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RESEARCH ARTICLE

TRABECULECTOMY- BLEB BEHAVIOUR STUDY.

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Abbreviations–IOP-
Intraocular pressure

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Abstract

Purpose:- Trabeculectomy Surgery results were observed.

Methods:- Prospective Study done at Government Medical College, Aurangabad between May 2005-Dec 2009.
46 eyes of 37 patients with Primary Glaucoma, uncontrolled medically were operated for Trabeculectomy surgery by a single surgeon .41 eyes had Open angle Glaucoma, 5 eyes had Narrow angle Glaucoma.Postop IOP, Bleb formation, Anterior chamber depth and other complications were noted. Follow-up was kept for 5 years.

Results:-
40 eyes showed good postop IOP and formed anterior chamber and good healthy blebs.
2 eyes had flat anterior chambers and Anterior chamber formation with pressure pad bandage had to be given.
2 eyes had Raised IOP after 2 years and had to be reoperated with Trabeculectomy and Mitomicin C .

Conclusion:-
Satisfactory results were obtained with this surgical technique.Diffuse blebs ,less vascularised ,un-inflamed blebs filtered well.

Introduction:-

Trabeculectomy is the surgery of choice to reduce IOP, hence to reduce progression of Glaucomatous Optic Atrophy and Vision loss in medically uncontrolled Glaucoma. Outcome of Trabeculectomy depends on formation of a functioning bypass channel from anterior chamber to subconjunctival space for outflow of aqueous from the eye,which results in formation of a filtering bleb. A proper flowing channel is indicated clinically by a healthy bleb.We studied the Postoperative clinical features and the wound healing process, factors which may affect the success and specific methods to improve the surgical success.

Methods:-
Prospective Study done at Government Medical College, Aurangabad between May 2005-Dec 2009.
46 eyes of 37 patients with Primary Glaucoma, uncontrolled medically were operated for Trabeculectomy Surgery by a single surgeon.

Indications for surgery:-

- ❖ IOP too high, to prevent further Glaucoma damage and functional visual loss.
- ❖ Progression of Glaucoma damage at current IOP level with treatment.
- ❖ Poor compliance to medical therapy: Cost, Inconvenience, Age, Understanding of disease.
- ❖ Intolerance to medical therapy due to side effects.

Previous Glaucoma surgery and Combined Cataract and Glaucoma operations were excluded.

Preop. Evaluation:-

1. Preop. IOP
2. Vision.
3. Slit Lamp examination to assess anterior segment evaluation
4. Cornea- edema,Bullae.
5. Anterior chamber depth
6. Pupil-size and reaction to light.
7. Lens- Pseudoexfoliation ,Cataract,Zonules.
8. IOP- with Shiotz tonometer. Regular checkup for 8 days.
9. Examination of Fundus- Optic Disc evaluated for C:D and surrounding Retina.
10. Perimetry and Visual Field changes tested
11. Gonioscopy was done for grading of angle of anterior chamber.

Procedure:- Trabeculectomy.

1. Pupils were not dilated.
2. Under Local anaesthesia, Xylocaine with Adrenaline with Hyalase, Peribulbar block given.Eye cleaned and draped.
3. Superior Rectus suture applied.Limbal based Conjuntival flap made about 8mm posteriorly.Tenon's cut sideways. 15 no.blade scraped all the subconjunctival tissue. Good cautery done. Square 4x4 mm avascular zone for superficial sclera flap marked. A half thickness ,rightly and uniformly thick superficial sclera flap,dissected and extended it far anteriorly,around 2 mm in cornea.With 11 no. Blade, 2x2mm deep scleral flap marked far anteriorly,Cut with scissors.As soon as you cut, iris popped out, Anterior chamber first formed with air, then Peripheral Buttonhole Iridectomy was done just under the deep sclerectomy.Superficial sclera flap was closed with 2, 8-0 silk sutures at corners tightly.If anterior chamber air intact, fine otherwise inject air with 26 G needle through 3 o clock limbus.
4. Now again conjunctival flap inspected and any extra tenon's cut. Conjunctival flap sutured tightly with 8-0 silk continuous sutures. Subconjunctival injection Genta+ wymesone given. Eye patched.
5. Followup- Wound seen. Bleb observed for Conjunctival congestion and bleb formation.whether diffuse or localized.
6. Cornea seen for Strait keratopathy/ Bullae/ Edema.
7. Anterior chamber formation seen.Flat anterior chamber and Hypotony suggested extra filtration due to loose scleral sutures.
8. Digital and Shiotz tonometry done.
9. Patients called after 5 days Conjuncival sutures removed.
10. Bleb configuration, IOP, A/c Depth were observed.
11. Other Complications Like Infection, Malignant Glaucoma, Choroidal Haemorrhage were watched for.
12. Increased IOP- Massage applied to eyeball through inferior eyelid daily BD, this opened the inner scleral block if any.
13. Hypotony – Pressure pad applied.
14. Inflammation taken care of by Topical steroids and anti-inflammatory medication.
15. Fundus was seen for any changes in C:D ratio.
16. Failing blebs were subjected to Gonioscopy,Seidel's test.
17. Follow-up kept for 5 years.

