Original article

Perioperative complications of trabeculectomy with releasable sutures at tertiary eye center

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Abstract

Background: Trabeculectomy is a commonly performed surgical procedure for management of glaucoma in Ethiopia. The purpose this study is to describe the frequency and types of surgical complications documented during and within the first post-operative month after trabeculectomy with releasable sutures.

***Methods*:** Retrospective chart review of 220 eyes of 211 patients who underwent trabeculectomy with scleral flap closure by means of two releasable and one permanent sutures at tertiary center.

***Results*:** Complications encountered were 8.2% (18 eyes) and 47.3% (104 eyes) intraoprative and postoperative respectively. Twenty-one eyes had more than one complication. Anti-fibrotic agents (Mitomycin C and 5-Fluorouracil) were used for 89.1% of the eyes. Conjunctival tears or holes (3.2%), bleb hemorrhage (1.8%), and scleral-flap-related problems (1.8%) were the types of intraoperative complications. Elevated intraocular pressure (IOP) (17.7%), hypotony (15.4%) and bleb leakage (9.6%) were the most common postoperative complications; while shallow or flat anterior chambers (5.5%) and choroidal effusion (2.3%) were less frequent. Surgical intervention was done for five eyes, whereas, in 90 (86.5%) eyes the complications were self-limiting or managed by suture removal.

Conclusion: This study has identified the majority of the complications encountered in trabeculectomy with scleral flap closure with releasable sutures to be transient and self-limiting.

***Recommendation*:** For resource limited countries like Ethiopia, trabeculectomy with temporary tighter scleral flap closure is a cost-effective means to minimize the sight-threatening complications of procedure, and it can be practiced by all ophthalmic surgeons managing glaucoma patients. [*Ethiop. J. Health Dev.* 2015;29(2):111-118]

Introduction

Glaucoma is a major eye problem and a leading cause of global irreversible blindness afflicting 4% of population age 40-80 Years. The global prevalence was estimated to be 64.3 million, increasing to 76.6 million in 2020 (1-3). In sub-Saharan Africa glaucoma is more prevalent and thus has been considered as a major public health issue for the region (4).

The goal of the currently available modalities of glaucoma therapy whether medical, laser, or surgical, is to preserve visual function by lowering the IOP below a level that is unlikely to produce further damage to the optic nerve head (5-7). Among all types of filtration procedures, including minimally invasive glaucoma (MIGS), trabeculectomy has remained to be the gold standard and most widely performed surgery after Cairns and Watson introduced the technique in 1968 (8, 9). This has been the mainstay of surgical glaucoma therapy in Ethiopia as well. Trabeculectomy can be performed by all ophthalmic surgeons, and it is rewarding when the intra- and postoperative course is smooth and the IOP comes down to the desired level. However, it could be discouraging not only to the operated patient and the surgeon but also to other glaucoma patients when the surgery is complicated or fails, which is not uncommon experience.

Modifications and refinements have been done to the original procedure to improve the outcome and prevent complications (10-12). Scleral flap closure with releasable sutures is one of the modifications that has been used not only to minimize the postoperative complications, but also to titrate the amount of flow and to improve the long-term success rate (13). Both scleral flap closure with releasable sutures and laser suture lysis are equally effective for their intended purpose (14). However, the expensiveness of equipment required for suture lysis, such as the laser machine itself and the special suture lysis contact lens makes this procedure not being practiced not only in our country, but also by ophthalmologists practicing in resource limited countries.

There have been retrospective as well as prospective studies that have demonstrate higher incidence of postoperative hypotony, anterior chamber shallowing, and choroidal effusion following the standard trabeculectomy with two permanent scleral flap closure sutures, than in trabeculectomy with releasable sutures that permits temporary tighter closure of the scleral flap

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with multiple sutures, in order to minimize the aforementioned sight-threating complications (15-17).
Shallow anterior chamber, hyphema, uveitis, and choroidal effusion were the most common types of post-operative complications in a retrospective study of standard trabeculectomy reported by Alemu B in 1997, from the same center where the current study was done (18). The first author of this article, the surgeon, had also observed frequent postoperative shallow anterior chamber, hypotony and choroidal effusion with her experience of the standard trabeculectomy prior to adopting the modifying technique of sclera flap closure with multiple and releasable sutures.

Therefore, the purpose of this study is to describe the frequency and types of intraoperative and first one-month postoperative complications of trabeculectomy with releasable sutures.

