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RESEARCH ARTICLE

MOBILISING A MOBILE SURGICAL TEAM AT THE DISTRICT LEVEL: A COST EFFECTIVE STRATEGY FOR CATARACT SURGERY IN MALI I. VISUAL ACUITY OUTCOMES AND COST STUDY.

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Abstract

Objectives:To compare, in the region of Mopti in Mali, the cost and effectiveness of a proximity surgery strategy (advanced surgery close to the patients' residence) with surgery practised in a traditional ophthalmology centre (fixed surgery in a hospital environment).

Methods:Two samples of 199 and 100 people operated on for cataract in the advanced and fixed strategies respectively, were included in this study.

Results:The functional results were excellent since, after correction, 92.5% of the advanced, and 98% of the fixed, surgery patients had a vision higher than or equal to 6/19. The rate of patients' satisfaction was 96% for advanced surgery and 89% for fixed surgery. From a societal point of view, the advanced strategy was slightly less costly with a unit cost of 96.2 US\$ compared to 96.9 US \$ in the fixed strategy. On the other hand, advanced surgery was much cheaper (26.6 US\$ vs. 36.5 US\$) for the patient and their family because of reduced transportation costs and patient and attendant opportunity cost in terms of time.

Conclusion:Operating patients using a proximity surgery strategy, whereby a regional ophthalmic team is mobilised at the district level, appears to be as cost effective as a classical fixed strategy. This innovative strategy should allow, if extended to all Malian regions, most patients needing surgery to be operated on.

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Introduction:-

Unoperated cataract remains the leading cause of blindness, 51% in 2010 (1). If these figures are applied to Mali, which has a population of 13" million inhabitants, there is an expected 130 000 blind persons including about 65,000 with bilateral cataract.

Cataract blindness is of economic importance (2). A blind person is unproductive and requires constant assistance from another person. They are excluded from society and are no longer able to take part in the community's productive and convivial activities (2).

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The Institute of African Tropical Ophthalmology (I.O.T.A) is a tertiary reference centre based in Bamako, Mali, which provides ophthalmic services and operates 3 500 cataracts a year. Within the regions of Mali, four secondary centres also practise ocular surgery and operate approximately 2000 cataracts each year. Thus, a total of 5 500 cataracts operations are performed annually in Mali, which does not even cover a tenth of the 65 000 estimated cases of cataracts waiting to be operated on. The cataract surgical ratio will be 423 cataracts operated for 1 million inhabitants each year.

It is not only the limited availability of services which poses a problem. A number of barriers lead to under-use of the available health services (3), such as distance from an ophthalmology service, ignorance of the existence of an effective treatment, fear of surgery, and frequent recourse to traditional surgery by couching the lens in the vitreous body (4). The major obstacle, however, appears to be the cost of being operated on, which includes in addition to the cost of the surgery, travel to the care centre and mobilization of an accompanying person.

Bringing surgery closer to the patient by moving the regional hospital surgical team towards the district health centres, could remove some of these barriers. We tested the feasibility of such a strategy, which we call the "advanced" strategy, and compared its cost and its effectiveness (measured in terms of patient's satisfaction and visual recovery) with those of the "fixed" surgery practised at the regional hospital level.

Patients and Methods:-

Context

The Mopti region of Mali covers 78 000 square km and has a population of approximately 1968 000 inhabitants. It includes 8 districts in two different geographical areas: a flooded and a non-flooded zone.

Study process

The study was carried out from September 2014 to June 2014 within the framework of the campaign against blindness developed by Lion's Club International (LCI) in Mopti. Two strategies were compared: i) "advanced" in seven health district centres, ii) "fixed" in the Mopti regional hospital.

1. For advanced surgery, the surgical team temporarily moved to the district health centres, bringing with them the equipment needed for examination and cataract surgery (slit lamp, tonometer, refractive set, microscope etc). Before the arrival of the surgical team, the district population was sensitised by community health workers and via rural radio.
2. For fixed surgery, patients suffering from cataract came by themselves to the ophthalmic service, surgery was proposed to them if needed, and an appointment was fixed if the patient agreed. The surgeon himself conducted the surgical follow-up and remained available for the patient in case he was needed.

