 141                                     | 17            | 3        | 12               | 173        | 135                                     | 4        | 11            | 0        | 18               | 168        |
| PHACO              | 132                                     | 10            | 1        | 9                | 152        | 134                                     | 0        | 10            | 0        | 7                | 151        |
| <b>TOTAL:</b>      | <b>273</b>                              | <b>27</b>     | <b>4</b> | <b>21</b>        | <b>325</b> | <b>269</b>                              | <b>4</b> | <b>21</b>     | <b>0</b> | <b>25</b>        | <b>319</b> |

Anterior uveitis and corneal edema were the main early post-operative complications observed; however these complications were completely healed by few days of steroid therapy. It was observed similar complications between both types of surgery. (p 0.08 )

**Table 7:** Surgical technique and late post-operative complications.

|               | None       | Corneal edema | Endoph   | Anterior uveitis | PCO       | Total      | None       | Corneal edema | Endoph   | Anterior uveitis | PCO       | Total      |
|---------------|------------|---------------|----------|------------------|-----------|------------|------------|---------------|----------|------------------|-----------|------------|
|               | SICS       | 159           | 0        | 0                | 1         | 13         | 173        | 159           | 0        | 0                | 2         | 10         |
| PHACO         | 141        | 0             | 1        | 2                | 9         | 152        | 139        | 0             | 0        | 1                | 8         | 148        |
| <b>TOTAL:</b> | <b>300</b> | <b>0</b>      | <b>0</b> | <b>3</b>         | <b>22</b> | <b>325</b> | <b>298</b> | <b>0</b>      | <b>0</b> | <b>3</b>         | <b>18</b> | <b>319</b> |

By the third month after surgery, posterior capsular opacification was the main complication, with an increased number in the SICS group (p 0.04).

## DISCUSSION

Several studies on outcome of cataract surgery were performed across the world, also in developing countries. However, very few were done in Rwanda. These studies had differences in outcomes ranging from poor visual results in settings with poor eye care systems to very good outcomes in centers with good eye care system [10, 11]. We performed this hospital based study so that we obtained data on the outcome after cataract surgery in our setting.

We reviewed 644 operated eyes of 430 patients for a period of up to 6 months after surgery. The distribution of the patient's age showed a majority of them aged between 50 and 79 years with a mean age of 65.8 years. Increased number of cataracts with the patient's age was observed. This age distribution was similar to many studies performed across the world, especially in developing countries [11,12,13]. It was described an equal number of gender in this study. Several studies found male preponderance among cataract patients presenting to eye clinics in low income countries [11,12,13]. However some studies found different findings with women having greater risk of developing cataract than men; the reason behind this could have been the lack of protective effects of estrogen in post- menopausal years [6]. Even though we have almost two third of female in the Rwandan general population distribution, this found equal number of gender. Tentative explanation to this could be the fact that males could be the ones being treated earlier for cataract in our setting than females. However a population based study could be more helpful in obtaining complete information on this aspect of the outcome of cataract surgery.

Visual acuity before surgery was poor, with more than three quarter of eyes having poor UCVA. The mean UCVA was respectively 0.183 on the RE and 0.048 on the LE before surgery. This high percentage of poor vision could be related to the opacification of the lens interfering with the formation of retinal image. Majority of patients in our setting seeks medical attention when they are already blind or almost. Surgery performed at advanced stage of cataract in our setting may also explain the presence of poor vision before surgery. This is different from what happens in the developed world where patients seek medical attention earlier and therefore consult eye care services earlier with better visual acuity.

The WHO recommends surgeons aim at achieving visual outcome with available correction in post cataract patients

of at least 80% with good visual acuity (6/18), 15% with borderline vision (<6/18-6/60) and less than 5% with poor outcome (6/60) [3]. On the day1 after surgery, majority of patients had UCVA of 6/18 and more. Both types of surgery had comparable UCVA at day1 after surgery. At 1 month after surgery, two third of eyes came for follow up, with majority of them having UCVA of 6/18 or more. The improvement of the UCVA highlights how good was the visual outcome after cataract surgery, starting even from the day1 after surgery. Several studies performed in good health centers showed improvement of the UCVA from day1 after surgery. On a study performed in Nepal, Sanduk R et al. described phaco and SICS achieving excellent surgical outcomes with low complication rates [14]. Both groups had comparable UCVA and BCVA from the postoperative day1 up to six months. A Cochrane database described some differences with our setting on 3 studies and reported UCVA of 6/18 or better at six to eight weeks, with a pooled RR indicating a more favorable outcome with phacoemulsification [11]. Parikshit M Gogate et al. noticed similar findings with our setting with majority of patients in both phaco and SICS group having better than or equal to 6/18 UCVA at the 6-week follow-up for presenting visual activity [6]. Hosamani SA et al also revealed similar post operatively UCVA of 6/12 or better by 6th week in the majority of cases [15]. The UCVA was good in our setting, highlighting the importance of not only performing good surgery but also having good UCVA after the use of biometry. This aspect is so important, considering the fact that many settings in developing countries are still lacking biometry before surgery, or corrective devisers like glasses and others post operatively. Furthermore, the type of daily activities of some populations could be a blockage to the use of some refractive devisers. People working in agricultural areas also could be having difficulties in the use of refractive devisers.