Observations:-

46 Eyes of 37 patients were operated.

Table 1. Laterality

Unilateral Eye	28
Bilateral Eyes	9

Table 2.Type of Glaucoma

Open Angle Glaucoma	41
Narrow Angle Glaucoma	5
Total	46

Mean Age of Patients was 55years (range 35-75)

Table 3. Gender

Male	22
Female	15
Total	37

Table 4. Preop Vision Range

6/9-6/18	25(54.34%)
6/18-6/60	5(10.86%)
6/9	11(23.91%)

Table 5. Preop IOP Range

25-30 mmHg	12 eyes
30-35mmHg	20eyes
35-40mmHg	14eyes

Table 6.Bleb Morphology

Diffuse	30
Cystic	8
Encapsulated	4
Flattened	4

Table 7. Postop IOP reduction range

14-20mm Hg	40(86.95%)
21-35 mm Hg	6(13.04%)

Table 8. Postop Management

Medication required	4
Resurgery	4

Results:-

40 eyes showed good postop IOP and formed anterior chamber and good healthy blebs
2 eyes had flat anterior chambers and Anterior chamber formation with pressure pad bandage had to be given.
2 eyes had Raised IOP after 2 years and had to be reoperated with Trabeculectomy and Mitomicin C .

Discussion:-

Success of Trabeculectomy depends on development of a filtering bleb. Various Factors influenced adequate Bleb formation, including age,type of glaucoma, H/o previous surgery,proper surgical technique, postop wound healing and subconjunctival fibrosis.[4] Blebs were classified clinically with reference to Slitlamp morphology and bleb function into Diffuse filtering, Cystic, Encapsulated and Flattened types.[9,1]

Good IOP control (<21 mm Hg) after trabeculectomy was commonly found with low-lying diffuse blebs.[8]
Diffuse blebs, less vessels, an uninflamed eye,Elevated blebs and Microcystic changes showed good IOP control.[7,4]

Signs of impending Bleb failure were noted as

Increased bleb Vascularity,Ropy, corkscrew vessels,Thickening of Conjunctiva and Tenon's capsule,Reduction in bleb size and height,Localized blebs,Reduction of Conjunctival microcyst,and Progressive elevation of IOP.

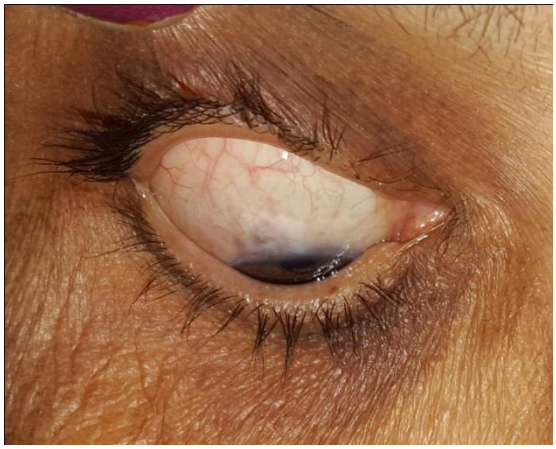
Thin sclera flaps lead to hypotony.
Postoperative management of inflammation in the first 2 weeks was seen important for favourable bleb outcome.

Postop complications:-

1. Hypotony was treated first with Pressure pad Bandage.Any excess filteration was taken care of.Persistent hypotony required resuturing and tightening them.
2. Flat anterior chamber was corrected by anterior chamber reformation with air.
3. Increased IOP was treated with intermittent digital pressure, laser suture lysis, or bleb revision.
4. Malignant Glaucoma required Nd Yag Laser Peripheral Iridectomy, or reformation surgery.
5. Blebitis and Endophthalmitis need proper management.

In our study 30 eyes showed Diffuse blebs filtering very well, 8 eyes had Cystic blebs which also filtered well.4 blebs were encapsulated and vascularised but filtering too.4 were very flat and didn't open with digital massage too.and had to be reoperated eventually.
40 eyes(86.95%) showed good IOP control.

Fig.1. A good functioning Diffuse Bleb.



Conclusion:-

Satisfactory functional results were obtained with this surgical technique.
Tenectomy,Thick uniform scleral flap ,Square 4x4mm flap,Watertight suturing,Proper Peripheral Buttonhole Iridectomy,Anterior chamber formation,Proactive Follow-up with Postop care of inflammation and regular supervision of Blebs and IOP were the factors important for good results.

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