Inclusion

People who were more than 40 years old presenting a bilateral cataract with a bilateral vision lower than 6/60 and without associated ocular lesions were included in the study.

Surgical technique

All patients accepting the intervention were operated on according to the extra capsular extraction technique with, if possible, the insertion of posterior chamber intraocular lens under viscoelastic. The intraocular lenses were of Indian origin (Aurolab) and their power varied from 21 to 23 dioptries. The viscous used (Aurovisc * Hydroxy Propyl Methyl Cellulose 2% W/V USP) came from the same Indian supplier and was preserved at room temperature.

All the interventions were carried out in ambulatory conditions under local anaesthesia, for both the fixed and advanced surgeries. Patients who could not receive an artificial lens were given a pair of aphakic glasses.

Follow-up methods

Within the framework of the advanced surgery, patients were examined one, three and seven days after surgery by the surgeon before his departure. They were then released with a 15 day topical treatment of tropicamide and a 30 day treatment of dexamethason-gentamycin and were asked to return three months later to the district health centre for a last examination practised by another ophthalmologist. The removal of all the threads was carried out at the time of this last examination.

In the fixed surgery strategy, the same follow-up schedule was employed but patients had the possibility of consulting the surgeon present at the hospital at their own convenience between the seventh and ninetieth days.

Visual acuity was assessed before surgery and after the operation with and without correction. For patients not having benefited from an intraocular lense (IOL), correction was done with spherical glasses of 10 diopters. For those having benefited from an implant, correction with spherical glasses of a diopter higher or lower was performed.

Quality of life and perceived vision were assessed before and three months after surgery as well as social reinsertion. Results will be presented in another paper.

Judgement criteria

Effectiveness was assessed by the level of corrected vision three months after the intervention, but also by the rate of pre- and post-operative complications and the patient's satisfaction. Success was defined as a best corrected visual acuity equal or superior to 6/19.

Cost estimation

We calculated a total societal cost that included costs to the government, to Lion's Club International (LCI), consumables, and to the patient and their family.

The governmental cost included building investments, salaries (depending on the time spent on the care of cataract), administrative costs, material and surgical equipment, and maintenance and running costs. The LCI cost included vehicle investments and transport expenses (fuel), extra wages for the mobile team, and communication expenses. The consumable costs were related to pre, per and post operational consumables, including the IOL bought on the Indian market.

The cost to the patient and their family included the cost of travel, food and lodging of the patient and their attendant. The opportunity cost for an adult working day was estimated as 600 FCFA (1.09 US\$).

A unit societal cost was calculated for each strategy by taking into account the exact number of cataracts which had been operated on during the study period, whether or not they were included in the study. A unit provider cost was also calculated, which similarly included government, LCI and consumable costs.

We also estimated the total amount paid by the patient and their family which included the above-mentioned costs plus the consultation and surgical fees (10 000 FCFA).

Partnership.

This intervention immediately became part of the existing health system. A protocol was established between the prevention of blindness national program, the regional health direction of Mopti, the Mopti regional ophthalmic centre, the district health centres, and Lion's Club International (LCI). The regional level provided consumables. The district health centres collected consultation fees. A surgical fee of 10 000 FCFA was asked from the patient. This fee plus an additional 10 000 FCFA given by LCI were deposited in a regional account in order to buy consumables.

Data entry and analysis

Data were recorded on standardised forms, reviewed daily for accuracy and completeness, and entered into Epi Info version 6.04 (Center of Disease Control and Prevention, Atlanta, GA, USA). Categorical outcomes, such as prevalence rates, were initially compared using the chi square test or Fisher's exact test. Continuous data across groups were compared by analysis of variance (ANOVA) if normally distributed. The Wilcoxon rank-sum test was used for non-normally distributed data. Odds ratios (OR), their 95% confidence intervals (95% CI), and P-values were calculated to compare results between groups.