Some studies are still showing poor UCVA after cataract surgery, especially in low-income countries with poor eye care facilities. C Mpyet et al. described poor visual outcome after SICS at Jos Teaching Hospital in Nigerian with almost half of eyes having poor UCVA at respectively 6 days and 6 weeks after surgery [13]. Muhammad T Khan et al described good visual outcome after cataract surgery however they had 3 blinding cases of endophthalmitis [16]. Endophthalmitis is a sight and life threatening; postoperative complication of cataract surgery. It can have a devastating consequence on a patient's vision; some patients may lose all light perception. The bacteria most frequently isolated are gram-positive coagulase-negative cocci which account for 70% of culture-positive cases. Gram-negative bacteria account for just 6% of culture-positive cases; however, an infection with these bacteria, particularly with *Pseudomonas aeruginosa*, can lead to a complete loss of the visual acuity [16]. Preventive measures like asepsis before cataract surgery are the k-element to be performed to avoid endophthalmitis. On the 3rd month after surgery, almost half of eyes came for follow up, with almost two third of them having UCVA of 6/18 or more. Both types of surgery had similar UCVA on the 3rd month after surgery. The slit reduction of the UCVA at 3 months after surgery could be related to the occurrence of PCO in the first three months after surgery. This is similar to what is being described in the literature [16]. At 6 month post-operatively, only half of eyes came for follow up, and two third of them had UCVA of 6/18 and more. Both types of surgery had comparable UCVA. Eventhough many patients did not come for follow up,

the UCVA at 6 months post operatively was good. Several studies performed in settings with improved eye care facilities showed similar results [16,17,18]. The good UCVA at 6 months after surgery highlights how good our setting is performing cataract surgery. Few decades ago, cataract surgery with good outcome was not a reality in developing countries. Nowadays, many settings in developing countries are providing cataract surgeries with very good outcomes [19]. The BCVA before surgery was not improved, with a median of 5/60. However, on the 1st postoperative day results revealed an obvious improvement of the BCVA, with both types of surgeries having comparable BCVA. At 1 month after surgery, two third of eyes came for follow up and majority of them had the BCVA of 6/18 or more. Several studies showed similar improvement of the BCVA from the day1 post operatively [2,3,20]. Kongsap P et al described good BCVA from day1 up to 3 months after surgery, with low complication rates following small incision cataract surgery comparing Blumenthal and Ruit techniques inPrapokkklao Hospital, Thailand . Sushma A. H et al. revealed an even better BCVA of 6/12 and more in 86.1% cases achieved by 6th week post operatively [22]. Venkateshet al. showed that high quality cataract surgery, with 94% BCVA of 6/18 or better can be attained in a high volume setting [8]. Hosamani SA et al. described also BCVA of 6/12 and even better in 86.1% of cases achieved by 6th week and the remaining having low vision was mainly attributed to ocular comorbidity [15]. Some studies revealed different results compared to our setting. Colin Cook et al. described both uncorrected and corrected visual acuities better in the eyes that had phacoemulsification at 8 week post operatively [23]. Adepojuet al reported bad visual outcome, with only 9% of patients having good vision after cataractsurgery [3]. It was also noticed an improvement of the BCVA at 3 months after surgery with the BCVA similar in both types of cataract surgeries. Furthermore, the BCVA at 6 months after surgery improved too, and was similar in both types of surgery. Several studies performed across the world showed similar results to our setting [21,22,23]. However some studies revealed poor or borderline visual outcome post operatively, especially in settings with poor facilities [2-13]. Six months post-operative is an ideal time for which the patient's visual acuity is the real one he may have for the rest of his life. Even though half of patients did not come for follow up, those that were reviewed at six months after surgery showed good visual outcome with few complications. This highlights how good the visual outcome was not only at 6 months after surgery but also for the rest of the patient's life.

It was observed few complications related to cataract surgery. Similar complications were noticed in both groups of cataract surgery. This could be due to the fact that eye surgeons in our setting are skilled. This is similar to a study performed in several studies [6,11,16,23]. However, the study that was done 3 years earlier in the same setting showed that intraoperative complications were frequent due to the skills that were not yet acquired. So the importance of improving eye care systems by focusing on human resource development, acquisition of equipment and improvement of infrastructure. The early post-operative complications observed were anterior uveitis and corneal edema. These 2 complications are described as frequent in most of intraocular surgeries; however they are completely healed after few days of steroid therapy. Several studies described anterior uveitis and corneal edema as common and treatable ocular complications after cataract surgery [11-23]. Posterior capsular opacification was also revealed as the main post-operative complication, and was common in the SICS group, especially 2 months after surgery. This

is also described by several studies described across the world, especially in the SICS group [5, 21, 23, 24].

## CONCLUSION

The visual outcome after cataract surgery at KUTH was good despite big percentage of patients that lost follow up

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