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**Review Article** 

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# Review of Current Literature on Congenital Glaucoma: A Focus on Surgical Management

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## ABSTRACT

Congenital glaucoma is a polygenic disorder characterized by the improper development of aqueous outflow system of the eye, hence resulting into a rise in intraocular pressure which is often present at birth. Though the disease is generally rare, the effect on visual development may be extreme. When recognized early and appropriate therapy applied, there can be significant improvements to the visual future of the children. The main symptoms of the condition include enlarged eye, which is referred to as buphthalmos; swollen cornea; decreased vision; sensitivity of the eye to light; tearing; as well as uncontrolled eye twitching. Congenital glaucoma affects 1 in 10,000 infants. Management is mainly surgical and the classical procedures, which are employed in congenital glaucoma, are trabeculotomy ab externo, goniotomy, as well as trabeculectomy. Goniotomy is done using a goniolens, to observe the structures of the anterior chamber. Goniotomy is mainly aimed at clearing the obstruction to the aqueous discharge from the eye, which in effect results in the reduction of intraocular pressure (IOP). Trabeculectomy, is a filtering process for the eye, where fistula is formed under a scleral flap into anterior chamber enabling the drainage of aqueous from anterior chamber to subconjunctival space. Trabeculectomy is often reserved as the second procedure following failure of angle surgery. A cyclodestructive procedure refers to ciliary body destruction, which is the section of the eye, which produces fluid. It can also be employed when it comes to the treatment of severe glaucoma, which has not had any kind of improvement after the use of other kinds of treatments or surgeries.

Keywords: glaucoma, congenital, goniotomy, surgery

## **INTRODUCTION**

In the recent past, a plethora of studies have been carried out on congenital glaucoma. This is brought about by the dire consequences, which are associated with the condition when left untreated [1]. Within the pediatric population, about 8% of blindness can be attributed to congenital glaucoma [14]. Congenital glaucoma is an international problem, which generally poses therapeutic and diagnostic challenges to a number of ophthalmologists. The rare disorder mainly takes place from birth until the teenage years. It always brings about grave visual deterioration [1].

## Prevalence of Congenital Glaucoma in various countries

In the United States, primary congenital glaucoma is generally estimated to affect less than 0.05 percent of the ophthalmic patients and about 0.05 percent of children [2]. Though the patients having the disease generally account for higher incidence within the institutions for blind individuals, a number of previous studies suggest that the rate ranges from 2-15 percent [2]. For the genetic reasons, the incidence is much higher within Saudi Arabia and also among the Romanian gypsies. With regards to mortality or morbidity, the condition is bilateral in about 75 percent of

cases. Congenital glaucoma affects people from all races. Previous research, however, indicate that the male patients have a higher incidence by comprising about 65 percent of all the cases. Congenital glaucoma is often diagnosed at birth or in some cases shortly thereafter. A huge chunk of the cases is often diagnosed during the first year of life of the children [5].

There is a high prevalence of congenital glaucoma within Saudi Arabia. The condition has been attributed to a number of cases of blindness among the children within the nation. The severity of the disease among a number of children within Saudi Arabia is very high. Due to this, the specialists in the country always use several procedures in order to deal with the numerous cases. The economic and social burden of the condition within the nation is huge [52]. Currently, the major technique, which has been adopted to ensure effective management of the condition within Saudi Arabia, is early diagnosis, as well as early treatment. Premarital screening, majorly in recessive diseases has been very useful when it comes to the detection of the presence of the defect in the causative genes. This is always followed by genetic counseling to the potential couples. This is expected to bring about complete eradication of the condition among the future generations [52]. Previous research also indicates that introducing national screening program which is the same as that for thalassemia is capable of possibly eliminating childhood blindness as a result of congenital glaucoma within Saudi Arabia [51 & 52].