Methods
We ran a retrospective chart review of glaucoma patients who underwent trabeculectomy with releasable sutures between Jan 2013 and Jun 2014. The review was conducted in August and September 2014 at the Glaucoma Clinic of the Department of Ophthalmology, Addis Ababa University, Menelik II Hospital (a tertiary center). The study was ethically approved by the research and publication committee of the Department of Ophthalmology, and the data were handled confidentially.

Children operated for glaucoma and those who underwent trabeculectomy that was combined with cataract surgery were excluded from the review. Similarly charts of patients, who were lost during the first one month period of their follow-up or kept incomplete were excluded.

All surgeries included in the study were performed by one glaucoma surgeon (the first author), who closed the rectangular sclera flap (4mm X 3mm), after 2mm X 2mm corneosclreal block excision and peripheral iridectomy, with two releasable and one permanent sutures. The surgeon used horizontal mattress suture at the middle of the conjunctival flap closure to the limbus in addition to the lateral wing sutures to secure water tight closure. Mitomycin C and 5-FU were the anti-metabolite agents used, except for eyes with thin or fragile conjunctiva.
List of patients who undergone trabeculectomy in the stated period of time was compiled from the registration book in the operation theatre and the respective charts were identified for review. As is customary for glaucoma unit each chart had specific and different forms for detailed checklist of initial patient evaluation and follow-ups, pre-operative summary and surgical note and postoperative follow-ups. The routine schedule of postoperative follow-up evaluation for uncomplicated surgery is on the first day, one week, one month, three months and every three months then after.

The preoperative data that was retrieved from the patients' charts included age, gender, type and stage of glaucoma [early being a vertical cup/disc ratio (VCD) of < 0.6, moderate 0.7 to 0.8, and advanced > 0.9] (19) , preoperative anti-glaucoma medication (s), prior ocular surgery, and history of any systemic diseases. The type of anti-fibrotic agents used, whether the conjunctiva was thin or not, scleral flap thickness, and any encountered complications were the types of intraoprative data collected. Postoperative complications related to the filtration surgery and their interventions documented during the first post-operative month were the additional data retrieved.

***Operational definition*:** In order to make comparison with other studies possible, the following operational definitions were used. Hypotony was defined as an IOP below 6 mmHg. Intraocular pressure above 21 mmHg and visual acuity reduction of greater than two Snellen lines noted on two visits were considered as a complication. The anterior chamber was considered as shallow when there was peripheral irido-corneal touch or central +1 (1mm) depth, and flat when there was lenticulo-corneal touch.

Statistical Analysis: Data were coded, doubly entered into a computer, cleaned and analyzed using the SPSS 21.0 software. Patients'/ eyes characteristics are presented as frequencies, proportions, means and standard deviations. Statistical associations were checked between variables using chi-square test, and a P value of <0.05 was considered statistically significant.

Results
A total number of 220 eyes of 211 patients were enrolled in the review, while five patients who lost to follow-up were excluded. The mean age of the patients was 56.7 years (SD 11.8 years; range 17 to 80 years) with a high proportion of males (69.7%). Age and sex distribution of the patients is described in detailed in Table 1.

Table 1: **Age and sex distribution of the study Patients who Underwent Trabeculectomy with Releasable Suture, Menelik II Hospital, Addis Ababa, Ethiopia, 2013- 2014**

Age category (years)	Sex		Total
	Female (N,%)	Male	
<30	0	6	6
30 -39	5	4	9
40-49	15	23	38
50 59	15	32	47
60-69	23	59	82
70+	6	23	29
Total	64	147	211

Prior to surgery, anti-glaucoma medications had been used in 126 eyes (57.3%) for more than six months. Eight eyes had had previous standard trabeclectomy. Diabetes mellitus (10 patients, 4.7%) and systemic hypertension (12 patients, 5.7%) were the two common types of systemic diseases documented. Pseudoexfoliative glaucoma was the commonest diagnosis in 100 (45.5%) eyes followed by primary open-angle glaucoma in 86 (39.1%) eyes. Majority of the cases had advanced stage glaucoma, 72.3% (159 eyes) (Table 2).

