

Usefulness of Autokeratoplasty

M HUSSAIN M MOIN N A AASI,

Institute of Ophthalmology, Mayo Hospital, Lahore.

Correspondence to Dr. Muhammad Moin, Senior Registrar

Autokeratoplasty involves the exchange of corneal button between the two eyes of the same person. The eye with the clear cornea has no potential for vision while the recipient eye has an opaque cornea. Autografts offer the potential advantage of having a very low risk for immunological rejection. We report 3 cases who underwent autokeratoplasty to restore useful vision in one eye.

Keywords Autokeratoplasty, cornea graft.

Corneal autografts offer potential advantages over conventional penetrating keratoplasty in a selected group of patients, in particular the lack of the risk of immunological graft rejection. Suitable patients must have potentially useful vision limited by a diseased cornea in one eye and the fellow eye must have no useful vision but a healthy cornea. Corneal autografting is very rarely carried out due to this unusual combination of clinical features, and remains virtually unreported. Moreover in Pakistan where donor corneas are not usually available this offers a useful compromise for the patients. We report 3 cases where corneal autograft helped restore useful vision.

Materials and Methods.

Case 1.

A 70 year old male presented in our outpatients department with a history of right intracapsular cataract extraction and left open angle glaucoma. His vision was perception of light in the right eye and no perception of light in the left eye. Right eye was aphakic with bullous keratopathy. A grossly normal retina was seen through the hazy cornea. Left eye showed a clear cornea with an atrophic fully cupped disc. Intra-ocular pressures (IOP) were 18 and 35 mm of Hg in the right and left eye respectively.

He underwent a left to right autokeratoplasty under general anesthesia. An 8 mm corneal disc was removed from the right side and stored in ringer lactate solution. Methylcellulose was injected to form the anterior chamber before removal. An 8mm disc of clear cornea was taken from the left eye and directly transplanted to the right eye. Four cardinal 10/0 nylon sutures were placed to stabilize the cornea in the horizontal and vertical meridian and then a running 10/0 nylon suture was used to complete the keratoplasty. A similar procedure was done on the left eye to suture the initially removed corneal disc from the right side.

No complications were seen during his postoperative period and 1 year later he had improved from perception of light to 4/60 with a refraction was +10 +5 x 30. He was able to perform his daily activities.

Case 2.

A 65 year female presented in our outpatients department with a history of right pseudophakia and left open angle

glaucoma. She was a non-insulin dependent diabetic and her visual acuity was perception of light in the right eye and no perception of light in the left eye. Right eye showed pseudophakic bullous keratopathy and a grossly normal appearing fundus. Left eye had a clear cornea along with a dense cataract and a marked afferent papillary defect. IOP was 14 and 28 mm of Hg in the right and left eye respectively.

She underwent a left to right autokeraoplasty in a similar way as described above. There were no complications post operatively and her vision improved from perception of light to 3/60 after 6 months with a refraction of -2 +5 x 60.

Case 3.

A 50 year male presented in our outpatients department with a history of open angle glaucoma in the right eye and aphakia in the left eye post extracapsular cataract extraction. Visual acuity was no perception of light in the right eye and hand movement in the left eye. Examination of the right eye showed a clear cornea, cataractous lens, marked afferent pupillary defect with a totally cupped atrophic disc. Left eye was aphakic and had an 8mm central corneal opacity secondary to trachoma Figure 1. No fundal view was obtained in the left eye therefore a B scan was done which revealed a flat retina. IOP was 40 and 17 mm of Hg in the right and left eye respectively.