In comparison to the other nations, congenital glaucoma is very common, aggressive, and very hard to control within Saudi Arabia. Among a huge chunk of the pediatric population in Saudi Arabia, trabeculotomy or goniotomy is rarely successful [51]. Previous research indicates that trabeculectomy has a low success rate among the children in comparison to the adults. This was brought about by the inherent tendency toward excessive scarring among the young children. The other kinds of risk factors for surgical failure like intraocular surgery or prior conjunctival, uveitis or aphakia have also featured prominently low success rate. Combined Trabeculotomy-Trabeculectomy (CTT) has been found to be the treatment of choice among the children suffering from congenital glaucoma within Saudi Arabia [27, 28 & 29].

## General overview of Congenital Glaucoma

Congenital glaucoma refers to a polygenic disorder. It often involves many genes. Because this kind of glaucoma is hereditary and JOAG genes as well as congenital glaucoma have been mapped, genetic tests can be carried out for determining if a given baby is at risk for the disorder [2]. Primary congenital glaucoma is often present at birth [3]. The manifestations, however, might not be recognized until early childhood or infancy. One of the major characteristics of congenital glaucoma includes the improper development of aqueous outflow system of the eye, hence resulting in a rise in intraocular pressure (IOP). This together with the consequent damage to ocular structures brings about the loss of vision. Though the disease is generally rare, the effect on visual development may be extreme. When recognized early and appropriate therapy applied, there can be significant improvements to the visual future of the children [4]. Ophthalmologists globally are generally faced with the therapeutic and diagnostic challenge of primary congenital glaucoma. Primary congenital glaucoma is accounting for 0.01 percent-0.04 percent of the total number of blindness [23, 24, 25 & 26].

Congenital glaucoma is generally restricted to developmental abnormality, which has various impacts on trabecular meshwork. This distinguishes it from the other childhood glaucoma, which are linked, to the other ocular, as well as other systemic congenital abnormalities, and childhood glaucoma, which might be secondary to other kinds of ocular disorders, like trauma, inflammation, as well as tumors [5].

## **Demographics of congenital glaucoma**

Congenital glaucoma affects 1 in 10,000 infants [52]. Previous research indicates that it affects more boys in comparison to girls. It affects both eyes in 75 percent of the patients [52]. These kinds of glaucomas are different from secondary glaucoma, which are brought about by medical conditions like Marfan's syndrome, diabetes, juvenile rheumatoid arthritis (JRA) or which are brought about by intraocular tumors, trauma as well as cataract surgery [52]. In a number of cases, secondary glaucomas can be managed through medical treatment rather than through the adoption of surgical treatment. About 95% of developmental glaucoma or congenital often appear before the age of three [2].

## **Diagnosis of congenital glaucoma**

Detection of the clinical symptoms of congenital, as well as infantile glaucoma can be done a few months following the birth of the children [3]. Some of the main symptoms of the condition include enlarged eye, which is referred to as buphthalmos; swollen corneal; decreased vision; sensitivity of the eye to light; tearing; as well as uncontrolled eye

twitching. However, the signs are often absent in JOAG. Due to this, glaucoma among older children might go undetected up to the point that the children lose their vision [4].

The examiners need to take various kinds of measurements so as to diagnose glaucoma effectively. Some of the measurements ought to include corneal diameter, as well as the length of the axis of the eye [14]. For the infants, the diameter of the cornea is often less than 10 mm. For one-year-old children, it is about 11–12 mm. However, it could be as big as 14 mm among the children whose glaucoma have advanced. Axial length is often measured through the use of A-scan. This is a kind of ultrasound. The doctor should establish intraocular pressure using TonoPen or Schiotz tonometry [5].

Gonioscopy, a tool, which is often applied for the examination of the eye's interior structures, is carried out through the placement of a unique contact lens on the eyes [14]. The lens, together with the biomicroscope, enables the surgeons to evaluate the structures of the anterior section of the eye. Evaluation of the state of the optic nerve is carried out and drawings and photos can be taken to carry out comparison in the future [6]. Because cooperation is hard for the infants and also for the children who are young, the assessments can be carried out through the use of anesthesia or through the use of sedatives. The evaluation is similar among the young and old children [7]. Upon the confirmation of diagnosis, goniotomy is always the first treatment, which is often done.