Statistical analysis was conducted in two stages. First, a univariate analysis was performed and the association between surgical success and risk factors was estimated separately. Logistic regressions were performed using Stata 8.0. Statistical software (Stata Corporation 702 University Drive East College Station, TX 77840 U). Logistic

regression models were constructed to predict success with and without preoperative correction and complications with the following covariates: age, gender, baseline visual acuity, eye operated on, strategy and duration of illness.

Results:-

The Study Population

Between 1st September 2014 and 30th June 2014 the number of consultations carried out in the advanced strategy amounted to 3350 (**Table 1**). Among the people examined, 595 people had cataract and 335 agreed to be operated on (56.3%). Only a proportion of those operated on could be included since people having their second eye operated on, people with a visual acuity higher than 6/60, and people with other ocular lesions were excluded. Thus in advanced surgery, 210 people were included in the study and 199 were examined in the third month.

During the same time period, in fixed strategy, the number of consultations in the ophthalmic service of Mopti hospital totalled 7032. There were 585 detected cataracts of which 250 were operated on (42.3%). Among the people operated on, 104 were included in the study and 100 were examined in the third month. Men represented a little more than half of the sample for both strategies (**Table 2**) (respectively 56.8% and 53% in the advanced and fixed strategies).

The average age was 66.0 years for the advanced strategy and 64.8 years for the fixed strategy (in the two strategies ¼ were less than 60 years and ¼ more than 70 years). It should however be noted that 25% of the people operated on were less than 60 years and were thus still of working age (**Table 2**).

The majority of the patients involved in both the advanced strategy (94.5%) and fixed strategy (92%) had not been to school.

The distribution of ethnic groups in the two strategies appears to be different, with the Dogon group more frequently represented in the advanced strategy. For the advanced strategy, the mean distance travelled to be operated on was 20.3 km, although 55% of patients lived in the district main city where surgery took place. This mean distance was significantly longer (40.4 km) in the fixed strategy, and the percentage of patients who did not have to travel because they lived in Mopti city was lower (38%).

The duration of the visual impairment linked to cataract was longer in the advanced strategy, with 43% of patients reporting having visual troubles more than two years after surgery compared with 31% in the fixed strategy.

Outcomes

Main per-operative complications such as capsular rupture and/or vitreous loss were not statistically different in the two groups (**Table 3**). Nevertheless, the total number of complications and minor incidents was less important in the advanced strategy group and the patients in this strategy were more frequently implanted (88%) than those in the fixed strategy group (79%).

No late complications were noted in either strategy after three months.

In the absence of any optical correction, there was no significant difference in the functional results of the two strategies. More than half of the two groups obtained an acuity higher than or equal to 6/19 (59.3% in the advanced strategy and 54.0% in the fixed strategy, $p=0.38$).

After an optimal visual correction, the success rate, defined as a vision higher than or equal to 6/19, was high in the two strategies. The success rate appeared a little higher in the fixed strategy (98%) than in the advanced strategy (92.5%), but it did not reach the significance threshold. However, the level of satisfaction (satisfied or very satisfied patients), was high in both groups, and significantly more so in the advanced strategy group (96% vs. 90%).

When one considers success or failure factors in the surgical act (**Table 4**), factors such as having been operated on in one's town of residence, having had no complications, and being able to benefit from an IOL, appeared to be significant major determinants. There was no significant difference between the two strategies in either the univariate (**Table 4**) or multivariate analyses (**Table 5**). The model explaining the incidents and complications emphasises the positive role of the advanced strategy.

Costs.

The fixed costs were higher for the advanced strategy (19 354 US\$) than for the fixed strategy (12 205 US\$). In the advanced strategy, a significant part of the fixed costs (9117 US\$) can be attributed to team mobility (expenses for the vehicle and per diems) (**Table 6**). The variable costs corresponding to consumables were estimated to be 31.0 US\$ for each patient in both strategies.

