



## SURGICAL MANAGEMENT OF HUGE CYSTIC BLEBS IN A PRIVATE HOSPITAL SETTING TWO-CASE REPORTS

<b>Chaha K</b>	Department of Ophthalmology, Benue State University Teaching Hospital Makurdi
<b>Chinda D*</b>	Department of Ophthalmology, ABUTH Shika, Zaria *Corresponding Author
<b>Anongu It</b>	Department of Radiology, Benue State University Teaching Hospital Makurdi.

### ABSTRACT

**AIM:** To highlight the challenges of surgical management of cystic blebs

**METHODOLOGY:** Two eye or cases with huge cystic blebs that underwent surgical reconstructions were retrospectively reviewed along the lines of post-operative bleb morphology, visual acuities and intra-ocular pressures.

**RESULTS:** There was no significant difference in the visual acuities or the IOP's post-operatively with rather flatter, diffuse with good and functional blebs.

**CONCLUSION:** Careful surgical reconstruction of cystic blebs especially the huge types which are usually unsightly and causative of dellen's ulcers and other annoying symptoms is advocated as effective and without any significant side effects.

**KEYWORDS :** Cystic blebs, Careful, Surgical , Reconstruction.

### INTRODUCTION

The presence of Blebs in the eye is suggestive of post-trabeculectomy. Blebs are bladder-like structures with thin walls measuring more than 5mm in diameter and usually filled with fluid<sup>1</sup>. The morphology of the bleb gives insight into the functionality of the bleb and subsequent IOP control. Cystic and overhanging blebs have the potentials of causing dellen's corneal ulcers with severe irritation, tearing and redness of the eyes. Astigmatism has also been observed as one of the complications of cystic and overhanging blebs (site refpls). A number of cystic blebs also end up being non-functional with resultant increases in the intraocular pressures after successful drainage procedures. For the sake of this study we choose to refer to any bleb the spreads beyond 3 clock hours of the eyeball and overhanging the cornea as a huge bleb. For the purpose of clarity the workers have decided to tag any bleb that is cystic, overhanging the cornea, and about 3-4 clock hours in size as huge. Most huge cystic blebs are symptomatic.

There are several modalities of managing huge, overhanging, cystic and symptomatic blebs. These are classified into conservative, medical and the surgical modalities.

Conservative management of the cystic and symptomatic bleb includes simple observation, blb massage with or without anaesthesia, reassurance and use of lubricants . Medical management of the cystic blebs include use of irritants like the trichloroacetate application to induce shrinkage of the bleb , has also been used particularly in huge blebs with hypotony, topical steroids, aqueous suppressants, bleb massaging with or without topical anaesthetics have also been used as conservative approaches. Surgical approaches including Nd-Yag laser application to cause disruption of the thick wall of the cyst, use of cryoapplication over the bleb also as an irritant to induce shrinkage of the bleb, needling of the tenon's cyst and surgical excision of the walls of the cyst<sup>1</sup>.

The pathogenesis of cystic bleb is not exactly known and so there is no guarantee it will not recur after excision. Some have attributed the use of anti-metabolites as a predisposing factor for the formation of huge cystic blebs. The commonest complications of cystic bleb include astigmatism, dellen's ulcers, and failed filtrations AIM: The main aim of this study is to highlight the possible surgical outcome post surgical bleb revisiting in our environment.

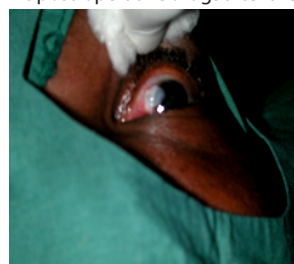
**METHODOLOGY:** This is a retrospective review of two cases of huge cystic and symptomatic blebs following trabeculectomy

### CASE REPORT 1

A 50 year old man presented with complaints of foreign body sensation, tearing, occasional pains and a whitish swelling in the left only Seeing Eye. He had volunteered a history of loss of vision in the

right eye due to absolute glaucoma and glaucoma surgery in the left eye in a certain hospital years back (patient was not sure of the actual date). He also agreed that he was still using anti-glaucoma eye drops to further control the intraocular pressure in both eyes and eye ointments given to him from the same hospital which names he could not remember (probably as lubricants). His visual acuities were perception of light in the right eye and 6/9 in the left eye unaided and the conjunctiva was mildly injected diffusely in the left eye. The intraocular pressures were 23 mmHg and 13mmHg in the right and left eyes respectively, with overhanging, vascular and cystic bleb (type 1 of Kronsfield and Kansky's classifications)<sup>10,12</sup> over the supero-nasal limbus of the left eye extending to almost the mid-periphery of the cornea (see Fig.1). The cornea in the left eye stained with fluorescein adjacent to the bleb suggestive of a Dellen's Ulcer. There were peripheral iridectomy spots on the irides in both eyes. The lenses of both eyes were clear and the cup-disc ratios were 1.0 and 0.9 in the right and left eyes respectively. The patient's consent as sought and obtained in writing after explaining the procedure and possible outcomes to the patient The patient was slated for bleb revisiting. The dissection of the bleb was done in layers followed by shelling out of the tenon's cyst (tenon's cystectomy) and closing of the conjunctiva using continuous suturing technique with the 9-0 virgin silk sutures. The patient was placed on his usual IOP lowering drug including Nyolol gel nightly with the routine anti-inflammation combination covers (dexamethasone and ofloxacin eye drops respectively).