#### Medical management of Congenital Glaucoma

Medical therapy is often applied as temporizing measure for helping in controlling IOP and clearing cornea before surgery. On the other hand, it might be more integral to the treatment strategy if surgery cannot be done because of various medical reasons or due to inadequacy of surgery. Medical treatment may be highly challenging because most of the relevant medications have not been approved to be used among the children. When the diagnosis, as well as the treatment is done in a timely and in the right manner, it is capable of dramatically changing the course of disease besides restoring visual development [30, 31, 32, 33, 34 & 35].

It is worth pointing out that the management of primary congenital glaucoma is mainly surgical and the present classical procedures, which are employed in congenital glaucoma, are trabeculotomy ab externo, goniotomy, as well as trabeculectomy [36]. Before surgery, medical therapy is often applied as temporizing measure. It is also used for maximizing pressure control when the surgery has been carried out. With regards to the surgical care, surgical tools are generally designed for the elimination of resistance to aqueous outflow, which is brought about by structural abnormalities within anterior chamber angle [37]. This may be attained via internal approach with goniotomy. It can also be achieved via external approach using trabeculotomy.

#### Goniotomy

Goniotomy refers to the surgical process, which is often done through the use of a lens referred to goniolens, the doctors are in a position to observe the structures of front eye parts (the anterior chamber). An opening is made within the trabecular meshwork, which is the group of small canals situated within the drainage angle, in which the fluid gets out of the eye. The new opening makes the fluids to get out of the eye [38].

Children who have undergone goniotomy for glaucoms should be watched carefully following the surgery in order to ensure effective control of glaucoma. One of the key measures, which ought to be taken into consideration include frequently measuring the pressure of the eyes [39], [40]. Goniotomy has been highly successful for over 80 out of 100 babies who developed glaucoma after birth. An increase in the pressure in the eye may make the process to be repeated. While the procedure is highly effective in dealing with the condition, there are various kinds of complications, which are associated with it. They include infection, bleeding, as well as cataracts [41].

Goniotomy is mainly aimed at clearing the obstruction to the aqueous discharge from the eye, which in effect result in the reduction of intraocular pressure (IOP). Reduction of IOP is highly beneficial in stabilizing the enlargement of cornea, as well as distension and the stretching of the eye, which often takes place in congenital glaucoma. Other than congenital glaucoma, Goniotomies are often used for treating Aniridia, which is a condition where the patients are lacking a visible iris; Uveitic glaucoma, which is linked to juvenile rheumatoid arthritis; maternal rubella syndrome as well as JOAG [42, 43 & 44].

Prior to the commencement of the process by the surgeons, patients are provided with miotics. These are drugs, which result in the contraction of the pupil. The partial closure enhances the view of the surgeon. It also makes the surgeon to be in a position to access the trabecular meshwork. On the same note, it plays a key role in protecting the eyes' lens from trauma when surgery is taking place. There is the administration of other kinds of drugs to ensure that intraocular pressure is reduced [44]. After the provision of anesthetization to the patient, in order to ensure that the eye is stabilized to be in the right position, the surgeons always use forceps. The head of the patient is rotated away from the surgeon

in order to ensure that the eye's interior structures can be seen more easily [45]. After that, using either a goniotomy knife or knife-needle, the surgeon pierces the cornea while observing the eye's interior using a loupe or a microscope. The assistant makes use of the syringe for introducing the fluid into the anterior chamber of the eye via a viscoelastic tube while the surgeon is performing the goniotomy. After that, gonioscopy lens is put on the eye [46]. While the assistant rotates the eye, the doctor sweeps the needle or the knife blade via 90-120 degrees of arc within the eye, while making openings within the anterior trabecular meshwork, and while also shunning the posterior section of trabecular meshwork so as to minimize the chances of damage to both the lens and the iris [45].

