

AUTOKERATOPLASTY

When and How?

MOHAMED SAAD,MD
Prof. of ophthalmology
ASSIUT UNIVESITY HOSPITAL



- Corneal blindness is the most common cause of blindness in Egypt(*Al-Hussaini.M.K.1987*)
- Although keratoplasty is the ideal solution, its availability in Egypt is limited by legal and traditional factors.
- Autokeratoplasty may be the logical solution for these cases.

Types of corneal autografting:

- Contralateral auto grafting.
- Ipsilateral rotational auto grafting.
- Surgical Vs Femtosecond assisted.

Aim of the work

- Studying the clinical outcomes of ipsilateral rotational autokeratoplasty.
- Comparing surgery and femto second assisted IRA results.

Introduction:

Homologus graft disadvantages:

- Unavailability.
- High cost
- Endothelial rejection...15 - 20% .
- Late graft failure.
- High doses of postop. steroids.

Autografting :

WHEN?

- Ipsilateral rotational autokeratoplasty (IRA) indicated in non progressive central corneal opacity and a clear cornea in one side.

HOW?

- The procedure involves an **eccentric trephination** of the cornea, **rotating the opacity out of the visual axis** and the clear peripheral cornea to the center.

Advantages of autografting over homograft:

- **NO risk of immunological rejection** (pediatric patients).
- Does **not** require high doses of postoperative **corticosteroids** (unlike PK) and therefore avoids its complications.
- **lower endothelial cell loss** than after homologous PK.

Disadvantages:

- **Astigmatism** continues to be a problem due to the **eccentric** nature of corneal trephination in rotational keratoplasty.

Methods:

- 1) Formulae.
- 2) Digital photographs and imaging softwaredrawbacktwo-dimensional images do **not** consider the **curvature** of the cornea .
- 3)Simpler technique.

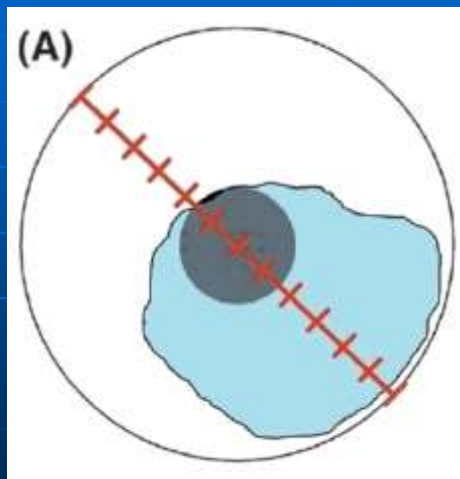
Steps:

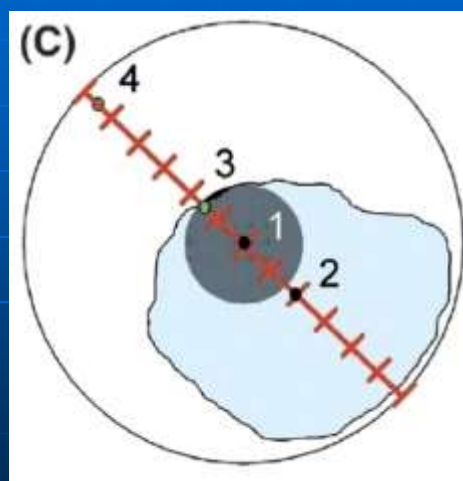
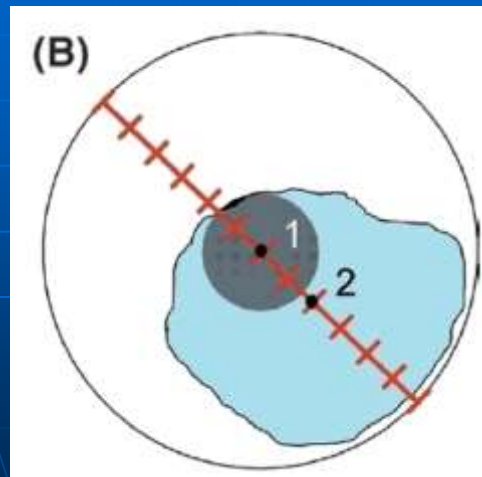
- Preoperative assessment.
- Intraoperative calculations
- Appropriate **trephine size**.
- Appropriate **position** on the cornea.