The total societal cost including the patient costs was higher in the advanced strategy (32 219 US\$) than in the fixed strategy (24 230 US\$). Dividing these amounts by the number of cataracts operated on, we obtained a slightly inferior unit cost in the advanced strategy (96.2 US\$) than in the fixed one (96.9 US\$).

Nevertheless, from the provider point of view, and not taking into account patient costs, the unit costs would have been 88.8 US\$ for the advanced surgery and 79.8 US\$ for the fixed surgery.

Patients and their attendants had to stay near the medical centre longer in the fixed strategy (10 days) than in the advanced strategy (4.3 days). As patient attendants are generally of working age, one can estimate the opportunity cost for this person to be 4.7 US\$ in the advanced strategy and 11 US\$ in the fixed strategy. The transport expenses were also significantly higher in the fixed strategy (5.7 US\$ compared with 1.6 US\$).

When consultation and surgery fees are added to these costs, we obtain a total cost of 26.6 US\$ for the patient and their family in the advanced strategy and 36.5 US\$ in the fixed strategy.

However, the unit cost is different depending on the patient residence. If the patient lives in the district or in the city where the regional hospital lies, it is much lower (20.3 US\$ and 21.9 US\$ for the advanced and fixed strategy respectively) than if living out of this town (34.1 US\$ and 45.2 US\$ for the advanced and fixed strategy respectively).

The cost difference between both strategies is very significant if the patient has to travel.

Discussion:-

The main objective of this study was to compare the cost and effectiveness of two cataract surgery strategies (advanced and fixed) in order to aid decision-makers in facilitating access to cataract surgery for the largest number of blind patients. In bringing care closer to patients, it was possible to significantly increase the rate of acceptance of the intervention: 56% of the people having a cataract requiring an intervention agreed to be operated on in advanced strategy whereas only 42% accepted for the fixed strategy. In this study, one cannot blame economic barriers since surgery was offered free of charge, in case of indigence. Thus, the rate of acceptance remains insufficient and it is necessary to better understand the reasons for this reluctance in order to improve surgery uptake.

A number of patients who did not report for the third month examination could not be included in the analysis (11 patients for the advanced strategy and 4 patients for the fixed strategy). Men appear to take up cataract surgery more often than women. The percentage of men appearing for surgery (57% in advanced surgery and 53% in fixed surgery) is similar to that reported in another study conducted by Schémann *et al.* (4) in Mali (52%). This can be explained by the fact that men are heads of household and that any decision incurring expenses requires their approval. This phenomenon is not specific to Africa and was also described in India by Singh *et al.* where the proportion of men coming for surgery was 52% (5).

One of the great advantages of the advanced strategy is that it considerably reduces the distance to be travelled in order to be operated on. If the district patients had to go to Mopti, they would have travelled between 75 km and 270 km and the majority would not have undertaken this trip.

The technique of choice was an extra-capsular extraction with implantation of an intraocular lens in the posterior chamber. Several types of incidents or complications sometimes prevented the IOL from being inserted. These complications were generally capsular rupture of and/or vitreous loss, as well as flatness of the inner chamber, hernia of the iris, or too much patient agitation. The percentage of patients who benefited from an implant proved to be significantly higher in the advanced surgery. Capsular ruptures were not significantly different between the two strategies (6.5% in advanced surgery and 8% in fixed surgery). These figures are comparable to those found in other studies such as in Nepal (6) where there were 20.5% of capsular ruptures, in India (7) (7%) and in Nigeria (8) (6,28%).

Immediate post-surgery complications were limited to oedemas of the cornea, keratitis and conjunctiva chemosis. No late complications such as iris hernia or uveitis were noted three months after the intervention. We did not note any capsular opacity during this last examination, but a three month period is too short to draw conclusions. In the event of later sight depreciation, the patients were invited to return to the medical centre at the time of the medical team visit to undergo a possible capsulotomy. In the two strategies, the functional results observed were satisfactory with more than 90% of patients having a corrected vision higher than or equal to 6/19.