The examination on second day post-surgery revealed a visual acuity of 6/24 unaided which suggested a drop in the visual acuity in the immediate post-operative period from the entering visual acuity of 6/9 unaided in the same left eye. The intraocular pressure in the left operated eye was maintained at almost the same Intraocular pressure (14mmHg). The bleb flattened out into a diffuse bleb. The conjunctiva was moderately hyperemic with clear cornea, deep anterior chamber with minimal flares. The pupil was round otherwise the eye was normal. The patient was discharged home on his post-operative drugs after the first post-operative day.



**FIG. 1: HUGE BLEB OVERHANGING THE CORNEA (Pt-1)**



**FIG. 2: POST SURGICAL REPAIR OF CYSTIC BLEB (Pt-1)**

**CASE REPORT 2**

A 49 year old female presented to us with foreign body sensation, a protruding mass on the upper part of the eyeball with pains, intermittent tearing and redness in the left better eye. She volunteered a history of trabeculectomy in both eyes 4 years earlier. Her visual acuities were 6/9 and 6/6 unaided in the right and left eyes respectively. The intraocular pressures (IOPs) were 10 and 09 mmHg in the right and left eyes respectively. The bleb in the right eye was diffuse and avascularized while the bleb on the left eye was huge, cystic and avascularized (type 1 of Kronsfield and Kansky's classifications)<sup>10,12</sup>. The cup-disc ratios were 0.7 in both eyes. The patient's consent was sought and obtained in writing after explaining the procedure and possible outcomes to the patient. We carried out a bleb revision of the left better eye under local anesthesia during which surgery the tenon's cyst was dissected from the conjunctiva (tenon's cystectomy) and the overlying conjunctiva on the limbus was sutured with 9-0 virgin's silk sutures. The intra-ocular pressure in the left operated eye 2 days after surgery was 08mmHg and a visual acuity of 6/12. The patient was discharged home on topical (ofloxacin eye drop and ciprofloxacin eye drops), topical tropicamide with dexamethasone. Consecutive monthly follow-up examinations were uneventfully and at six months the patient's IOP was 10mm Hg and his best corrected vision was 6/5<sup>13</sup> in the same re-operated left eye



**FIG.3: HUGE CYSTIC BLEB OVERHANGING THE CORNEA (Pt-2)**



**FIG. 4: POST SURGICAL REPAIR OF CYSTIC BLEB (Pt-2)**

**LITERATURE REVIEW AND DISCUSSION**

The knowledge of bleb morphology is expected to be handy to any glaucoma specialist. The bleb is a blister or swelling. It is also used for bubble or protuberance on a cell surface<sup>1</sup>. The bleb morphology helps the glaucoma surgeon to assess the functionality of the bleb and thus the success of the trabeculectomy surgery.

According to Dr. Pro, a bleb is the end result and intention of glaucoma surgery such as trabeculectomy, express shunt, and even some non-penetrating surgery such as canaloplasty. He also believes that a bleb is an aqueous-filled cyst between the conjunctiva and sclera under the upper lid<sup>2</sup>. Blebs can either be cystic or diffuse<sup>2,12,13</sup>. Depending on the nature of the filtering bleb a number of complications can arise from bleb including bleb infections (blebitis), hypotony, endophthalmitis, dellen's ulcers, blurring of vision from astigmatism<sup>2,3,10</sup>; these are to mention but a few.

The assessment of bleb morphology can be done with naked eyes or the loupe using simple illumination source. It can be assessed with the help of the slit-lamp. For instance, the Indiana classification of bleb morphology (IBAGS) considers slit lamp images with special attention to the bleb height, the bleb extent, bleb vascularity and bleb leakage with the seidel's testing<sup>4</sup>. This is more of a slit lamp classification and so, it does not consider the intra-bleb assessments.

The ultrasound biomicroscopy, another tool for assessing the bleb is more objective, more quantitative and capable of assessing the in-bleb morphology. It however requires contact with the bleb and its axial resolution is limited<sup>5</sup>.

The anterior segment OCT is presently the preferred means for the assessment of the bleb morphology as it requires no contact with

the bleb, provides better quantitative and objective assessment of the bleb morphology, with a high cross-sectional resolution power<sup>6</sup>.