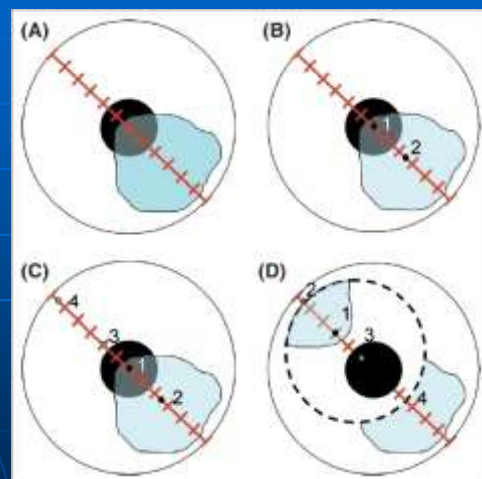
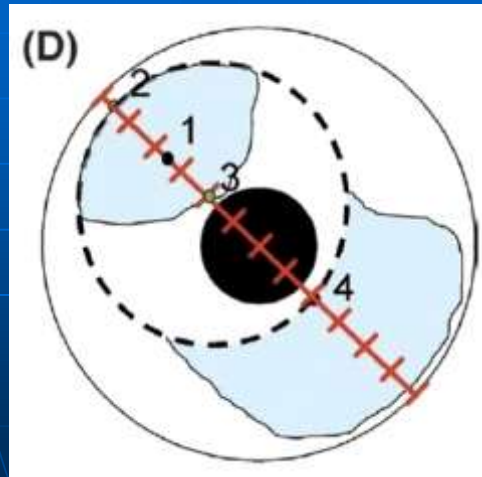
Tools

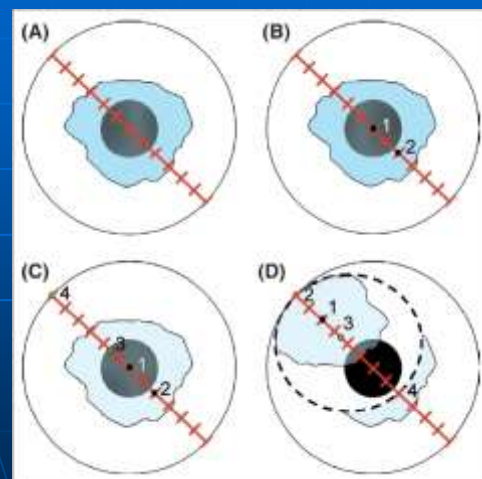
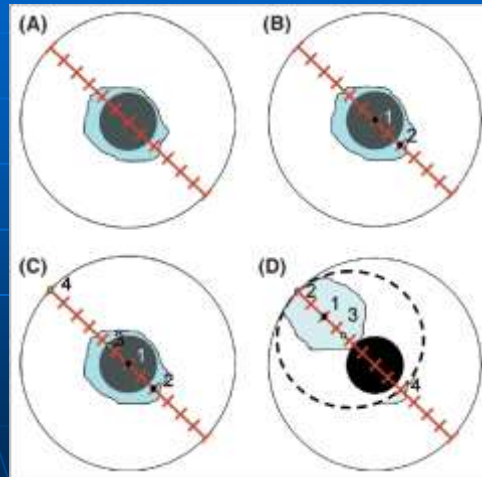
- Calipers is inked with a marking pen (mark 1).
- (mark 2)
- (mark 3)
- (mark 4)

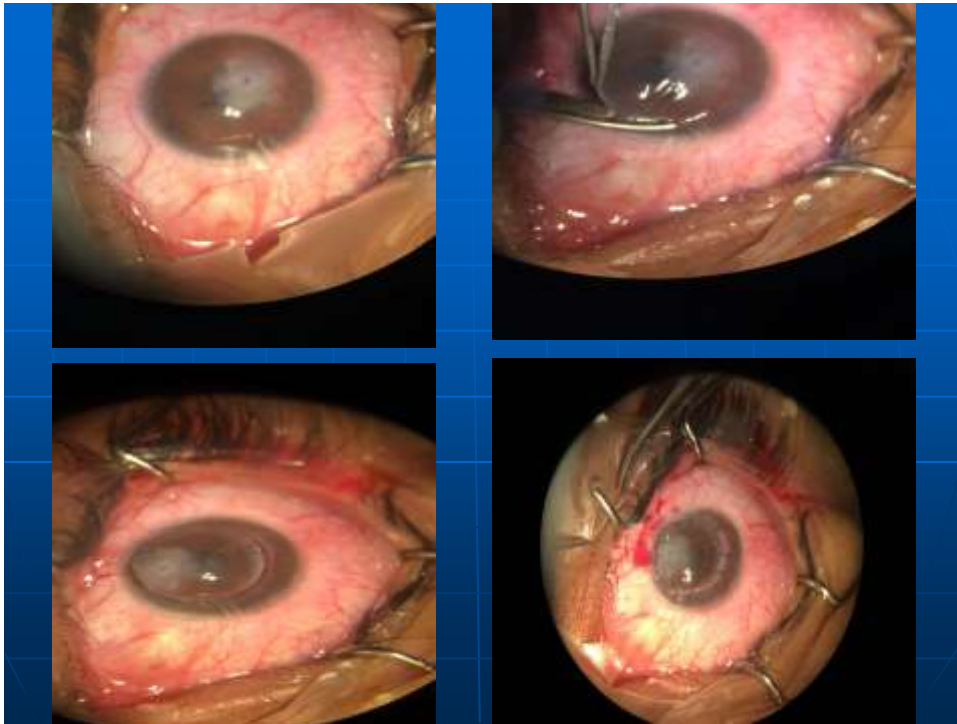
Technique:







