

Deep anterior lamellar keratoplasty or penetrating keratoplasty in lattice corneal dystrophy

Lattice corneal dystrophy (LCD) has been classified as epithelial-stromal transforming growth factor beta 1 corneal dystrophy as per the updated IC3D classification of corneal dystrophies.^[1] The presentation may range from recurrent corneal erosion to gross diminution of vision. LCD 1 has the classical presentation of refractile lines in the superficial central stroma sparing the far peripheral stroma, Descemet's membrane, and endothelium. Diffuse central haze developing centrally in the second to third decade may reduce the vision sufficiently to necessitate surgical intervention. LCD type 111 A variant also shows central thicker lattice lines while LCD Type IV is characterized by more deeper deposits and do not have epithelial erosions. Marked vision loss occurs by fourth decade though corneal erosions may be evident from the first decade.^[1]

Histopathologically, there occurs amyloid deposition between the epithelial basement membrane and Bowman's layer and in the stroma distorting the corneal lamellae. The treatment options available for LCD in the current scenario are penetrating keratoplasty (PK), deep anterior lamellar keratoplasty (DALK), and phototherapeutic keratectomy (PTK).^[2] In an exhaustive article on "outcomes of keratoplasty in LCD in a large cohort of Indian eyes" in the current issue, a retrospective analysis of 72 eyes of 57 patients over 15 years with LCD is presented.^[3] This is the first article on the large cohort of LCD patients of Indian ethnicity. The outcomes of the graft reported are similar following PK and DALK though number of eyes undergoing DALK was one-fourth of those undergoing PK. DALK as a treatment option has been introduced much later after PK in the management of stromal corneal dystrophies. DALK was found to provide slightly better visual outcome at 2-year follow-up compared to PK. The median logMAR best-corrected visual acuity was 0.65 at 10 years after PK. Major challenges limiting the overall graft survival in both the groups, however, have been dystrophy recurrence and graft infections.

When comparing the results in another large series of 60 eyes with LCD undergoing PK or deep lamellar keratoplasty (DLKP),^[4] DLKP was found to be a safer alternative. Most of the complications such as Descemet's micro and macroporations occurred intraoperatively in the DLKP group while late phase complications such as endothelial rejection and secondary glaucoma were the main complications in the PKP group. There is no mention of the recurrence of the disease during the median follow-up of 29.6 months.

Delayed corneal epithelial wound healing in LCD patients after PK is another challenge in the postoperative period. Keratoepithelin gene mutations are probably responsible for the conditions that affect corneal epithelial cells.^[5] Potential for recurrence in LCD exists because of genetic nature of the disease. Recurrences of lattice dystrophy in corneal grafts are

time interval-related post-PK/DALK. Recurrences following PTK also exist. Early recurrences however may be missed. Recurrences reported especially in PK series range from 2.8% to 48% and 60% at 33 months, 9 years, and 8.4 years follow-up, respectively.^[6-8] In the current series also, recurrence rate of 12.5% was observed at 5 years. Incomplete removal of the recipient stroma by DLKP/DALK can lead to recurrence of LCD in the corneal grafts. It thus becomes important to perform complete Descemet membrane baring technique to perform DALK to reduce the incidence of recurrence in LCD patients and further improve the graft survival. Type of LCD on which PK/DALK is performed may also influence the recurrence.

Endothelial rejection is an important cause of graft failure after PK. Although other types of graft rejection (subepithelial or stromal) may develop after DALK, preservation of host endothelium eliminates the risk of endothelial rejection, thus improving the long-term graft survival when compared to PK.

Graft rejection though is a rare cause for a new graft after DALK surgery, clinically significant recurrence may require multiple grafts in eyes undergoing DALK for LCD. Re-grafting after anterior lamellar surgery is not very challenging and is a relatively simple procedure. Therefore, performing DALK with big bubble technique may be a better option in LCD cases as repeat procedures may be necessary over a lifetime.

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References

1. Weiss JS, Møller HU, Aldave AJ, Seitz B, Bredrup C, Kivelä T, *et al.* IC3D classification of corneal dystrophies – Edition 2. *Cornea* 2015;34:117-59.
2. Jung JW, Kim SA, Kang EM, Kim TI, Cho HS, Kim EK, *et al.* Lattice corneal dystrophy type IIIA with hyaline component from a novel A620P mutation and distinct surgical treatments. *Cornea* 2014;33:1324-31.
3. Mohamed A, Chaurasia S, Ramappa M, Murthy SI, Garg P. Outcomes of keratoplasty in lattice corneal dystrophy in a large cohort of Indian eyes. *Indian J Ophthalmol* 2018;66:664-70.
4. Kawashima M, Kawakita T, Den S, Shimmura S, Tsubota K, Shimazaki J, *et al.* Comparison of deep lamellar keratoplasty and penetrating keratoplasty for lattice and macular corneal dystrophies. *Am J Ophthalmol* 2006;142:304-9.
5. Kawamoto K, Morishige N, Yamada N, Chikama T, Nishida T. Delayed corneal epithelial wound healing after penetrating keratoplasty in individuals with lattice corneal dystrophy. *Am J Ophthalmol* 2006;142:173-4.
6. Pandrowala H, Bansal A, Vemuganti GK, Rao GN. Frequency, distribution, and outcome of keratoplasty for corneal dystrophies at a tertiary eye care center in South India. *Cornea* 2004; 23:541-6.

7. Meisler DM, Fine M. Recurrence of the clinical signs of lattice corneal dystrophy (type I) in corneal transplants. *Am J Ophthalmol* 1984;97:210-4.
8. Marcon AS, Cohen EJ, Rapuano CJ, Laibson PR. Recurrence of corneal stromal dystrophies after penetrating keratoplasty. *Cornea* 2003;22:19-21.

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Access this article online	
Quick Response Code:	Website: www.ijo.in
	DOI: 10.4103/ijo.IJO_393_18

Cite this article as: Arora R. Deep anterior lamellar keratoplasty or penetrating keratoplasty in lattice corneal dystrophy. *Indian J Ophthalmol* 2018;66:673-4.