Table 2: **Preoperative clinical characteristics of patients underwent trabeculectomy with releasable suture, Menelik II Hospital, Addis Ababa, Ethiopia, 2013-2014**

Characteristics	No. %
Glaucoma type	
PXG*	45.5 (100)
POAG**	39.1 (85)
ACG***	8.2 (18)
GOAG****	4.5 (10)
Others	2.8 (6)
Glaucoma stage	
Early	15.0 (33)
Moderate	12.7 (28)
Advanced	72.3 (159)
Period of Glaucoma drug use (months)	
<6	42.7 (94)
6-12	20.5 (45)
>12	36.8 (81)
Previous intraocular surgery	
Trabeculectomy	3.6 (8)
Others	1.9 (4)

PXG*: Pseudoexfoliative glaucoma, POAG**: primary open angle glaucoma, ACG***: angle closure glaucoma, JOAG****: Juvenile angle closure glaucoma

The proportions of right and left eyes were (49.1%) and (50.9%), respectively. Anti-fibrotic agents were used in 89.1% of the eyes [Mitomycin C in 130 eyes (59.1%) and 5-Fluorouracil in 66 (30.0%)]. The sclera flap was dissected as half thickness of the sclera in 185 eyes (84.1%). And 46 eyes (20.9%) were found to have thin conjunctiva intraoperatively (Table 3).

Table 3: **Operative details of trabeculectomy with releasable suture, Menelik II Hospital, Addis Ababa, Ethiopia, 2013-2014 (n=220)**

Details	No. %
Operated eyes	
Right (OD)	108 (49.1)
Left (OS)	112 (50.9)
Anti-fibrosis agent	
Mitomycin C	130 (59.1)
5-Fluorouracil	66 (30.0)
Without	24 (10.9)
Scleral Flap thickness	
One-third	27 (12.3)
Half	185 (84.1)
Two-third	8 (3.6)
Thin conjunctiva	
Yes	46 (20.9)
No	174 (79.1)

The frequency of complications were 8.2% (18 eyes) intraoperatively and 47.3% (104 eyes) postoperatively. The number of eyes with one, two, three, four and five post-operative complications were 83, 15, 2, 3 and 1, respectively, making the total number of complications to be 136. Among the intraoperative complications, conjunctival tear or hole was the most common, occurring in 7 (3.2%) eyes. Bleb hemorrhage and scleral flap problems were equal in frequency, occurring each in 4 (1.8%) eyes. Three of the scleral flap problems were partial tear and the fourth was full detachment, all required suturing.

Three commonly noted post-operative complications were elevated IOP, hypotony and bleb leakage. Elevated IOP (> 21mm Hg) was found in 39 (17.7%) eyes. The pressure was lowered in 30 eyes by removing one or two of the releasable sutures and in 7 eyes by applying pressure over the bleb. The pressure could not be lowered in two eyes, which necessitated the use of anti-glaucoma drugs.

Hypotony (IOP < 6 mm Hg) occurred in 34 (15.4%) eyes and it was related to the removal of the releasable sutures in 9 eyes. The complication was transient and recovered in 29 eyes with conservative management, while the remaining five developed further complications.

Bleb leakage was documented in 21 (9.6%) eyes, which was self-limiting in 17 eyes with observation, while two eyes needed pressure patching and the other two required surgical intervention.

Anterior chamber shallowing or flattening occurred in 12 (5.5%) eyes. It was self- limiting without further complication in six out of ten eyes with shallow AC. One of the two eyes with flat anterior chamber was managed with AC reformation; while the second case had choroidal effusion that required intervention.

Twelve eyes (5.5%) had visual acuity reduction of more than 2 Snellen-chart lines. The eyes had advanced glaucoma (7 eyes), choroidal effusion (3 eyes), uveitic glaucoma (1 eye) and angle-closure glaucoma (1 eye).

Choroidal effusion occurred in 5 eyes (2.3%). Three of the eyes were related to releasable suture removal resulting shallow AC and hypotony, the fourth was with flat AC and the fifth was diabetic and hypertensive case. The condition resolved spontaneously with medical management in three eyes, while two required surgical intervention.

Conjunctival recession, encapsulated blebs and hypotony maculopathy were the less common types of complications encountered. The least complication types that occurred each in one eye were bleb dellen effect, hyphema, bleb hemorrhage and posterior synechiea, which are aggregated under others in Table 4.

