



Iz istorije časopisa

ACTA OPHTHALMOLOGICA IUGOSLAVICA

Vol. 22, supplement 1, 1984

UDK 617.713-089.843

CODEN: AOPIBU

YU ISSN 0001-6403

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KERATOPLASTY IN INFLAMED EYE

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Key words: indications for keratoplasty, bacterial keratitis, herpetic keratitis, mycotic keratitis, trophic corneal ulcer, acute keratoconus, eye-burns, complications, results in separate groups

Summary

Corneal grafting in an inflamed eye was only recently the last resort with the purpose of tectonic preservation of an eye. Today the situation has changed primarily thanks to the improvements in the surgical techniques and better understanding of the essence of inflammation.

The author presents personal experience with 145 keratoplasties on inflamed eyes. From this series there were 64 with corneal perforation.

Surgery was performed in 17 cases of bacterial keratitis with satisfactory results.

Herpetic keratitis as a single finding was the most frequent reason for keratoplasty of an inflamed eye. A total of 76 eyes were operated of which 31 had corneal perforation. Graft rejection occurred in 20% of the operated patients, and a relapse of herpetic keratitis in 17%.

Another large series included 26 cases of trophic keratitis. Their prognosis depends mainly upon the basic disorder. The prognosis is unfavourable in Sjogren, dubious in Mooren, and quite good in lesser atheromatous ulcers.

The results of 15 acute keratoconuses were excellent.

Finally, on the ground of this experience with keratoplastic procedures in 7 eyes with fresh severe burns, the author believes that the results are not even encouraging.

An eye-saving operation - keratoplasty in an inflamed eye, or as the French ophthalmologists prefer to call it keratoplastie a chaud, has become a routine procedure. This change is for the most part due to the technical novelties and partly to the better understanding of the different mechanisms involved in an eye inflammation.

Generally speaking, therapeutic a chaud keratoplasty is performed:

1. As an emergency procedure to save the eye usually following or preceding corneal perforation

2. After an unsuccessful conservative treatment of active corneal disease.

3. To eradicate a focus of corneal inflammation and prevent recurrence.

4. To enable a complete cure of a torpid corneal inflammation.

To be more precise, an inflamed eye is grafted in the following conditions :

- a. bacterial keratitis,
- b. viral keratitis,
- c. mycotic keratitis,
- d. trophic ulcers of various origin.

- 5. acute keratoconus.
- 6. In an acute stage, that is immediately after a corneal burn. Our personal experience with keratoplasty a chaud is based upon 145 keratoplasties performed in acutely inflamed eyes, 64 of them being corneal perforations.

Category	Total	Perforated
Bacterial keratitis	17	11
Herpetic keratitis	4	2
Trophic corneal ulcers	26	17
Acute keratoconus	15	—
Eye burns ((Causoma)	7	3
Total	145	64

Table 1. Summarizes the ocular conditions which demanded corneal grafting in those 145 eyes.

We should now like to comment each category in detail.

1. Bacterial keratitis was once a leading cause of blindness throughout the world¹. Due to the widespread use of antibiotics they are less common today but still present an important and difficult therapeutic problem. At the present time, bacterial keratitis, which requires corneal grafting, usually develops in an immunologically compromised cornea. That is after recurrent herpetic infection, severe trauma or after prolonged conservative treatment especially with steroids. We have performed a total of 17 corneal graftings (Table 2) in an acute stage of bacterial keratitis.

Total	Perfor.	Opacif.	Graft reject.	Clear
17	11	7	7	10

Table 2. Bacterial keratitis.

Ten out of 17 grafts remained clear which is not a very high percentage, but if we bear in mind that 11 out of 17 were corneal perforations and that in all 17 eyes keratitis was long standing, the final result must be considered satisfactory. We have had no recurrence either in the graft or in the recipient cornea. We do not have the impression that in bacterial keratitis corneal perforation necessarily means bad prognosis. According to our experience, it is the presence of purulent material in the anterior chamber and serious uveitis which lead to graft failure.

2. Herpetic keratitis has become the leading ocular disease requiring therapeutic grafting. In our material exactly one half of all operations (76 out of 145) were done in corneal herpes.

Total	Perfor.	Recur.	Opacif.	Graft reject.	Clear
76	31	13	18	15	49

Table 3. Herpetic keratitis.

As one can see studying the table, we have performed grafting in almost 50% of all eyes because the herpes disease had led to corneal perforation. In the total of 74 patients there were two patients with bilateral corneal perforations following herpetic keratitis. Both of them had been on topical steroids for quite a long time. Similarly as in bacterial keratitis, the perforated cornea does not mean per se worse prognosis.