The percentage of good results is slightly lower in the advanced surgery (92.5%) than in the fixed surgery (98%), but the significance threshold was not reached. These results appear excellent especially if one compares them with those of a previous retrospective study carried out in Mali by Schémann *et al.* (4). This investigation had shown very poor functional results among patients operated on by intra-capsular surgery without implantation at the regional hospital - after optical correction of aphakia, only 5.3% had a vision higher than or equal to 6/19. Part of the difference in the functional results between these two studies can be attributed to better technical conditions (microscopic surgery) and the introduction of extra-capsular surgery practised by surgeons who were well trained at the IOTA. The superiority of extra-capsular surgery over intra-capsular in terms of visual recovery and satisfaction has been well-established in Madurai by Prajna *et al.* (9).

The functional results are comparable with other studies carried out in developing countries. For example, in Nepal, Ruit *et al.* (10) found that 87% and 74.1% of patients operated on in two different sites had a vision higher than 6/19 after correction. In Pakistan, Malik *et al.* (11) found that after correction, 77% of the patients having undergone an extra-capsular extraction had satisfactory vision. In Madurai, Prajna *et al.* (9) found that one year after the intervention, 96.3% of the patients having undergone an extra-capsular extraction had, after correction, a vision of at least 6/12.

The success rate observed in advanced surgery in Mali appears much higher than the one observed during the surgery carried out in the "eye camps" in Nepal (6) where only 47% of those operated on had a good vision after correction. In the present study, the rate of satisfaction among the patients operated on appeared very high for both strategies. However, it appears significantly higher in the advanced strategy. This fact could be attributed to the greater percentage of patients who benefited from implants in this group. In any case, almost all the patients operated on wished to have the second eye operated on. Therefore, these results are very different from those of Singh (5) in India where only half of patients operated on in "Eye camps" were satisfied compared with over 80% of patients operated on in the hospital.

From the societal point of view, including the opportunity costs for the patient and their family, the unit costs were quite similar in the survey conditions: 96.2 and 96.9 US\$ in the advanced and fixed strategies, respectively. These societal unit costs diminish with a higher volume of surgery. The unit cost depends on the number of persons operated on and will decrease when the volume of acts increases. For a low surgical level, the unit cost is slightly higher in advanced surgery. If more than 750 cataracts are operated on, the unit cost becomes lower in the advanced conditions (Figure 1).

From the provider point of view, the advanced surgery is forcibly more expensive because of costs related to team mobility. In the study conditions (with 335 patients in advanced and 250 in fixed surgery) the unit cost for the structure appears to be higher in the advanced strategy (88.8 US\$) than in fixed strategy (79.8 US\$). Whatever the number of acts the unit cost will always remain higher in advanced surgery.

The objective was to operate 500 patients a year in the Mopti region by advanced strategy. This objective was reached in 2004. The societal unit cost was then 77.1 US\$ and the provider unit cost 69.7 US\$. This last figure can be compared to other studies carried out in India (12) or in Nepal (10;13) which stated a unit cost varying between 20 to 53 US\$ (converted into the rate of the US \$ in 2000). However, these do not include program costs which are estimated to be between 24 and 68 US\$ by Baltussen *et al.* (14).

From the patient point of view, the cost including surgical fees, travel expenses and opportunity cost is significantly lower in the advanced strategy than in the fixed strategy (26.6 vs. 36.5 US\$). This difference of 9.9 US\$ is important. In reality, , the difference would be greater since most cases live in other districts than that of Mopti and they would have a greater distance to travel than the patients operated on in the Mopti surgical centre during the study. If one takes an average distance of 150 km to travel for surgery, the cost related to transport would be 21,4

US\$ and the total cost for the patient 52.2 US\$ instead of 26.6 US\$. The patient would then have to pay double for being operated on in the regional hospital. The option for an inhabitant from a district other than that of Mopti to be operated on in their district health centre is thus important since it reduces the cost by about half.

