

Odonto Corneal Implant : Canine Vision

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Osteo-Odonto Keratoprosthesi (OOKP) (also known as "tooth in eye" surgery^[1]) is a medical procedure to restore vision in the most severe cases of corneal and ocular surface patients. It includes removal of a tooth from the patient or a donor.^[2] After this, a lamina of tissue cut from the tooth is drilled and the hole is fitted with optics. The lamina is grown in the patients' cheek for a period of months and then is implanted upon the eye.^[3]

Indications And Prognosis

An operation to graft the OOKP is undertaken in severe pemphigoid, chemical burns, StevensJohnson syndrome, trachoma, Lyell syndrome and multiple corneal graft failure.^[4]

There is a significant risk of anatomical failure of lamina in the long term, estimated at about 19% in a small study,^[5] with the main risks being laminar resorption, particularly in allografts, and glaucoma. Another, bigger study comparing OOKP with the lesser known osteo-kerato prosthesis (OKP) in 145 and 82 patients and follow-up terms up to 10 years yielded following statistics:

- 10-year anatomical survival: 66% for OOKP and 47% for OKP,
- 2-year functional survival: 63% for OOKP and 49% for OKP,

- 10-year functional survival: 38% for OOKP and 17% for OKP, with functional survival defined as best corrected visual acuity above 0.05. A long-term study of 181 patients puts the chances of retaining an intact OOKP after 18 years at 85%.

Procedure

OOKP is a complex two stage operation which was pioneered in Italy in 1963 by professor Strampelli.

Stage 1 of the surgery involves 5 separate procedures:

1. The eye is opened up and the entire inner surface of the eyelids, corneal surface and all scar tissue is removed
2. Inner mucosal lining of the cheek is transplanted onto the new surface of the eye
3. A canine or premolar tooth and part of the adjacent bone and ligaments are removed
4. A bolt-shaped structure is fashioned from the tooth-bone complex which is fitted with a plastic optical cylinder
5. The tooth-bone-cylinder complex is implanted into the patient's cheek to grow a new blood supply

Stage 2 (about 4 months later) involves 2 separate procedures:

1. The cheek mucosal lining over the eye is opened and the inner contents of the eye are removed

2. The tooth-bone-cylinder complex is removed from the cheek and inserted into the eye, the mucosal cheek lining is replaced over the implant.

At the end of the procedure, light can now enter through the plastic cylinder, and the patient is able to see through this cylinder with good vision.^[3]

References

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Legends

Fig. 1 The affected Eye

Fig. 2 PMMA Cylinder Glued to Osteodental Lamina

Fig. 3 Appearance of Eye after 1 month

Fig. 4 Appearance of Eye with Cosmetic Shell

