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Trabeculectomy with collagen implant in a neglected case of late onset primary congenital glaucoma.

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Abstract:
Congenital glaucoma is a major cause of blindness in children .It is a surgical disease and the surgery should be performed as early as possible.
Here we report a neglected case of late onset primary congenital glaucoma which was bilateral with extensive corneal changes , raised central corneal thickness, long axial length and a vertical CDR of 0.9 who underwent trabeculectomy with adjunctive subconjunctival collagen implant. On follow-ups we found that IOP decreased with no improvement in best corrected visual acuity, axial length, corneal diameter and vertical CDR.
Key Word: *Congenital glaucoma, Collagen implant ,vertical CDR.*

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I. Introduction

Congenital glaucoma (CG) is a major cause of blindness in children, despite its low incidence (1 : 10,000 births). It may be isolated (primary congenital glaucoma) or associated with other developmental anomalies, either systemic or ocular. The eyes with primary congenital glaucoma have an isolated maldevelopment of the trabecular meshwork not associated with other developmental ocular anomalies or ocular diseases that can raise intraocular pressure. It is the most common glaucoma of infancy, occurring in about 1 : 30,000 live births.1

Primary congenital glaucoma (PCG) is a bilateral disease in about 75% of cases, with males accounting for approximately 65% of cases. Most cases are sporadic in occurrence, with no evident hereditary pattern. In approximately 10% of cases, a hereditary pattern is evident; it is believed to be autosomal recessive. Many authors believe that the inheritance pattern is polygenic 2

Congenital glaucoma is essentially a surgical disease, in which surgery must be performed as early as possible. Goniotomy and trabeculotomy are usually the first procedures of choice. Both are safe and have a low incidence of complications. When goniotomies or trabeculotomies fail or are impossible, trabeculectomy is the usual alternative. Glaucoma drainage implants, nonpenetrating surgery, and cyclodestructive procedures are other options 3,4

Combined trabeculotomy and trabeculectomy is the most common procedure for congenital glaucoma in our locality because many cases present late with advanced disease. It allows high chance of success from the first intervention and reduces the need for secondary intervention which carries high failure rate.

MMC is a chemotherapeutic agent that has been widely used intraoperatively to enhance the success rate of glaucoma filtration surgery.5-8 However, it is frequently accompanied with short- and long-term postoperative complications such as hypotony, bleb leaks, cataract formation, avascular filtering blebs, thinning of the conjunctiva, subsequent blebitis, choroidal effusions, maculopathy, and endophthalmitis9. Therefore, there is still a need for other adjuvants with similar or better efficacy and less complications.

Recently, several tissue-engineered biodegradable implants have been introduced to augment success of trabeculectomy with less complications than MMC10

Ologen (Aeon Astron Europe BV, Leiden, The Netherlands) is a biodegradable collagen-glycosaminoglycan (GAG) implant which decreases early postoperative scarring and prevents collapse of the subconjunctival space 11-13. It is a disc-shaped porcine-derived collagen matrix that is inserted under the conjunctiva at the time of trabeculectomy, acting as a reservoir and helping to mechanically separate the conjunctiva from episcleral surface preventing adhesions between them. After implantation, the device should completely degrade within 90–180 days. 14,15

II. Case Report

13 year old male patient was brought to our opd by his mother with the complaint of bluish discolouration of cornea , protrusion of cornea and diminution of vision left eye which had all been noticed 4years back but has progressed in the last year. Child complained of photophobia and watering since 2 years. The child was born out of a nonconsanguineous marriage, full term through normal vaginal delivery with normal birth weight and normal milestones, had no history of any instrumental delivery or any hospitalisation in the past. On examination the child was conscious, well oriented to time place and person, nonirritable and cooperative. Child's vision was fc ½ metre pl+ pr present in all directions in left eye and 6/36 in right eye. IOP in right eye was 24.4 mmhg and in left eye was 29mmhg as taken with applanation tonometer. Extraocular movements were full and free and in all directions.

On slit lamp examination:

Patient's right cornea had horizontal corneal diameter of 15mm and left corneal diameter was 15.5mm.