**CLASSIFICATIONS OF BLEBS**

	CLASSIFICATION	BLEB TYPE	BLEB CHARACTERISTICS
1	KRONSFIELD <sup>10</sup>	1	FUNCTIONING POLYCYSTIC BLEB
		2	FUNCTIONING DIFFUSE BLEB
		3	NON-FUNCTIONING FLATTENED BLEB
2	YAMAMOTA ETAL <sup>10</sup>	1	LOW REFLECTIVITY
		2	HIGH REFLECTIVITY
		3	ENCAPSULATED
		4	FLATTENED
3	KANSKY <sup>12</sup>	1	THIN-WALLED, POLYCYSTIC WITH ASSOCIATED GOOD FILTRATION/FUNCTION
		2	THIN-WALLED, DIFFUSE AND FAIRLY AVASCULAR WITH BIOMICROSCOPICAL MICROCYSTS ON THE SURFACE AND ASSOCIATED WITH GOOD FILTRATION/ FUNCTION
		3	FLAT, HIGHLY VASCULAR WITH ASSOCIATED MARKED SUBCONJUNCTIVAL FIBROSIS AND POOR FILTRATION/ FUNCTION
		4	ENCAPSULATED, DOME-SHAPED WITH TORTUOUS VESSELS ASSOCIATED AND WITH POOR FILTRATION/ FUNCTION <sup>6, 8,9</sup>

**CAUSES OF HUGE CYSTIC BLEBS**

Presence of neo-vascularization in the dissected and the non-dissected areas around the trabeculectomy site have been found as a predisposing factor for cystic bleb formation<sup>13</sup>. The absence of posterior tarsal artery (PTA) feeding the conjunctiva has also been found as a predisposing factor for cystic bleb formation<sup>13</sup>. Presence of the avascular area of the conjunctiva was also found by some researchers to be a predisposing factor for cystic bleb formation<sup>13</sup>. Use of antimetabolites like the 5-Fluoro-uracil and the Mitomycin-C have also been reported as predisposing causes of cystic bleb formation. Franks and Hitchings reported higher incidence of cystic blebs in patients that had 5-Fluoro-uracil during trabeculectomy<sup>14</sup>

Others researchers are of the opinion that the cause of cystic overhanging blebs may be due to the continuous lid movement over the blebs. Cordeiro, etal found out that limbus-based flap trabeculectomy techniques developed more cystic blebs than the fornix-based techniques<sup>16</sup>

**HUGE CYSTIC BLEB MANAGEMENT**

Blebs that are huge enough to cause symptoms can be revisited surgically or conservatively to alleviate the symptoms. Surgical revisiting of the huge overhanging bleb could be done using the free conjunctival autografting technique or the conjunctival rotation flapping technique<sup>6,7,8</sup>.

We tried a slightly different approach of dissecting off the conjunctiva from the tenon's cyst and then excising the tenons' cyst from the conjunctiva after which we closed the conjunctiva by sliding and anchoring it to the limbus adjacent over the ostium.

Other surgical approaches include Palmberg mattress compression suture, Autologous blood injection, Continuous wave Nd:YAG laser application over fluorescein stained conjunctiva, Trichloroacetic acid coagulation, Excision of redundant bleb, Conjunctival pedunculated grafting, Amniotic membrane, Pericardium, Dura, or Scleral patch grafts and the Transconjunctival scleral flap suture<sup>8</sup>.

A number of surgeons will however try conservative measures including use of irritants like trichloroacetate application, use of cryoapplication over the bleb also as an irritant to induce shrinkage of the bleb has also been used particularly in huge blebs with hypotony, topical steroids, aqueous suppressants, bleb massaging with or without topical anaesthetics have also been used as conservative approaches<sup>7,9</sup>. Lee, et al found out that use of Tissue plasminogen activator (tPA) a clot-specific fibrinolytic agent is effective in decreasing postsurgical fibrin formation and enhancing filtration after trabeculectomy<sup>11</sup>. Quigley, et al and others in their works concluded that surgical revision for complications after trabeculectomy is safe, effective and does not lead to loss of IOP control<sup>7,15</sup>.

### STUDY LIMITATIONS

This is a retrospective study, so a lot of information may be absent. For instance pictures during the pre-operative, post-operative and in particular, the intra-operative stages of the management are not available. We did not get the vivid description of the treatment including the names of the drugs the patients had received before presenting to our facility either. Because the case studies are just two we cannot authoritatively say that surgical bleb revision is very safe since we need more cases or larger sample size for analysis before such a conclusion is drawn.

### CONCLUSION

We find out in our reports that surgical revision for huge and symptomatic blebs post trabeculectomy is a safe and effective procedure in the hands of experienced and proficient glaucoma surgeons. We also found out that the procedure did not affect the intraocular pressure control or the patients' visual acuities. The aesthetics of the patients and the symptoms also improved appreciably. We found out also in our reports that the success of the surgery is not dependent on the patients' race or the geographic location. We therefore concluded finally that our findings are in consonance with the findings from the developed world and thus encourage the glaucoma surgeons in our environment to apply the procedures without fear of poor outcome.

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