Table 4: **Frequency of intra-operative and post-operative complications in 220 Eyes, n (%)**

Complication	Intra-operative (n=220)	Post-operative (n=220)
Retrobulbar hemorrhage	3 (1.4)	0
Bleb hemorrhage	4 (1.8)	0
Conjunctival hole/tear	7 (3.2)	0
Scleral flap problem	4 (1.8)	0
Elevated IOP* (>21 mmgH)	0	39 (17.7)
Hypotony	0	34(15,4)
Bleb leakage	0	21 (9.6)
Shallow or flat anterior chamber	0	12 (5.5)
>2 line VA**	0	12 (5.5)
Choroidal effusion	0	5 (2.3
Conjunctival recession	0	4 (1.8)
Encapsulated bleb	0	3 (1.4)
Hypotony maculopathy	0	2 (0.9)
Others***	0	4 (2.0)

IOP*: Intraocular pressure, VA**: visual acuity, Others***: Delen, Hyphema, Bleb hemorrhage and Posterior synechiae

Seventy- seven eyes (35%) required one or two releasable suture removal within the 4 weeks postoperative follow-up period for elevation of IOP greater than 15 mm Hg in 47 eyes and above 21 mm Hg in 30 eyes. The removal was required in 47 (36.2%), 22(33.3%) and 8 (33.3%) eyes that had undergone surgery with MMC, with 5-FU, or without anti-fibrotic agents, respectively (P-0.911). Choroidal effusion drainage (2 eyes), conjunctival recession re-suturing (2 eyes) and anterior chamber reformation (1 eye) were the types surgical intervention performed.

Other than the eyes with vision reduction and eyes requiring surgical interventions, the majority of the postoperative complications (90 eyes, 86.5%) were either transient, resolving with conservative management or by suture removal.

Patients' age, sex, use of preoperative anti-glaucoma medications, the presence of systemic diseases and scleral flap thickness had no significant association with post-operative complications.

Complication in relation to the type of glaucoma occurred in 47.0 % (47/100), 50.0% (43/86), 33.3% (6/18), 60% (6/10) and 33.3% (2/6) eyes with the diagnosis of PXG, POAG, ACG, JOAG and others, respectively; which had no statistical significant association (P - 0.73). On the other hand, the distribution of the total 136 complications (occurred in 104 eyes) among the types of glaucoma is depicted in cross tabulation (Table 5). The table shows the distribution of the complications to be 60 (44.1%), 55 (40.4%), 6 (4.4%), 9 (6.6%) and 6 (4.4%) in PXG, POAG, ACG, JOPG and others, respectively. The rate of complication per eye with complication would the same for PXG and POAG, i.e, 1.3, and the rate for ACG, JOAG and others would be 1.0, 1.5 and 3.0, respectively.

Table 5: **Distribution of postoperative complications (N=136) among types of glaucoma**

Post-op complications	Type of Glaucoma					Total (%)
	PXG	POAG	ACG	JOAG	Others	
High IOP	17	19	1	1	1	39 (28.7)
Hypotony	15	13	3	2	1	34 25.0)
Bleb leakage	8	9	0	3	1	21 (15.4)
VA reduction	6	4	1	0	1	12 (8.8)
Shallow AC	5	4	1	1	1	12 (8.8)
Choroidal effusion	3	2	0	0	0	5 (3.7)
Conj. Dehiscence	1	2	0	1	0	4 (2.9)
Encapsulated bleb	1	2	0	0	0	3 (2.2)
Maculopathy	0	0	0	1	1	2 (1.5)
Others*	4	0	0	0	0	4 (2.9)
Total (%)	60 (44.1)	55 (40.4)	6 (4.4)	9 (6.6)	6 (4.4)	136 (100)

Others*: Dellen, Hyphema, Bleb hemorrhage and Posterior synechiae in PXG

The frequency of complication among eyes operated with MMC, 5-FU and without was 43.8% (57/130), 48.5% (32/66) and 62.5% (15 /24), respectively; that had no significant statistical association (P- 0.24). Additionally, the distribution of the total 136 complications (occurred in 104 eyes) among eyes operated with MMC, 5-Fu and without is depicted in Table 6. As in this cross tabulation, the proportion of the complications was found to be 79 (58.1%) in MMC, 36 (26.5%) in 5-FU and 21 (15.4%) in eyes without anti-fibrotic agent. The rate of complication per eye with complication would be 1.4 in MMC, 1.1 in 5-FU and 1.4 in eyes without anti-fibrotic agent. Besides, high IOP and hypotony per eyes with complications were common in MMC (23/57 eyes, 40.4 %, each).