Upon the removal of the tubing and the knife, there is the introduction of saline solution through the hole in order to ensure maintenance of the eye's integrity. The hole is then closed using sutures. After that, the surgeon uses antibiotics as well as corticosteroid to the eye for the prevention of infection and also for the reduction of inflammation [47]. This is followed by the rotation of the head away from incision site to prevent the accumulation of blood. Operation on the other eye may be done at the same time. When there is need for a repeat of the procedure, treatment is done for a different part of the eye [46].

Viscotrabeculotomy, also referred to as canalotomy uses a high-viscosity viscoelastic to open the canal. When it comes to trabeculotomy, identification of Schlemm canal takes place via external dissection. The incising of the trabecular meshwork can be done when a robb is passed into the canal and, thereafter, ensuring that it is rotated into the anterior chamber. There is one main advantage, which is associated with the procedure. This includes the fact that it can be carried out in eyes that have cloudy corneas [47].

Goniotomy, as well as trabeculotomy are having their advocates. Previous research, however, indicates that the rates of success for the two procedures are about 80 percent. The worst prognosis takes place among the infants having elevated pressures, as well as cloudy corneas during birth. Highly favorable outcomes are often observed among the infants whose operation have taken place between their second and eighth month after birth. Previous research indicates that surgery has not been highly effective when it comes to preserving vision, with increasing age [48].

Upon the failure of multiple goniotomies, as well as trabeculotomies, surgeons always embark on filtering procedures, like trabeculectomy. In most cases, this might be attained either through the use of antimetabolites or even without them in some cases. The failure of the procedures always calls for the use of shunts. In case of failure of the procedures, ciliary body destructive processes can be highly useful [49].

A number of previous studies have recommended surgical therapy to deal with congenital glaucoma. Surgical therapy has been the accepted treatment standard for congenital glaucoma, with angle surgery, which includes trabeculotomy or goniotomy [52]. They are frequently adopted as the primary intervention. When it comes to angle surgeries, goniotomy is the most common one. Goniolens is employed for visualizing the angle structures. A knife or needle pierces the anterior chamber. It is used for incising trabecular meshwork circumferentially at 120 degrees. The failure of the first goniotomy should give rise to a second one, which should incise the trabecular meshwork, which was not touched previously via second corneal incision [50].

With regards to liltering surgeries, the main one is trabeculectomy, which is a filtering process for the eye, where fistula is formed under a scleral flap into anterior chamber enabling the drainage of aqueous from anterior chamber to subconjunctival space. Prevention of the scarring of subconjunctival space can be done through the use of drugs like mitomycin C (MMC). This is also aimed at maintaining drainage opening.

Trabeculectomy is often reserved as the second procedure following failure of angle surgery. It might be used together with trabeculotomy. Certain specialists often favor the trabeculectomy-trabeculotomy processes as their number one choice of surgery, regards majorly the babies at high risks for surgical failure [1]. Glaucoma drainage devices can also be used. Glaucoma drainage devices refer to the devices, which generally act as shunts for the drainage of aqueous from anterior chambers to the posterior drainage area surrounding the plate, which is sutured to sclera. In congenital glaucoma, they are often reserved for refractory situations where trabeculectomy or angle surgery either did not work well or was not relevant though numerous glaucoma specialists might use glaucoma drainage devices in secondary pediatric glaucoma [16].

## Aftercare

Patients are always provided with corticosteroids, antibiotics, as well as miotics for about a week or two following the surgery. When the surgeon has the feeling that the process was not successful, the patient might be given acetazolamide through the mouth together with the medications for about 10 days in order to minimize the IOP [8]. Patients should be anesthetized after about three to six weeks following the surgery to reevaluate the eye's anterior chamber [9].

