INTERNATIONAL CONGRESS OF THE

EGYPTIAN

OPHTHALMOLOGICAL SOCIETY

In collaboration with: MEACO MIDDLE EAST AFRICA COUNCIL OF OPHTHALMOLOGY

RISK FACTORS OF CORNEAL GRAFT

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AGENDA

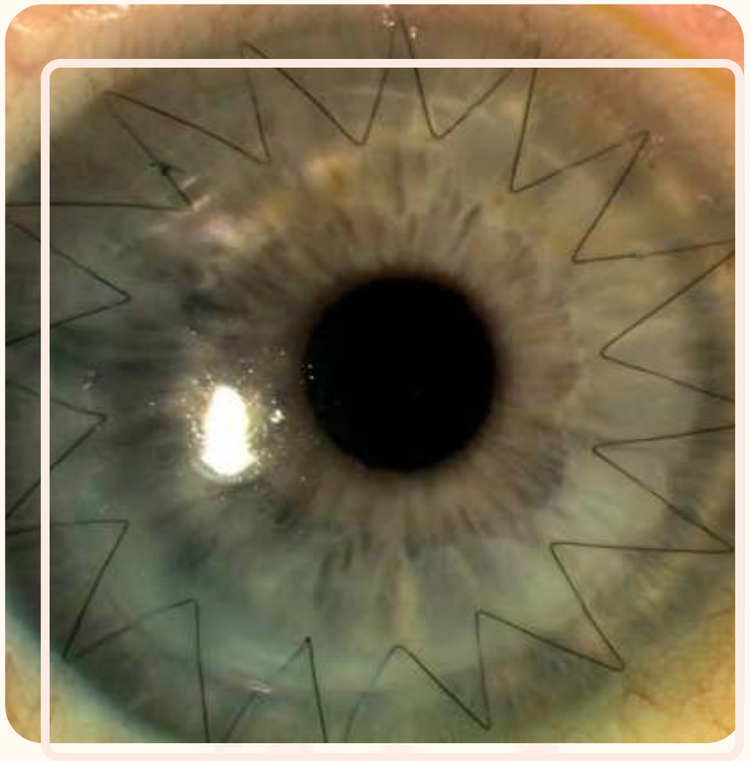
- Introduction
- Patient-Related Risk Factors
- Surgical-Related Risk Factors
- Graft-Related Risk Factors
- Postoperative Risk Factors
- Other Factors
- Conclusion

Introduction

- Corneal grafts (also known as corneal transplantation or keratoplasty) are commonly performed to treat various corneal diseases, such as keratoconus, corneal scars, and endothelial dysfunction.

- While corneal transplantation generally has good outcomes, several risk factors can influence the success and healing process of the graft.

- These risk factors can be categorized into patient-related, surgical-related, and graft-related factors.



1.PATIENT-RELATED RISK FACTORS

A) Age

B) Systemic Diseases

C) Ocular Surface Disease (OSD)

D) Corneal Pathology

1.PATIENT-RELATED RISK FACTORS

A) AGE

- Younger patients may have a higher risk of graft rejection due to a more active immune system.

- Older patients may have co-morbidities or a slower healing response.

1.PATIENT-RELATED RISK FACTORS,Cont’

B) Systemic Diseases

AUTOIMMUNE DISEASES

- Conditions like rheumatoid arthritis, lupus, or other autoimmune disorders can increase the risk of graft rejection due to the body's heightened immune response.

DIABETES

- Poorly controlled diabetes can impair wound healing and increase the risk of infection and rejection.

HYPERTENSION

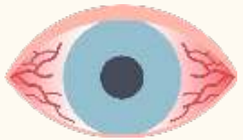
- Can affect blood flow and healing, potentially leading to complications.

INFECTIONS

- Systemic infections or a history of herpes simplex virus (HSV) keratitis may increase the risk of complications.

1. PATIENT-RELATED RISK FACTORS, Cont’

C) Ocular Surface Disease (OSD)

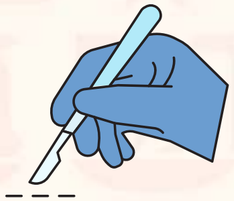


DRY EYE:

- Chronic dry eye can affect the healing process and increase the risk of graft failure.