Whether the activity of corneal inflammation determines the prognosis or not, is not clear from the literature. Fine² and Hallerman³ find it unimportant, but for Foster⁴ and Cobo⁵ the presence of an acute inflammation is a very bad prognostic sign.

As we are today discussing only corneal grafting in an acutely inflamed eye, I would not go into this discussions. But we feel that it is the presence and amount of the blood vessels in the cornea as well as the accompanying uveitis which determine the future of the graft, activity of the corneal process being of less importance.

If you look at Table 3, you will also notice that we have had 15 (out of 76) graft rejections which is exactly 20% of all corneal grafting done in herpes. Similar results had been reported in the literature². We have also seen 13 recurrences of herpetic disease in the graft. All recurrences occurred on the periphery of the graft usually at the site of the greatest activity prior to the grafting. The recurrent inflammation subsided in all the corneas, but 8 of them remained more or less opacified. We would like to conclude with the statement that corneal grafting in acute herpetic keratitis is an eye saving operation in corneal perforation but is also inevitable if the stromal process does not show the signs of regression. We do agree with Foster* that it is better to deally grafting or even avoid it by patching or using tissue adhesive, but the trouble is that this advice does not work in many patients.

3. Mycotic keratitis was an indication for an urgent keratoplasty in 4 patients. The overall result was only one clear graft and three opacified. However, the condition of all the eyes before the surgery was very bad. Two of the patients had perforated corneas and the other two heavily vascularized corneas.

4. Trophic corneal ulcers. This group consists of different corneal lesions which have in common an underlying trophic process.

Most common were atheromatous ulcers, that is torpid corneal ulceration which developed in an old corneal scar. As one can see in Table 4, 14 out of 18 had to be operated upon because they progressed to perforation. The problem these ulcers presented was that they were often large and of irregular shape so that it was very difficult to remove the degenerated scar completely. In that case the recurrence is very likely to appear.

We performed 4 corneal grafts in Moorens ulcer. In the last 6 years we have abandoned this operation. All of them were lamellar grafts, 3 of them opacified,

one remained clear, and there were two recurrences in the shortest follow up period of 7 years.

We were forced to do the grafting in one patient with Rosacea, one Pemphigoid, and one Sjogren's disease, simply because their corneas perforated. Due to the extremely vascularized host cornea and/or dry eye all the grafts opacified

Trophic	Total	Perfor.	Opacif.	Graft	Clear
Atheromatous	18	14	6	2	12
Mooren	4	—	3	3	1
Rosacea	1	1	1	1	—
Pemphigoid	1	1	1	1	—
Sjogren	1	1	1	1	—
Ophth. nodosa	1	—	—	—	1

Table 4. Trophic ulcers.

5. Acute keratoconus is becoming more and more common. We have operated upon 15 eyes in an acute stage of keratoconus.

Total	Graft	Opacif.	Clear
15	1	1	14

Table 5. Acute keratoconus.

14 of them remained clear. There was only one graft rejection. The results of corneal grafting in acute keratoconus are remarkably good³. It is worth mentioning that 3 were mongoloid patients.

6. Eye burns. Whether corneal grafting in the acute stage of an eye burn is a therapeutic or merely a tectonic measure is controversial point. According to Bella (cit. AlberW) and Puchkovskaya et al, 5 and some other Soviet authors, keratoplasty in an acute stage is to be recommended.

Total	Perfor.	Graft reject.	Opacif.	Clear
7	3	6	7	—

Table 6. Eye burns.

Our results as presented in table 6 do not confirm these recommendations. All the seven grafts opacified, which means that even in 4 cases without perforation grafting had to be considered tectonic. The authors we cited above feel that in these cases corneal grafting in an acute stage can be considered a preparatory measure. As all of the grafts in our series both opacified and developed a severe vascular ingrowth, we can only disagree with this statement. We do believe that the final outcome of a grafting procedure in an eye burn is determined by two factors: the degree of accompanying uveitis and, second, by the condition of ocular i.e. corneo-conjunctival surface which is in most instances completely destroyed.

We have presented to you our material and the results of our surgery. Now, we would like to discuss

some of the technical details we find specific for keratoplasty performed in an inflamed eye.

1. Accompanying uveitis is the most important single factor influencing the prognosis of corneal grafting in an inflamed eye. It may effect the final result in two ways. First, graft rejection is definitely more common in the eyes with active uveitis. Second, the presence of uveitis during corneal grafting means an outpour of exudate from the iris which in turn makes the reformation of the anterior chamber very difficult. Furthermore, posterior synechiae are either formed or apt to form. This makes one or more iridectomies necessary which in turn means more hemorrhages but the presence of blood may and does often destroy the final result of grafting.