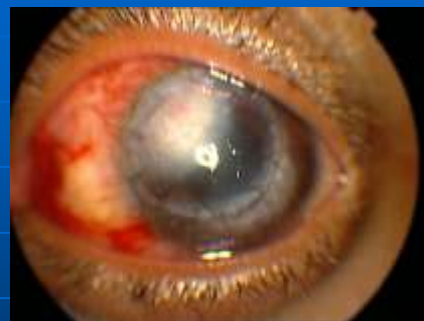
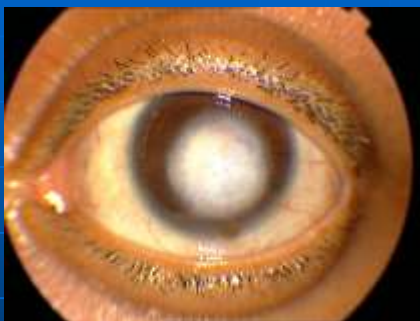


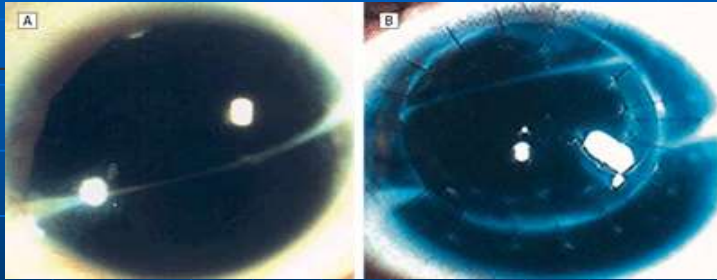


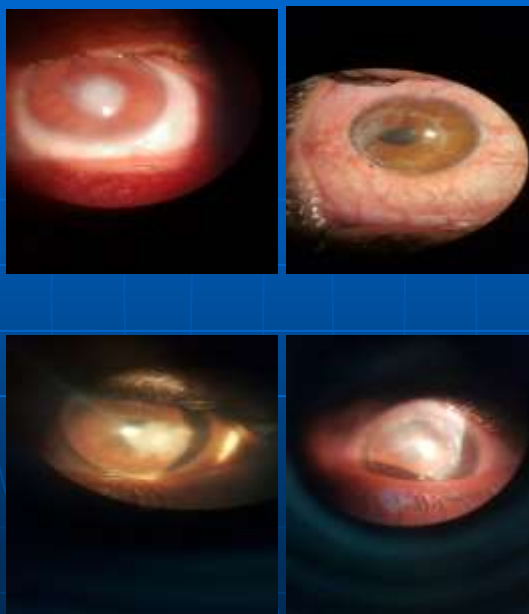
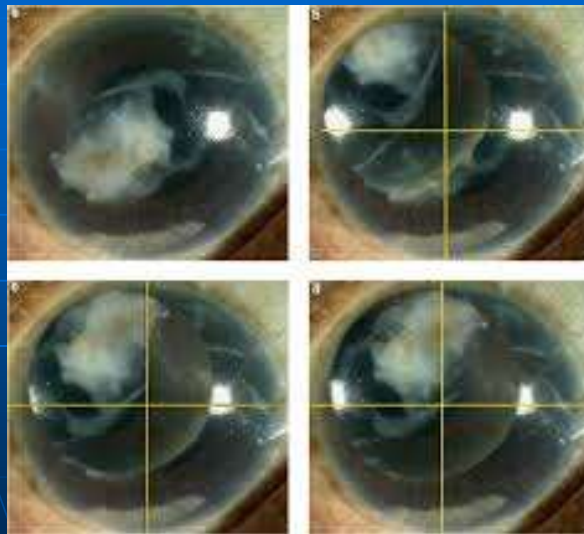
Results:

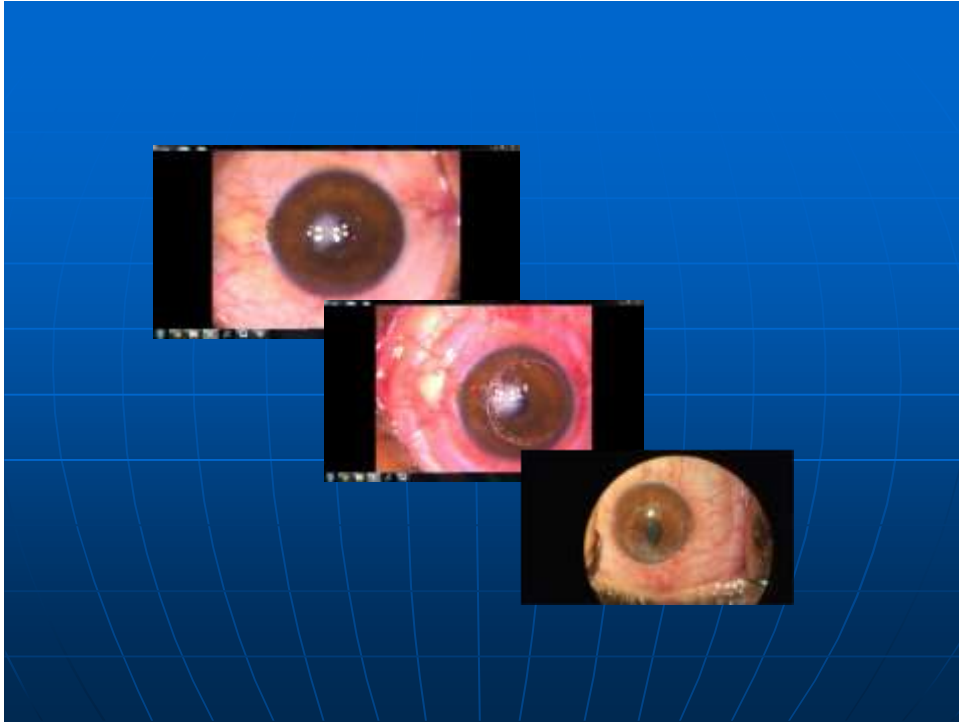
Two IRA studies:

	Surgical	FSA
No.of eyes	12	3
Duration	2003 to2005	2016 2017
Mean preop.VA	C.F.	C.F.
Mean Postop. VA	3 60-6 18(mean 6 36)	6 60-6 18(mean 6 24)
Mean post op.Astigm.	6.25D	4.75D
No.of failed grafts	2 12(16.7%)	0
No.of rejected grafts	0	0
No.of Pt.e VA more than 6 60	9 (75%)	3(100%)
Postop. glaucoma	1	0
Insruments	Hand held trephine.	Allegretto WaveLight® FS200 Laser .









DISCUSSION

Rotational autokeratoplasty has **many advantages** over homologous keratoplasty;

- **Availability**
- Absence of immune **rejection**.
- Rapid **healing**.
- Less postoperative **visits**.
- Less **steroids**.
- **Eye banking** is not necessary.

- **Disadvantages** of this procedure is poorer visual acuity due to **higher astigmatism** caused by eccentric grafting with proximity of edge of graft to the center.

- Although some authors use a special formula to determine the size and location of the graft (Jonas JB et al,1994), we prefer a simpler technique; an **eccentric graft of 8 mm diameter that include a part of opacity that occupies less than 4 mm of trephine.**

- Postoperative vision and astigmatism was comparable with other results
(Murthy S. et al 2001.)
- Graft failure represents 17% of cases underwent conventional surgery, probably due to poor endothelial count so preop.specular microscopy is advisable .
- Newer generations of CL e.g. Rose K2 XL (semi scleral lens) may compensate for high postop. Astigmatism.

CONCLUSION

- IRA is considered a good alternative to homologous grafting specially when the later is **inavailable**, also in cases with high risk of immune **rejection** (pediatric) with **less** postoperative **steroids**.

Take home message:

- Contrary to common belief, IRA is a safe and effective procedure.
- It can be alternative to PPK when donor tissues are scarce and also if risk of immune allograft rejection is high.
- Wider scale studies with use of specular microscopy and topography might be useful.
- Femtosecond laser may add some benefit to this procedure.

References

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