The examination should be carried out after every three months during the first year. After the second year, it ought to be done twice a year and after that, it can be done once annually. When the child is bigger, in most cases after three or after about four years, follow-up examination can be carried out without sedation or anesthesia [11]. Because a visual field test is hard or in some cases not possible to carry out on the infants or on the young children, the surgeon should measure the cornea for the evaluation of disease's progression. When there is a rise in the diameter of the corneal, it is an indication that the glaucoma is worsening. A visual field test can be conducted when the baby is old enough. The visual field test is capable of establishing the degree of vision loss, which has taken place due to the glaucoma [9 & 10].

A highly significant element for managing the glaucoma patients following the surgery entails the assessment of the extent of nearsightedness, as well as astigmatism. The two are brought about by eye stretch, which is due to an increase in intraocular pressure. When the child requires eyeglasses, they ought to be given very early in life because this is capable of decreasing the chances of amblyopia. Amblyopia generally refers to a state where correction of the vision cannot happen, even the use of glasses which is also very common among the patients with pediatric glaucoma [12]. Despite the fact that it is possible to correct congenital glaucoma among children to 20/50 or even better among 80 percent of the children, patching of the eye, as well as vision therapy is always needed for the achievement of this correction level. Approximately 10 percent of goniotomy patients always face the recurrence of glaucoma. At the same time, it might also develop in the eye, which is not affected. Therefore, the patient will require periodic assessment of the eye all through the course of life. In case glaucoma recurs later, surgical treatment or medical

treatment can be used based on its cause [13, 14, 15 & 16].

### Risks associated with goniotomy

Due to the fact that goniotomy is carried out under anesthesia, there could be certain risks as a result of reaction to anesthesia. One of the risks, which is very common among the infants include cardiorespiratory arrest. The complication is not a threat to life. It takes place in less than 2 percent of goniotomies. At the same time, it is worth pointing out that a hyphema is the other complication, which is very common when it comes to goniotomy. In numerous instances, blood clots are resolved in very few days [17 & 18]. When the cornea is unclear while surgery is taking place, the surgeon might unintentionally sever the iris from ciliary body. They might also separate ciliary body from the eye's sclera. The complications may result in hypotony, which is a condition where the eye's integrity is compromised as a result of inadequate intraocular fluid [19].

Other complications, which are associated with goniotomy include the formation of cataract; swelling in anterior chamber; mutilation of the cornea; the lens' subluxation as well as the detachment of the retina. Damage risk to lens is bigger if the given patient is aniridic. Additionally, there could be an increase in the intraocular pressure in spite of, or because of the complications, which are associated with the whole procedure. This might result in a repeat of the goniotomy. When goniotomy yields no success following two or even three trials, the surgeon ought to carry out a trabeculotomy [20, 21 & 22].

## Cyclodestructive procedures

A cyclodestructive procedure generally refers to a kind of surgery, which is employed in destroying ciliary body, which is the section of the eye, which produces fluid. It can also be employed when it comes to the treatment of severe glaucoma, which has not had any kind of improvement after the use of other kinds of treatments or surgeries. When every surgical and medical measure has failed in lowering intraocular pressure (IOP) among the patients having severe and uncontrolled glaucoma, the ophthalmologists have to use cyclodestructive procedures for decreasing the production of aqueous [37 & 38].

For over half a century, ophthalmologists have been embracing ciliary ablation for slowing the formation of aqueous production hence minimizing IOP within the eyes suffering from severe glaucoma [17]. Techniques for delivering the ablation energy to the eye include beta-irradiation, coagulation with diathermy, ultrasound, chemicals, xenon light, laser light, as well as freezing. The evolutionary route of cyclodestructive technology, which resulted in G-Probe<sup>TM</sup> development, has had its advantages and disadvantages. A number of the past cyclodestructive techniques proved to be disadvantageous [18]. Cyclodiathermy, which was first introduced during the year 1933 was associated with uveitis, phthisis bulbi, scleral necrosis, as well as hemorrhage. Beta-irradiation, which was used on the rabbits in the year 1948, was highly damaging to the lens and hence it was not embraced for clinical usage. In the year 1949, cycloelectrolysis technique was tried [18]. It never offered any advantage over cyclodiathermy. This made it not to be clinically popular.