Left eye had extensive corneal edema with epithelial bullae. Sclera had few areas of bluish discoloration suggestive of areas of scleral thinning. Right eye had mild corneal haze.

Anterior chamber was deep in both the eyes. Pupil were round regular reactive to light. Iris was normal in colour and texture.

Central corneal thickness was 525micron in right eye and 1010 micron in left eye. Dilated fundus examination revealed thinned NRR, deep cup in both eyes with vertical cup disc ratio of 0.85 in right eye and 0.9 in left eye. Gonioscopy revealed patchy pigmentation and anterior insertion of iris in both eyes.

The axial length was 25.30mm in right eye and 26.2mm in left eye.

The child was diagnosed with late presentation of primary congenital glaucoma and was started on topical antiglaucoma medications(2% dorzolamide and 0.5% timolol).

After explaining the risks and benefits associated and taking informed consent from the parents, the child was posted for trabeculectomy combined with subconjunctival collagen implant.

The wound was healthy the next postoperative day. The child was followed on Day 7, 4weeks and 12weeks and the IOP was recorded to be 17.3mm hg, 10.2mm hg and 8.5 mm hg respectively.

Although there was no change in BCVA, corneal diameter, axial length and vertical cup to disc ratio in the following visits.

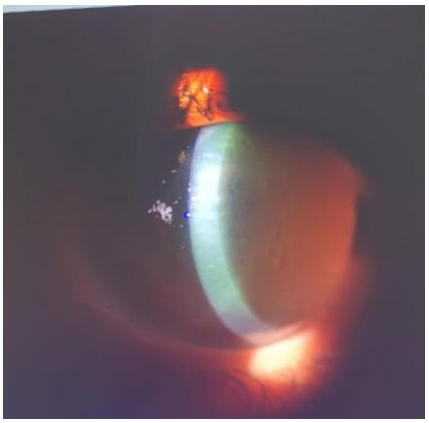

Figure 1: Slit lamp photograph of emlarged cornea with corneal edema and epithelial bullae.

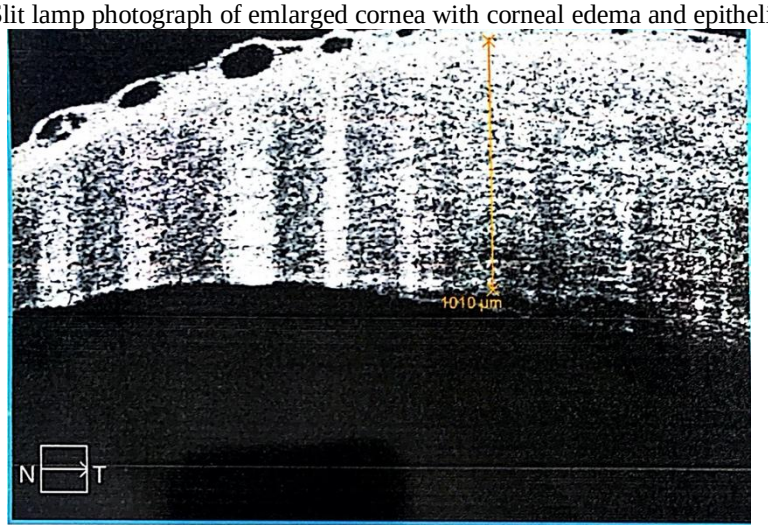

Figure 2: Central corneal thickness analysis of left eye.

III. Discussion

Congenital glaucoma is a major cause of blindness in children. Surgical treatment is the definitive treatment. Trabeculectomy with antifibrotics despite leading to good control of IOP, is associated with increased incidence of complications like blebits, bleb failure, endophthalmitis etc. Since patients with childhood glaucomas have a long life in front of them, there occurs a need for an adjuvant therapy that lasts long with minimal complications. Therefore collagen implant acts as a scaffolding for the growth of fibroblasts thus minimising the side effects associated with antifibrotics in trabeculectomy.

IV. Conclusion

In conclusion, trabeculectomy combined with adjunctive subconjunctival collagen implant is a good alternative to trabeculectomy alone in patients with primary congenital glaucoma in reducing the elevated intraocular pressure and preventing further damage.

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