Table 6: **Distribution of post operative complications (N=136) in relation to type of anti-fibrotic agents used**

Post-op complications	Anti metabolism used			Total (%)
	MMC (24 eyes)	5-FU (66 eyes)	NONE (24 eyes)	
High IOP	23	12	4	39 (28.7)
Hypotony	23	7	4	34 (25.0)
Bleb leakage	12	8	1	21 (15.4)
Shallow AC	7	2	3	12 (8.8)
VA reduction	7	2	3	12 (8.8)
Choroidal effusion	2	0	3	5 (3.7)
Conj. Dehiscence	0	2	2	4 (2.9)
Encapsulated bleb	2	1	0	3 (2.2)
Maculopathy	2	0	0	2 (1.5)
Others*	1	2	1	4 (2.9)
Total (%)	79 (58.1)	36 (26.5)	21 (15.4)	136 (100)

Others*: Posterior synechiea in MMC, hyphema and bleb hemorrhage in 5-FU, and Dellen in None

Discussion

This review has showed both intraoperative and postoperative complications and the required interventions of the eyes underwent trabeculectomy with scleral flap closed with one permanent and two releasable sutures.

The frequency and types of intraopeartive and postoperative complications of our study may not be directly compared with other reported trabeculectomy studies which had some variation in surgical techniques, study design, definition and follow-up period.

Hyphema (37 eyes 8%), conjunctival buttonholes (1.1%) and sclera flap problem (0.7%) were the common types of intraoperative complications of a prospective study of standard trabeculecteomy (with permanent sclera flap suture closure) reported by the Collaborative Initial Glaucoma Treatment Study (CIGTS) (20). Whereas, in our study, conjunctival hole /tear (3.2%), bleb hemorrhage (1.8%) and sclera flap problem (1.8%) were the common types. The absence of hyphema as a complication in this study could be explained by the presence of some technical variation, placing the corneoscleral block excision anterior to the sclreal boarder, and the surgeon did not document bleeding from the wound site into the anterior chamber as an intraoperative complication if it was small amount that resolved with irrigation.

The frequency of postoperative complication of this study, 47.3%, 220 eyes, is relatively lower as compared to that of the standard trabeculectomy , 50%, 465 eyes, of CIGTS report, same duration of postoperative follow-up; but higher as compared to 43%, 470 eyes, of a retrospective study of standard trabceulectomy with more than 3 months follow-up, reported by Alemb B (18). On the other hand, comparative studies of standared trabeculectomy versus trabeculectomy with releasable sutures have reported more complications in

the standard groups (14-17,21). The drawback of trabeculectomy is its complications, which could vary with technical variations and among surgeons. What matters is the nature and consequences of the complications. In this study even if the rate of complication is high, most of the complications (90 eyes, 86.5%) were transient and self limited. Besides, the elevated IOP that is considered as one of the complications, being the commonest, occurred in 39 eyes, was due to the temporary tighter closure of the Scleral flap with more sutures.

The leading types of postoperative complications among 220 eyes in our study were elevated IOP (17.7%), hypotony (15.4%) and bleb leakage (9.6%); while in the CIGTS were shallow or flat AC (13%), choroidal effusion (11%) and hyphema (10%). Shallow AC (29%), cataract (24%) and hyphema (24%) were also the common types of complications in that of Alemu B report. Shallow or flat AC was the commonest type of complication in the two studies, which was quite less (5.5%) in our review, that can be explained by the tighter closure of the sclera flap using more number of sutures. Again there was no postoperative incidence of hyphema documented in this study; which could be due to the reason mentioned above, and also the placement of the posterior sclera block anterior to the sclera border that minimizes bleeding (21).

The high IOP (> 21 mm Hg) considered as postoperative complication is expected from the tight sclera flap closure with three sutures. This can be confirmed by reports of comparative studies from India China, and Turkey that have indicated elevated IOP to be more common in the releasable groups prior to suture removal (15-17). The condition was easily manageable by removing the releasable sutures, as was done to 30 of 39 eyes. However, one has to keep in mind the possibility of hypotony from overflow which actually occurred in 9 eyes leading to further complications in 4 eyes. To minimize hypotony and shallow anterior chamber, the surgeon prefers to remove sutures after the first week of surgery.

