Volume-3, Issue-8, August-2014 • ISSN No 2277 - 8160

Research Paper | Medical Science

Outcome of Deep Anterior Lamellar Keratoplasty in Limbal Dermoids

Dr Swati Tomar	Professor, Dep artment of Ophthalmology, NIMS Medical College and Hospital, NIMS University, Jaipur, Rajasthan, India – 302004
Dr Chhavi Jindal	Resident, Nims Medical College and Hospital, Nims University, Jaipur, India 302004
Dr Mahesh Aggarwal	Assistant Professor, Nims Medical College and Hospital, Nims University, Jaipur, India 302004

ABSTRACT

BACKGROUND: Limbal dermoids are defined as congenital changes of mesodermal and ectodermal origin. Usually they are located at the limbus of the cornea in the inferotemporal quadrant , they can only rarely be observed in more central regions of the cornea.

OBJECTIVES: To evaluate the anatomical success and post operative outcome in patients of limbal dermoid who underwent Deep Anterior Lamellar Keratoplasty.

METHODS:

Prospective case series of 11 consecutive patients with limbal dermoid who underwent keratoplasty. Indications for surgery were: growth size & location, unresponsive amblyopia, psychosocial & cosmetic considerations.

RESULTS:

Anatomical integrity was obtained in all 11 cases. In 9 cases mean BCVA changed from CF 3m(preoperatively) to 6/18 (postoperatively).In 2 case, amblyopia remained even after surgery and visual acuity was less than 6/60.1 case had graft rejection resulting in irreversible graft edema.

CONCLUSION:

DALK for limbal dermoid achieved good cosmetic results with limited post operative complications. Visual prognosis is good in patients undergoing surgery. Amblyopia and cosmetic reasons were the main indication for early surgical removal.

KEYWORDS : Limbal, mass, graft, lamellar

INTRODUCTION

Dermoids are benign, dysontogenic, congenital tumours (choristomas) consisting of tissues not normally present in a specific location. These choristomas are thought to arise from an early embryological anomaly (occurring at 5-10 weeks gestation) resulting in metaplastic transformation of the mesoblast between rim of the optic nerve and surface ectoderm.[1]Ocular dermoid is usually the only disorder, but 30 % of the cases is associated with other abnormalities of the anterior segment and the ocular adnexa, or with the developmental syndromes of Goldenhar.[2]These lesions may present unilaterally or bilaterally, and the majority (>85%) are located in regions of the bulbar conjunctiva, limbus, cornea, and/or caruncles.[3]Their sizes range from a few millimetres to more than 1 cm. There is no gender or race predilection. For dermoids, lamellar keratoplasty serves as an effective means to stabilise the surgical site with excellent visual outcomes and good cosmesis.[4,5]

MATERIAL AND METHODS

We present a prospective case series of 11 consecutive patients of limbal dermoid attending out patient department of ophthalmology, from May 2012 to June 2013 who underwent deep anterior lamellar keratoplasty. Out of 11 patients, 7 were males and 4 were females with age group ranging from 8- 15 years. Patient that were selected were graded according to Mann classification into three grades, grade 1 (<5mm localised at corneal limbus) grade 2 (larger lesions covering most of the cornea, extending down to descemet membrane without involving it, rest anterior segment normal), grade 3 (larger lesions covering the whole cornea and extending through the histological structures between anterior surface of the eyeball and the pigmented epithelium of the iris). Clinical indications for surgery include growth size and location, amblyopia unresponsive to medical treatment, enlarging dermoids causing disturbance of ocular surface tear film, forming dellens which result in surface irritation, discomfort and rubbing of the eye, growth encroaching into pupillary area or optical zone, psychosocial and cosmetic considerations, irregular astigmatism and inadequate lid closure.

Patients presented to Ophthalmology out patient department with most common symptom of mass in eye which gradually increased in size. Patients did not have any pain, but the mass caused vision problem, mild discomfort on blinking, and the intermittent sensation of the presence of a foreign body.

A thorough history was taken from the parents, and serial examinations with cycloplegic retinoscopy (cyclopentolate eye drop; Cyclogyl 1 %) were performed .After retinoscopy and subjective acceptance, presence of refractive error and degree of amblyopia was established. Uncorrected preoperative V/A ranged from CF 3 meters to CF 6 meters.Slit lamp examination revealed a solitary, white, ovoid mass with well defined margins and irregular surface that straddled the inferotemporal limbus in 9 cases and inferonasal in 2 cases with multiple hair follicles on its surface. Mass was firm in consistency. Intraocular pressure was measured by applanation tonometry.Systemic examination was done for all the patients.The appearance of the mass,with hairs present,was indicative of limbal dermoid. Size of limbal dermoid was determined by vernier calliper preoperatively under microscope. All surgeries were done under general anaesthesia and surgical steps included lesion excision and manual deep anterior lamellar keratoplasty. Mass was removed in toto from sclera base and patched with eccentric lamellar graft. A partial trephination of approximately 2/3 of the total corneal thickness is performed, followed by stromal removal using a bevel-up crescent knife. Layer by layer stromal dissection and resection is repeated as one approaches DM[fig.1]. Then a donor lenticule is prepared by stripping off the DM with wekcell sponge and the lenticule is placed on receipient cornea and sutured with interrupted 10-0 nylon sutures[fig.2].