CHRONIC OCULAR INFLAMMATION

- Conditions like uveitis or other inflammatory eye diseases can lead to graft rejection and failure.



PREVIOUS OCULAR SURGERY:

- Any prior surgeries (e.g., cataract surgery, LASIK, or other corneal surgeries) can increase the risk of complications, including graft rejection.

1. PATIENT-RELATED RISK FACTORS, Cont’

D) Corneal Pathology

- **Corneal Scarring:** Severe scarring from trauma or infection may complicate grafting and lead to rejection or poor visual outcomes.
- **Keratoconus:** Patients with keratoconus may have lower rates of graft failure compared to other corneal conditions.

2.SURGICAL-RELATED RISK FACTORS

a) Surgical Technique:

- **Graft Preparation:**

- The technique used to prepare the donor corneal tissue (e.g., full-thickness vs. lamellar corneal grafts) can affect graft survival.

- For example, deep anterior lamellar keratoplasty (DALK) may have a lower risk of rejection compared to penetrating keratoplasty (PK), but it is technically more challenging.

2.SURGICAL-RELATED RISK FACTORS, cont’.

a) Surgical Technique, cont’. :

- **Surgical Experience:** Inexperienced surgeons may be more likely to encounter complications such as improper graft size, poor alignment, or improper suturing, leading to poor graft survival.
- **Graft Host Interface:** Inadequate apposition between the graft and host cornea can lead to epithelial ingrowth, graft rejection, or graft failure.
- **Suture-Related Issues:** Improper suturing can lead to complications like infection, astigmatism, or wound dehiscence.

2. SURGICAL-RELATED RISK FACTORS, cont’.

b) Intraoperative Complications:

Intraoperative Perforation

Accidental perforation of the cornea during the procedure can complicate graft acceptance and healing.

Infection

Intraoperative contamination or handling of the corneal graft can lead to postoperative infection, which may necessitate graft removal.

3. GRAFT-RELATED RISK FACTORS

a) Graft-Related Risk Factors

Age of Donor

Older donor tissue may be less viable, particularly in endothelial keratoplasty procedures.

Storage Time

Longer storage times, particularly when the graft is stored in organ culture or corneal preservation media, may reduce the quality of the donor tissue.

Donor Corneal Condition

The health of the donor cornea (e.g., presence of endothelial cell loss, keratoconus, or other pre-existing conditions) can affect the success of the graft.

3. GRAFT-RELATED RISK FACTORS, cont’

b) Graft Rejection:

- **Host Immune Response:**

  A strong immune response from the recipient’s body can lead to graft rejection. This is more common in the first year after surgery and can be influenced by the patient’s immune status, presence of inflammation, and type of keratoplasty performed.

