

**CORNEAL AUTO-TRANSPLANT: A REPORT OF 3 CASES\***

J. G. LOUW, B.A., M.B., Ch.B., D.O., D.O.M.S., *Department of Ophthalmology, Groote Schuur Hospital, Cape Town*

The ideal donor material for corneal grafting is the host's own cornea, either from the same eye or from the other eye that is totally blind from a cause that leaves the cornea intact and healthy; or possibly from an identical twin that has a cornea to spare for the same reason.

These cases carry an excellent prognosis for vision, provided the recipient eye meets the other requirements for improvement in the vision.

In assessing the possible improvement in vision in the recipient eye, the history is of great importance, and the projection of light test of great value. However, when the donor eye is quite blind, even a doubtful improvement in the vision of the recipient eye is justifiable cause for a cross-transplant.

## CASE REPORTS

*Case 1*

A non-White male (L.S.) of 58 years, a rather sickly and neglected individual, was referred to me for treatment of an indolent ulceration of the cornea of the left eye.

His right eye was blind and divergent from an old internal injury which was undiagnosed, but left a clear healthy cornea.

The ulceration was a diffuse type with streaky infiltration and a tendency to vascularize. The visual acuity was about 1/60. It resisted all treatment, and in January 1960 an 8 mm.  $\times$  0.3 mm. circular lamellar graft from cadaver material was placed.

The graft healed poorly and showed signs of breaking down at the suture edges. An ulcer developed in one area and 2 months later a large central tarsorrhaphy was performed. This resulted in healing of the ulcerated portion, but with increasing vascular invasion.

In June 1960 a 7-mm. lamellar graft (cadaver material) was placed in the centre of the old graft, after excising scar-tissue as deeply as possible.

A month later the entire central cornea appeared much clearer and lens opacity could be discerned. With -6.00 sph. vision was 3/60. This did not improve, but tended to get worse. There was deep infiltration in the graft, and vessels were increasing.

In May 1961 he presented with a cloudy cornea showing oedema, and the tension was found to be raised. In the following month a penetrating cyclo-diathermy was done in two upper quadrants and resulted in lowering of tension and clearing of the cornea, but in June 1962 he had recurrence of tension and a reading of 43 Schiotz.

An iridencleisis operation was performed by another surgeon, with a good filtering bleb and a resulting tension of approximately 14 Schiotz. At this stage visual acuity was CF only, but peripheral vision appeared intact.

In February 1963 the corrected visual acuity was about 6/60 and the tension 20 Schiotz. He was never very co-operative or appreciative, and he was lost sight of for nearly 3 years, when he came back asking for something to be done. He was then receiving a permanent disability pension for his poor vision. The cornea of the left eye was not inflamed, although hazy, and he had a

normal tension and a reacting pupil, allowing for the coloboma, and there was a fairly dense cataract which precluded any view of the fundus. Projection was good. He was advised to have an autokeratoplasty, to be followed by a lens extraction, and he reluctantly agreed.

In January 1966 a 7-mm. full-thickness keratoplasty was performed under general anaesthesia, using a disc from the right eye, the latter being provided with a graft from cadaver material. In this eye loss of vitreous matter was experienced and in fact the eye subsequently became phthisic.

The left eye, however, did very well. The graft remained clear and revealed posterior synechiae and a fairly dense cataract. In April 1966 an extracapsular extraction under general anaesthesia was performed and was later followed by a capsulotomy.

In November 1966 a fairly good view of the fundus was possible, showing no obvious pathology except a somewhat pale disc. With +10.00 sph. the vision was 6/18 and the tension 11.2 Schiotz (Fig. 1). He was reluctant to admit to the improvement, having trained himself to potter around with a white stick, but it was discovered that he could wander down to the local by himself! He several times tried to dodge the transport sent to fetch him to the hospital for examination, because he feared a favourable report would affect his pension. Only after reassurance could his co-operation be obtained. As far as we know, his vision remains satisfactory and he can help himself.

*Case 2*

A White female (A.V.), aged 48 years, had a left eye which was blind from optic atrophy, possibly after childbirth. There was evidence of some uveitis and the eye was divergent, with a partial posterior cortical cataract. The cornea was perfectly clear.

The right eye suffered from recurrent epithelial erosions and a form of bullous keratitis.

In October 1953 the corrected vision in the right eye was recorded as being 6/5. In January 1959 early bullous keratitis was observed, followed by recurrent infiltration and epithelial erosion. In November 1963 there was a fairly deep scar of the cornea with surface staining and the vision was approximately 6/36.

In December 1963 an 8.1  $\times$  0.35 mm. lamellar graft was performed. The thick graft remained relatively clear and the vision remained 6/36. Six months later there was a haziness of the host cornea below the graft, and a year later a staining area developed in the graft with a recurrence of erosion.

In September 1965 an 8.1  $\times$  0.4 mm. lamellar graft was performed into the same bed. This resulted in a clear graft, but the hazy host cornea behind precluded vision from being even 6/60. The new graft was subject to bouts of epithelial oedema, and vision dropped from 6/36 to CF at times, and then improved (Fig. 2).

It was decided to do an autograft, and in April 1968 an 8.1-mm. auto-transplant was performed on the right eye, a homograft from cadaver material being used for the left eye.

\*Date received: 26 August 1969.



Fig. 1. Case 1. Left eye (aphakic) 10 months after auto-transplant.

Fig. 2. Case 2. Left eye after second lamellar graft.

Fig. 3. Case 2. Left eye 1 year after auto-transplant.

Fig. 4. Case 2. The patient 1 year after auto-transplant.

Fig. 5. Case 3. Blind right eye before operation showing dense cataract and clear cornea.

Fig. 6. Case 3. Scarred left cornea before auto-transplant.

Fig. 7. Case 3. Right eye 1 month after cross-over auto-transplant.

Fig. 8. Case 3. Left eye 1 month after cross-over auto-transplant.

Fig. 9. Case 3. One month after cross-over auto-transplant.

Initially cloudy, the grafted right cornea cleared and remained clear, and when last seen, in June 1969, the corrected right vision was 6/12 and J4. The eye has remained free from inflammation (Figs. 3 and 4).

#### Case 3

A non-White male (A.J.), aged 58 years, was admitted to Groote Schuur Hospital from a distant part of the country, with a divergent right eye showing a dense calcareous cataract, no perception of light and a good clear cornea (Fig. 5).

The left cornea was greatly scarred from old repeated ulceration with infiltration, mostly in the central area. The vision was HM (Fig. 6). In addition he was quite deaf from bilateral chronic middle-ear disease.

In February 1969 a cross-over 7-mm. autograft was performed. The graft took well and the grafted cornea remained clear (Figs. 7 and 8). At the same time the ear surgeons cleared out his ears, and apparently restored some hearing.

When discharged from the hospital, he was a much

improved individual who could help himself and see where he was going (Fig. 9). He has not been seen since.

#### CONCLUSION

The corneal autograft carries an infinitely better prognosis than any selected homograft. Wherever possible a cross-over autokeratoplasty is preferable, even if indifferently material is placed in the blind eye.

#### SUMMARY

Three cases of corneal auto-transplant are reported. All 3 cases show that, although circumstances seldom permit, an auto-transplant of the cornea is a highly satisfactory and rewarding operation, and should always be done where there is any possibility of improving the vision in the only functioning eye.

The photographs were taken on Kodachrome film, and I wish to thank Messrs Kodak (South Africa) (Pty) Ltd for kindly sponsoring the publication of the colour illustrations.

#### ADDENDUM

By October 1969 the condition of case 3 was unchanged and his vision was considerably improved by a spherical -4.00 lens.