Barriers relating to geographical accessibility can thus be reduced by the advanced surgery. This approach implies a good organisation and rigorous logistics. It also causes an extra cost linked to mobility. This extra cost decreases with the volume of operations carried out and makes it possible to engage in a virtuous circle where an improvement in care supplied brings about a rapid increase in demand. This was seen in the flooded zones which were the areas hardest to access and where uptake was slow at first but demand for surgery later reached that of the most accessible zones. When extended to the whole country, this approach will make it possible to considerably reduce arrears of cataract to be operated.

One of the major advantages of the advanced surgery approach that we used was to carry it out in a perfectly integrated way into the existing health system. One phenomenon needs to be underlined: this activity is not implemented at the expense of structures and teams already in place in the districts, but tends on the contrary to reinforce them. One will note that surgical activity in the majority of district hospitals is extremely reduced and having a regular flow of surgical patients can but develop and give more credit to hospitals and health care teams. Therefore, it is a system in which everyone will gain.

Conclusion:-

To operate the patients by mobilising a regional ophthalmic team at the district level appears to be as cost effective as a classical fixed strategy. This innovative strategy should allow, when generalised to all Mali, to operate most of the patients needing surgery.

Table 1:-Activities completed

Strategy	Fixed	Advanced
Activity	Number	Number
Consultation	7032	3350
Cataracts diagnosed	585	595
Cataracts operated	250	335
Patients included	104	210
Patients examined after 90 days	100	199

Table 2:-Population by strategy

Population	Strategy 1 Fixed	Strategy 2 Advanced	P value
Age	64.8	66.0	0.89
Gender			
Male	53.00	56.80	0.53
Female	47.00	43.20	
Schooling	8.00	5.50	0.41
Ethnic group			
Dogon	18.00	44.70	
Fulani	25.00	25.10	
Bambara	21.00	10.60	
Other	36.00	19.6	
Profession			
Farmer	45.30	67.30	
Herder	9.40	8.80	
Other	45.30	56.50	
Distance =0	38.00	55.00	0.05
Aver. distance	40.45	20.35	0.0003
AV pre-op>LP	14.00	13.00	0.8
Duration>2years	31.00	43.00	0.045

Table 3:-Results by strategy after three months

Results after 3 months	Strategy 1 fixed %	Strategy 2 advanced %	P-value
IOL	79.00	88.00	0.04
Vitreous loss	11.00	8.00	0.39
Capsular rupture	8.00	6.50	0.63
Any incident per-op	25.00	13.00	0.009
Surgery constraint	10.00	10.55	0.88
AV without correction <6/60	2.0	4.5	0.23
6/60-6/30	44.0	36.20	0.17
≥6/19	54.0	59.3	0.38
AV with best correction <6/60	0	0	
6/60-6/30	2.0	7.50	0.09
≥6/19 (success)	98.50	92.50	0.052
Satisfaction	90.00	96.00	0.039

Table 4:-Univariate Analysis of success determinants

	%	Success	p
Age			
≤65	50.33	96.69	0.076
>65	49.67	91.95	
Gender			
Male	55.33	92.17	0.071
Female	44.67	97.01	
Strategy			
1 (Fixed)	33.33	98.00	0.052
2 (Advanced)	66.66	92.50	
Eye operated			
RE	53.33	93.13	0.33
LE	46.67	95.71	
AV pre-op			
>LP	13.33	95.00	0.845
≤LP	86.67	94.23	
Duration			
≤24 months	61.00	94.54	0.85
>24 months	39.00	94.01	
Distance			
0	49.33	97.30	0.028
>0	50.67	91.45	
Implant			
Yes	85.00	96.47	<0.0001
No	15.00	82.22	
Vitreous loss			
No	91.00	95.97	<0.0001
Yes	9.00	77.78	
Capsular Rupture			
No	93.00	95.70	<0.0001
Yes	7.00	76.16	
Any incident per-surgery			
No			
Yes	83.00	96.39	0.001
	17.00	84.31	