Histopathological analysis [fig.3] using Haematoxylin and eosin stain performed on the excised masses after surgery under light microscopy was done and lesion was confirmed. Patients were followed up for a period of 6 months.

Postoperatively all patients were kept on moxifloxacin eye drop(Moxoft;0.5 %) four times a day and predforte eye drop(Predmet 1 %) four times a day which was tapered over 3-6 months. We remove all sutures within a year postoperatively. Till 3 months no sutures were removed except for loose sutures. No patients were lost to follow up.

RESULTS

Patients who presented with limbal dermoid were in the age group range of 8-15 years with mean age of 10.63 years. Out of 11 patients, 7 were males and 4 were females. According to Mann's classification, out of eleven patients who were examined, five had grade 1, six had grade 2 and no patient had grade3 dermoid. Preoperative vision ranged from CF 3 meters to CF 6 meters. Trephine size used for partial trephination ranged from 5 mm to 6.5 mm.

Table 1 shows graft clarity in patients at 6 months post-operatively

Graft clarity	Cases
Clear grafts	10
Irreversible graft edema	1

Out of 11 patients, 10 patients had a clear graft at 6 months. 1 patient had irreversible graft edema secondary to stromal rejection at 4 months was started on medication.

Table 2 shows post operative BCVA of study patients (N=11) with limbal dermoid who underwent deep anterior lamellar keratoplasty.

	Cases
CF 3m to 6/60	2
6/60 to 6/24	6
6/24 to 6/18	3

2 cases which fall between CF 3 m to 6/60 had amblyopia and were started on amblyopia therapy with full spectacle correction.Histopathological analysis showed that excised tissue consisted of non-keratinising squamous epithelium, skin appendages, mature fat cells, connective tissues, elongated and spindled cells, and a few capillaries thus confirming to be limbal dermoid.

DISCUSSION

Epibulbar dermoids are choristomas of a single lesion or multiple lesions involving central or perilimbal cornea, conjunctiva and/or periocular tissues. They are typically slow-growing, minimally vascularized whitish lesions generally located in inferotemporal quadrant. [6-9]

They may contain a variety of histologically aberrant tissues including epidermal appendages, connective tissue,skin,fat,sweat gland,lacrimal gland, muscle,teeth, cartilage,bone,vascular structures & neurologic tissue including the brain.[10-12]

The surgical management of corneal dermoid depends on the size,site & depth of involvement.[13]

A study by Nevares et al indicates that the majority (76 %) of ocular dermoids occur at the inferotemporal bulbar location of the eye, with the other 22 % reported to occur superotemporally[14] which is similar to our study as 9 out of 11 dermoids in our case series were inferotemporal and 2 out of 11 were inferonasal.

In another study at the Wilmer Eye Institute of Pathology, choristomas comprised 33% of all epibulbar lesions in individuals younger than 16 years of age[15] , similar results were obtained in our study with all patients were under 15 yrs of age.

In 1961 , Bourne treated a series of four paediatric patients with grade II limbal dermoid by direct excision followed by lamellar keratoplasty using a 5-7 mm trephine with a good outcome.He reported no herniation of tissues posterior to the repaired site and no graft failures, but did not provide any details on visual acuity. Although the results of surface reconstruction was satisfactory,it is possible that the final visual acuity was limited because of the older age of the patients and lack of follow up treatment for amblyopia in some cases.[16]

Scott et al reported that seven of their 11 patients had a single inferotemporal limbal dermoid, with one patient having two dermoids in one eye. Their median follow-up time was 21.6 months, and eight of the 11 patients showed good or excellent cosmetic results with minimal interface haze and no vascularisation. Vascularisation developed postoperatively in two cases with previously excised lesions. One of these cases developed graft infection, underwent subsequent debridement, and had an opaque graft. BCVA was maintained or slightly improved in nine of these patients.[17]

Mader and Stulting have reported use of deep excision and deep lamellar keratoplasty with placement of eight equally spaced 10-0 interrupted or running nylon sutures for surgical removal of a grade II limbal dermoid in a single case report.[18]. Visual acuity remained unchanged and no complications were noted. Our study shows similar results in 11 cases who underwent lamellar keratoplasty with increase in best corrected post operative visual acuity.2 cases which did not improve had severe amblyopia and were started on amblyopia therapy. One patient who had graft edema also had decreased vision.