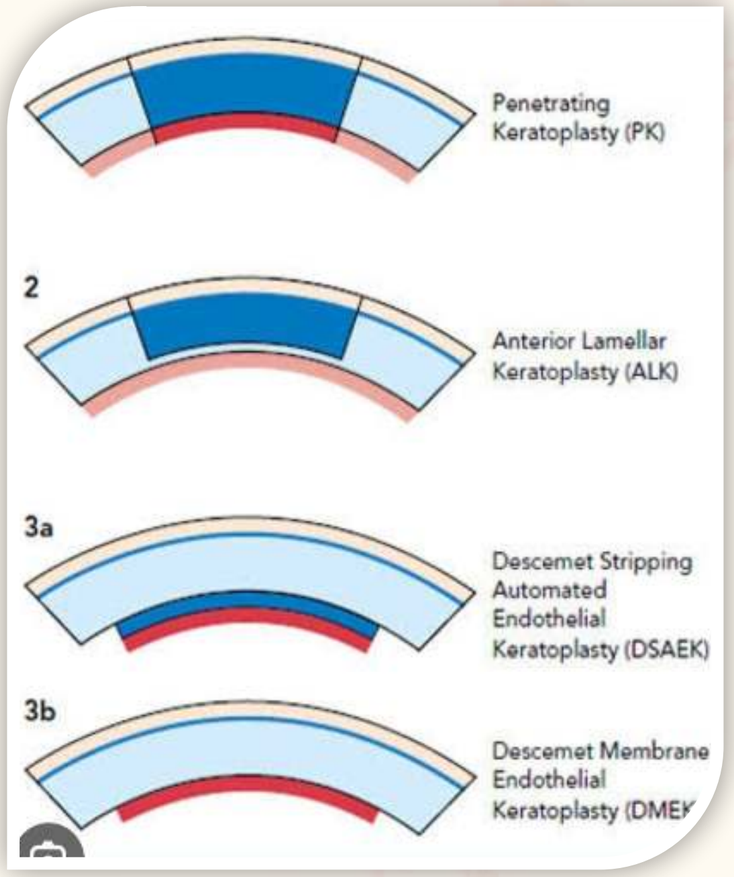
- **HLA Matching:**

  The degree of histocompatibility between the donor and recipient is important, especially for high-risk transplants like those performed for keratoconus or autoimmune diseases.

3. GRAFT-RELATED RISK FACTORS, cont’.

c) Endothelial Cell Loss:

- In endothelial keratoplasty (e.g., Descemet’s Membrane Endothelial keratoplasty or DMEK), endothelial cell loss can occur over time, leading to graft failure. Factors such as poor graft adhesion or endothelial dysfunction in the donor tissue can increase the risk.



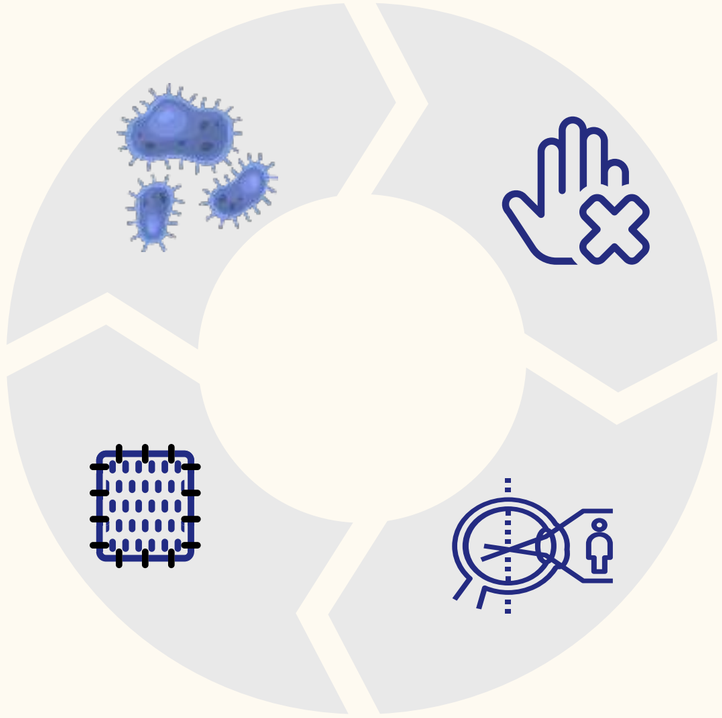
4. POSTOPERATIVE RISK FACTORS

❑ Infection:

- Postoperative infections, including bacterial, fungal, or viral infections, can lead to graft failure and a need for repeat surgery.

❑ Graft Dislocation or Failure:

- Graft dislocation or malpositioning may require additional surgery.
- This is particularly relevant in lamellar keratoplasty procedures where the graft may be more prone to movement.



❑ Rejection Episodes:

- Graft rejection may present as redness, pain, sensitivity to light, or decreased vision. Early detection and treatment with topical steroids or other immunosuppressive therapy can improve outcomes, but untreated rejection can lead to graft failure.

❑ Astigmatism:

- Corneal grafts can lead to irregular astigmatism due to poor alignment, irregular healing, or suture-related issues.

5. OTHER FACTORS

Smoking

Smoking has been shown to impair healing and increase the risk of complications after corneal transplantation.

Compliance with Postoperative Care

Non-compliance with the prescribed postoperative regimen (e.g., failure to use immunosuppressive medications or attend follow-up appointments) can increase the risk of graft rejection and failure.

CONCLUSION

- While corneal grafting is a generally safe and effective procedure, many factors can influence its success.
- Patient-related factors like age, systemic diseases, and ocular surface health, as well as surgical factors like technique and intraoperative complications, all play significant roles.
- Donor tissue quality and postoperative care are also critical in determining the outcome of the graft.
- Careful patient selection, thorough preoperative assessment, and diligent postoperative management are essential to maximize the chances of graft survival and restore vision.

Thanks for your attention!

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