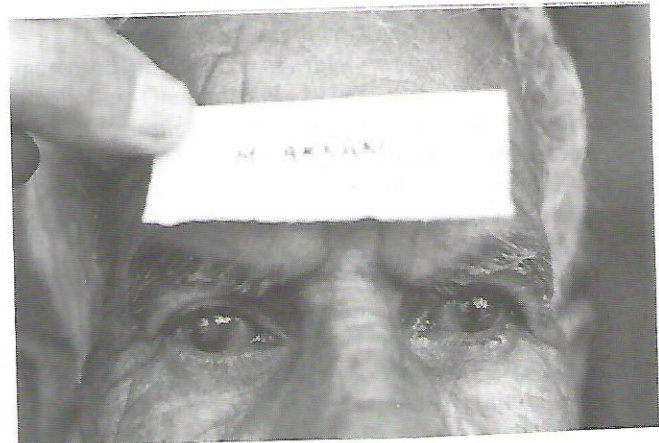


Fig.1 Preoperative photograph

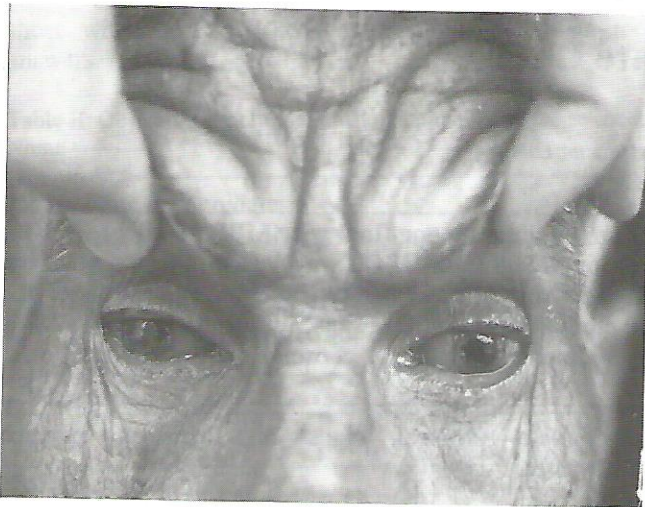


Fig.2. Postoperative photograph

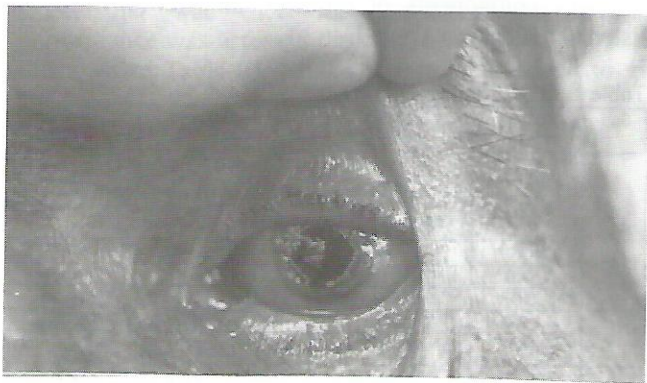


Fig.3 Postoperative left clear corneograph

He underwent a right to left autokeratoplasty in a similar manner as described for the first case Figure 2 and 3. There was large epithelial defect on the left sided graft initially which resolved completely. Five months post operatively he improved from hand movement vision to 1/60 with a refraction of +13.50 -4.0 x 120.

Discussion

In Pakistan, where there is poor availability of donor corneas, autografting is a useful way of restoring vision to

an eye with a diseased cornea if the fellow eye has no visual potential but a healthy cornea. But the main advantage of this technique is the avoidance of the risks of immunological graft rejection. This reduces the need for prolonged follow-up and benefits the patients in whom compliance is poor.

This unusual combination of clinical features that need to be present to consider autografting means that the procedure is rarely carried out. Hodkin and Insler¹ reported a case in which a homograft had failed in an eye with previous stromal keratitis, the fellow eye being blind from traumatic optic neuropathy. The eye achieved a pinhole visual acuity of 6/12. Tole et al² reported a case in which autografting of the cornea was combined with a limbal stem cell transplant in an eye that had sustained a severe alkali injury, the fellow eye being removed due to a large choroidal melanoma. The patient achieved a visual acuity of better than 6/9.

Oplinger et al³ reported 4 cases and warned of the risk of high postoperative astigmatism. However, 3 of the 4 cases had less than 7 diopters of astigmatism. Significant post-operative astigmatism remains a problem in all corneal graft surgery and is unlikely to be exacerbated by using an autograft.⁴ Indeed, because of the lack of the risk of rejection, large-diameter autografts may be used safely and this may reduce the risk of significant post-operative astigmatism.

In summary, corneal autografting avoids the risks of graft rejection and in selected patients is successful in restoring useful vision.

Reference:

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