All 11 cases in our study showed improved cosmesis like other studies.

SUMMARY

We conclude with our case series that Deep Anterior Lamellar Keratoplasty as primary surgery for limbal dermoids gave good cosmetic results with minimal postoperative complications. Visual prognosis improves in patients who undergo an early surgery with post operative amblyopia therapy.

ACKNOWLEDGEMENT

I am deeply thankful to all my seniors,colleagues and the staff ,who spent extra time helping me to achieve a clearer view about the topic.

Fig.1 Excised dermoid

Fig .2 Excised limbal dermoid with deep anterior lamellar keratoplasty

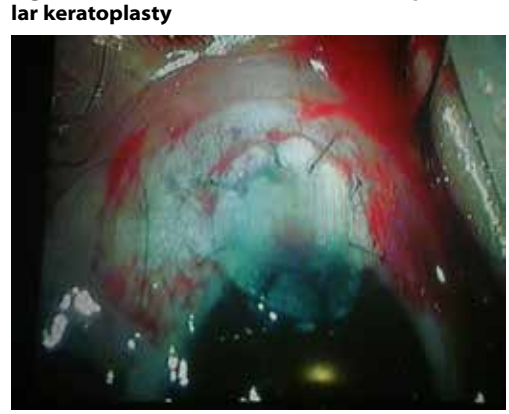
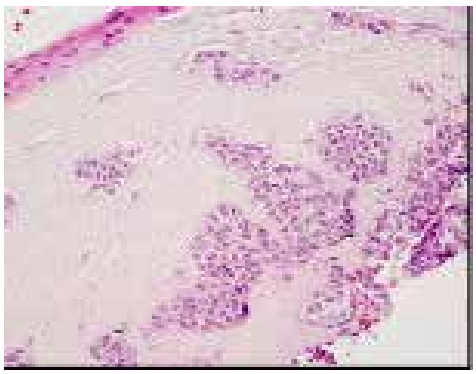


Fig.3 Histological cross section of limbal dermoid



REFERENCES

1) Mann I. Developmental Abnormalities of the Eye. Cambridge, UK: Cambridge University Press; 1937. | 2.CraitoiuS. Goldenhar's oculoauricular dysplasia, limbic dermoid and conjunctival dermolipoma.Oftalmologia.1992;36(4):357-361 | 3. American Academy of Ophthalmology. Basic and Clinical Science Course. Amercian Academy of Opthalmology; 2012. (Series 6). | 4.Panda A,Ghose S, Khokhar S,et al. Surgical outcomes of epibulbar dermoids.J Padiatr Ophthalmol Strabismus .2002; 39(1):20-5 | 5.Watts P, Michaeli- Cohen A, Abdolell M,et al. Outcome of lamellar keratoplasty for limbal dermoids in children J AAPOS.2002;6(4):209-15 | 6.Mansour AM ,Barber JC, Reinecke RD, Wang FM (1989) Ocular choristomas. Review Surv Ophthalmol 33 :339-358 | 7.Mohan M, Mukherjee G ,Panda (1981) Clinical evaluation and surgical intervention of limbal dermoid. Indian J Ophthalmol 29 : 69-73 | 8. Nevares RL, Mulliken JB , Robb RM (1988) Ocular Dermoids. Plast Recontstr Surg 82 (959):64 | 9.Burillon C , Duran L (1997) Solid dermoids of the limbus and the cornea. Ophthalmologica 211:367-372 | 10.Mann I . Developmental Abnormalities of the Eye . 1957 :357-364 | 11. Duke- Elder S. System of Ophthalmology: Congenital & developmental Anomalies.Vol 3.1963:488-495 | 12.Yanoff M ,Fine B.Ocular Pathology. 1982:316-317 | 13.Golubovic S, Latkovic Z & Horyatic OM. Surgical treatment of larger corneal dermoid.Doc Ophthalmol 1995 ;91:25-32 | 14Nevares RL, Mulliken JB, Robb RM. Ocular dermoids. Plast Reconstr Surg. 1988;82:959–964. | 15. Grossniklaus HE, Green WR, Lukenbach M, et al. Conjunctival lesions in adults: a clinical and histopathological review. Cornea. 1987;6:78–116. | 16. Bourne RA. Epibulbar dermoid tumours of the corneal limbus treated by lamellar keratoplasty. Trans Can Opthalmolog Soc. 1961;24:153–158. | 17. Scott JA, Tan DT. Therapeutic lamellar keratoplasty for limbal dermoids. Ophthalmology. 2001;108:1858–1867. | 18.Mader TH, Stulting D. Technique for the removal of limbal dermoids. Cornea. 1998;17:66–67. |