The use of ultrasound for ciliary ablation commenced in the year 1964. By the year 1985, high-intensity focused ultrasonic tool illustrated that besides minimizing aqueous production through destroying the ciliary epithelium, there were improvements on aqueous outflow because of separation of sclera from ciliary body [18, 34 & 35]. Since the year 1950, freezing ciliary procedures to -80° C for about 60 seconds was deemed more predictable as well as less destructive in comparison to cylcodiathermy. While cyclocryotherapy is presently the most commonly carried out cyclodestructive process, IOP controls, as well as visual acuity results have remained unpredictable. There are numerous other reported problems linked to cyclocryotherapy, like extreme postoperative pain, inflammation, IOP rise, hypotony, as well as uveitis. Hence, ophthalmologists have continued looking for a better technique of cyclodestruction. Cyclophotocoagulation has rapidly become the preferred cyclodestructive treatment [35, 36 & 37]. Since 1930s, destruction of ciliary body has been adopted for the treatment of glaucoma. In the cyclodestructive process, ciliary epithelium's secretory epithelium is damaged. This results in a reduction in the level of secretion of aqueous humor besides resulting in lower IOP. Due to the fact that the ciliary epithelium is capable of regenerating, various treatments are vital among some patients for the achievement of the anticipated long term IOP lowering impact [38, 39 & 40].

Some of the modalities for attaining cyclodestruction include surgical excision, diathermy, ultrasound, cryotherapy and laser light. Cyclophotocoagulation is a very regular procedure for performing cyclodestruction. It may be carried out through the use of diverse laser wavelengths. Neodymium: yttrium-aluminum-garnet laser has been adopted either with contact techniques or non-contact for achieving cyclodestruction. Currently, diode lasers either transsceral or with endoscopic probe is employed for performing CPC. It is worth pointing out that the diode laser is ideal over the other wavelengths because the melanin within ciliary epithelium is in a better position to absorb the wavelength in comparison to others and hence it results into more targeted destruction with minimal inflammation [40, 41 & 42].

In case surgical attempts for controlling glaucoma through the improvement of the outflow of aqueous are not successful, the other approach mainly entails the reduction of aqueous inflow through the use of a cyclodestructive process. Cyclodestructive components, which have been tried during the past generally, include electrolysis, beta irradiation, as well as diathermy. Cyclocryotherapy is currently the most frequently utilized cyclodestructive procedure, though the operation has huge limitations, and other new tools are being assessed, which uses ultrasonic radiation or laser energy [44, 45 & 47]. Every procedure adopts a transcleral approach that has various kinds of drawbacks, which include inability to accurately quantitate the ciliary processes' destruction and destruction of the near tissues. Transpupillary cyclophotocoagulation plays a role in minimizing these challenges. However, it is generally restricted to a small number of eyes where enough gonioscopic visualization of ciliary procedures can be attained [42, 43 & 44].

A different approach, which can be adopted for the aphakic eyes, includes the intraocular cyclophotocoagulation, which uses an endophotocoagulator via a pars plana incision. Based on the eye status, visualization for the tool may be accomplished through transpupillary route or through endoscope [47 & 50].

When it comes to laser cyclophotocoagulation, the laser bean is employed in the destruction of ciliary body. In the process, injection of the medicine for numbing the eye is done beneath the eyeball prior to the process. There are various kinds of complications, which are associated with laser cyclophotocoagulation. Some of them generally include the cloudiness of the eyesight; bleeding from site; uveitis; severe pain as well as the overall shrinkage of eyeballs as a result of the reduction in the eye's pressure. This may result in the lens' clouding, which is referred to as cataract. Laser cyclodestructive process might result into less pain in comparison to the other cyclodestructive processes, which are used for the destruction of ciliary body [47].