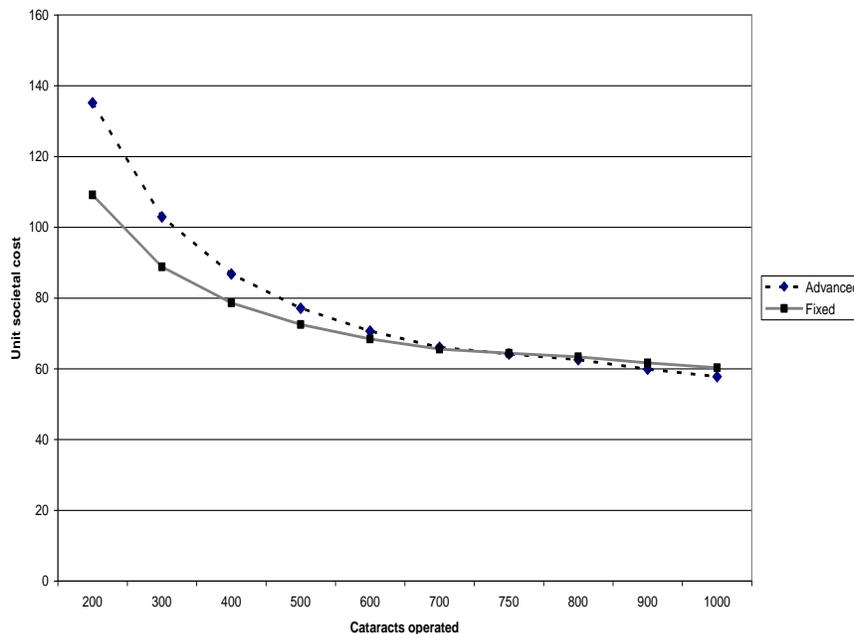
Table 5:-Multivariate Analysis of results and complications

	Success (best corrected visual acuity)			Uncorrected visual acuity			Any preoperative complication		
	OR	P value	IC	OR	P value	IC	OR	P value	IC
Age ≤65	0.47	0.20	0.15-1.47	0.53	0.013	0.32-0.87	0.82	0.54	0.43-1.56
Gender M/F	0.47	0.22	0.15-1.47	1.99	0.007	1.21-3.29	0.85	0.61	0.44-1.61
VA D0 ≤PL	0.96	0.96	0.20-4.57	0.96	0.91	0.48-1.93	0.52	0.12	0.23-1.18
Duration	1.11	0.84	0.39-3.10	0.84	0.48	0.52-1.36	1.50	0.22	0.79-2.83
Eye L/R	1.83	0.25	0.65-5.19	1.13	0.65	0.70-1.81	1.18	0.60	0.79-2.83
Strategy 2/1	0.25	0.073	0.05-1.14	1.24	0.40	0.75-2.04	0.42	0.007	0.22-0.79

Table 6:-Cost of cataract surgery in US\$

Governmental cost		Fixed			Advanced		
		unit	n	T	unit	n	T
	Building			113.1			169.7
	Salaries			3370.2			4730.1
	Overheads			1060.3			812.6
	surgical equipment			6608.6			4204.9
	Operating room			1053.1			0.0
LCI	Perdiems			0.0			3574.0
	Vehicles			0.0			5543.5
	Info / IEC			0.0			319.9
				12205.3			19354.7
	Consumables	31.0	250.0	7750.0	31.0	335.0	10385.0
Patient	Transportation	5.7	250.0	1425.0	1.6	335.0	536.0
	Other	0.4	250.0	100.0	1.1	335.0	368.5
	Time opportunity cost	11.0	250.0	2750.0	4.7	335.0	1574.5
Total societal cost				24230.3			32218.7
Average societal cost				96.9			96.2
Average provider cost				79.8			88.8
Average patient cost				36.5			26.6

Figure 1:-Unit societal cost by strategy and by number of cataracts operated



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