The frequency of hypotony that occurred in 34 eyes (15.4%) was high as compared to that of standard trabeculectomy in the CIGTS (0.9%), in which a definition was not given (20). Comparative studies from India and China have indicated hypotony to be more frequent in the standard than the releasable groups; 20.4% vs 9.1% and 53% vs 20% respectively (15,16). On the contrary, the report from Nepal showed equal frequency of hypotony (IOP < 6 mmHg) in both groups (15% and 14.3%). Despite the variation in the reports, the role of releasable sutures in reduction of the rate of hypotony is undeniable. Hypotony can be recovered without further complication with conservative managements as happened in 29/34 (85.3%) eyes. The surgeon has observed that hypotony to be innocuous and transient as long as the anterior chamber remained deep.

The bleb leakage that occurred in 21 eyes (9.6%) is comparable with that of CIGTS (9%). The number of eyes with leakage would have been much higher if limbal mattress suture had not been applied. The mattress suture enables tighter closure and facilitates healing as the fresh limbal conjunctiva wound edges can be attached together.

Shallow anterior chamber either from leakage, over filteration or reduced aqueous production is not uncommon in the early postoperative weeks (11). Sclera flap and conjunctival tight closure can reduce the complication. This can be seen from Alemu B study, in which shallow anterior chamber from excessive drainage was the leading type of complications that occurred in 29% eyes (18), comparing in 5.5% eyes in our study. It is also lesser than the CIGTS (13%) report. The reports of comparative studies of India and Turkey and Nepal have indicated shallow AC to be more common in standard trabeculectomy group than trabeculectomy with releasable sutures, 30% vs 4.7%, 34.2% vs 6.2% and 33% vs 7.0% , respectively (15,17,22). The condition is self limiting as happened in 6 of the 10 eyes in our study. However, when it is associated with hypotony there is risk of developing choroidal effusion from low grade inflammation (23) as was the case in three of the eyes in this study. Flat chamber that occurred in only 0.01% eyes is quiet less as compared to the report by Alemu B (4%).

Choroidal effusion associated with hypotony and shallow or flat anterior chamber that occurred in 5 eyes (2.3%) is less when compared with the standard trabeculectomy of the CIGTS (52 eyes, 11%) and 11eyes (4%) of Alemu B report. Three of the eyes with choroidal effusion were related to hypotony and shallow anterior chamber following removal of releasable suture.

Releasable suture removal was required for eyes operated with anti-fibrotic agents and without in a similar proportion with IOP greater than 15 mm Hg (77 eyes, 35%) during the study period. This shows the usefulness of placement of extra and manageable sutures to titer the level IOP and prevents hypotony, shallow anterior and choroidal effusion in the immediate postoperative period.

Most of the considered postoperative complications (90 eyes, 86.5%) in the study were either transient, resolved with conservative management or releasable removal, only 5 eyes (2.3%) required additional surgical intervention. This was also approved by a literature review reported from Wills Eye Institute, US, that has detected releasable sclera flap sutures not only to reduce the incidence of postoperative complications but also fewer cases to required AC reformation and choroidal effusion drainage (13).

Trabeculectomy in PXG is said to be associated higher complications due to the effect of the syndrome in the eye (24), but this was not the case in this study, which might be due to the sclera flap closure with more sutures, that prevents shallow anterior chamber, inflammation and other complications.

Even though there was no statistically significant difference among the anti-fibrotic agents and without, eyes operated with MMC had more rate of complications per eye with complication, and also there was more common hypotony and high IOP (23/ 57 eyes, 40.4% each). This higher rate can be explained by the nature of MMC, which has higher potency of delaying wound healing that results in more frequent and number complications (25,26). The rate of complication per eye (1.4) was higher in the without agent and that was because of those eyes operated without agents were eye with thin and fragile conjunctiva,, which is a risk for complication.

Limitation of the study: a number of complications might have been missed both intra-operatively and postoperatively from lack of a standardized format as in a prospective study.

Conclusion:
This study has identified the majority of the complications encountered in trabeculectomy with scleral flap closure with releasable sutures to be transient and self-limiting.

***Recommendation*:**
For resource limited countries like Ethiopia, trabeculectomy with temporary tighter scleral flap closure is a cost-effective means to minimize the sight-threatening complications of procedure, and it can be practiced by all ophthalmic surgeons managing glaucoma patients.

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