When it comes to cyclocryotherapy, a tool, which is very cold is applied continuously to sclera, which is the white component of the eye. This results in the destruction of ciliary body, the section of the eye, which generates fluids. In most cases, injection of medicine for numbing is applied beneath the eyeball prior to the commencement of the procedure. Following the procedure, there could be a rise in the eye pressure [47, 49 & 50].

Cyclocryotherapy can be adopted in the treatment of glaucoma, which is brought about by other conditions like diabetes among the older people. It can also be used in the treatment of open-angle glaucoma when the use of traditional surgery or the use of laser surgery has is not successful [50], [49]. There are various kinds of complications, which are associated with cyclocryotherapy. Some of them generally include a sudden rise in the pressure of the eye; bleeding, as well as the shrinkage of eyeballs because of the reduction in the eye's pressure. This might result in the clouding of lens [49 & 46]. Due to the fact that it might result in central vision loss, which is required for reading and

seeing details very clearly, cyclocryotherapy is not always employed for the individuals having comparatively good central vision [46 & 49].

Cyclodestructive therapy is also referred to as ciliary ablation. It is often reserved for treating the patients who have uncontrolled glaucoma although there have been maximum medical, as well as previous surgical interventions [46 & 49].

## The History of Cyclodestruction

Cyclodestruction as a technique for treating glaucoma was observed first by Heine after discovering that ciliary body detachments brought about a reduction in intraocular pressure [14]. During the 1960's, Purnell championed a transscleral ultrasound radiation for the generation of the needed destruction. Because during the time, cyclophotocoagulation via either trans-pupillary route or through contact and non-contact trans-scleral route has been popularized using diverse lasers [13, 14 & 46].

Different efforts aimed at reducing intraocular pressure through cyclodestruction are sharing similar set of drawbacks as well as complications. Before ECP, the cyclodestructive process entailed the surgeon trying to ablate ciliary tissue with restricted capacity to evaluate anatomic accuracy. Some of the major complications are continued hypotony, uveitis, pain, choroidal effusion, hemorrhage, scleromalacia, anterior segment ischemia, as well as postoperative visual loss, which are linked to chronic cystoid macular edema [14]. Conventionally, the procedures had mainly been limited to the patients suffering from refractory glaucoma, in most cases as the last resort following the failure of the other different surgical procedures [14].

ECP affords the capacity to use cyclodestruction in a targeted manner directly to the tissues, which is targeted, ciliary epithelium, whereas reducing collateral damages. A number of the histologic studies reveal that there is minimal tissue distraction with ECP in comparison to the transcleral cyclophotocoagulation (TSCPC) [13, 14, 15 & 16].

It is worth pointing out that endoscopic cyclophotocoagulation (ECP) is a highly effective technique for treating refractory glaucoma's. It plays a huge role in effectively managing the patients with the cataract, mild glaucoma and moderate glaucoma. While there are various kinds of problems, which are associated with the past cyclodestructive procedures, previous ECP studies promise and generally offer the suggestion that the procedure is having minimal complications in comparison to the past transscleral cyclodestructive techniques. The report indicates that ECP provides the advantages, which includes short surgical times, specific tissue treatment, rapid postoperative recovery, as well as a reduction in complications. Conclusive further research is needed to offer a better definition of its effectiveness in the long term as well as the role, which it plays with regards to effectively managing glaucoma. ECP generally appears to be a comparatively safe and a more appealing surgical option among the patients having mild or moderate glaucoma who are also having a good vision potential, majorly in the context of cataract surgery [16, 17 & 14].

## CONCLUSION

This paper has mainly provided a review of congenital glaucoma as well as the present surgical options, which are often used for congenital glaucoma. The paper has provided a review of the options together with their advantages as well as their disadvantages. The key options, which have been explored by the paper include goniotomy, which refers to the surgical process, which is often done through the use of a lens referred to goniolens, the doctors are in a position to observe the structures of front eye parts (the anterior chamber). We have also thoroughly investigated Cyclodestructive procedure as a treatment modality which is usually considered after the use of other kinds of treatments or surgeries.

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