2. Bulging syndrome is also a very unpleasant complication encountered during keratoplasty a chaud. This term is used for the situation when the entire iridolental diaphragm is being pushed forward with such force that not only the iris but also the lens gets incarcerated in the corneal opening and protrudes out of the globe. Luckily it is an uncommon complication and is probably due to the formation of an aqueous poop behind the vitreus.

3. Corneal and uveal bleeding during the operation present a serious problem. Uveal bleeding is quite a problem in corneal perforation during the separation of synechiae, or following an iridectomy. According to literature corneal bleeding can be prevented either by peritomy or preoperative irradiation.¹⁰ We have not been satisfied by either method.

4. The difference in thickness between the graft and recipient cornea is not very important, if the recipient is thicker - usually due to the edema - but may be very unpleasant complication if the recipient cornea is thinner than the graft which often happens in trophic ulcers.

5. In the immediate postoperative period the most common complication is a torpid, aseptic ulceration of the graft which leads to graft failure in spite of all precautions such as fresh donor, soft lens, steroids etc.

6. The loosening of sutures occurs because the edema of the host cornea decreased and the tight running suture become loose. It can, of course, in turn lead to the anterior synechiae or even to iris prolapse.

7. Secondary glaucoma was once considered a major problem in keratoplasty of the inflamed eye. In the entire series of 145 eyes we had only 6 cases of raised intraocular pressure but 4 of them had it before the surgery.

8. Damage to the lens is of course quite possible and more likely than by standard corneal grafting. We have not had such a complication.

But in spite of all that, we feel that the grafting in inflamed eyes which once was considered dangerous is now a routine ophthalmic procedure and the treatment of choice for many dangerous eye diseases.

References

1. Parunović, A., Milenković, S.: VII Congres Europ. Ophthalm. Soc.:, Proceedings, p. 389, 1980
2. Cohen, E., Laibson, P., Arnsten, H.: Am. J. Ophthalm., 95:645, 1983.
3. Cobo, M., Custer, J., Rice, N., Jones, B.: Am. J. Ophthalm., 88:787, 1979
4. Alberth, B.: Surgical Treatment of Eye Burns, Ak. Klado, Budapest, 1968
5. Putchkowskaya, N., Schulgina, N.: Pathogenesis of Eye Burns, Mir, Moscow, 1976
6. Pine, M., Cigneti, F.: Arch. Ophthalm., 95:913 1975
7. Hallerman, W.: Klin. Mbl. Augenhk., 146:161, 1965
8. Foster, S., Duncan, J.: Am. J. Ophthalm., 92:336 1981
9. Alberth, B.: Klin. Mbl. Augenhk., 174:466, 1979
10. Werb, A.: In Casey, T.: Corneal Grafting, p. 107, Appleton, N. York, 1972
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Sažetak

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KERATOPLASTIKA NA AKUTNO ZAPALJENOM OKU

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Ključne riječi: indikacije za keratoplastiku, bakterijski keratitis, herpetični keratitis, mikotički keratitis, trofički kornealni ulkus, akutni keratokonus, očne opekotine, komplikacije, rezultati pojedinih grupa

Presadivanje rožnjače na oku u zapaljenju bila je do skora poslednja mera kojoj se pristupalo s ciljem da se tektonski sačuva oko. Danas se stanje izmenilo, prvenstveno zahvaljujući tehničkim usavršavanjima same operacije, a delom i bolijem poznavanju suštine samog zapaljenja.

Autor iznosi lična zapažanja, na osnovu iskustva sa 145 keratoplastika, izvedenih na očima zahvaćenim zapaljenjima. Među njima su bile 64 perforacije rožnjače.

Operisano je 17 bakterijskih keratita. Ishod operacije je bio u potpunosti zadovoljavajući.

Herpetični keratitis je najčešći pojedinačni uzrok operacije keratoplastike inflamiranog oka. Rađeno je 76 očiju, 31 od njih sa perforacijom rožnjače. Reakcija odbacivanja kalemata javila se u 20% operisanih, a recidiv herpetičnog keratita u 17%.

Sledeću veliku grupu predstavljaju trofični keratiti, kojih je u posmatranoj seriji bilo 26. Njihova prognoza zavisi prvenstveno od osnovnog oboljenja. Tako je npr. veoma loša kod Sjogrena, dubiozna kod Moorena, a dosta povoljna kod manjih ateroskleroznih ulkusa.

Rezultati 15 akutnih keratokonusa bili su izvrsni.

Najzad, na osnovu iskustva sa keratoplastikom, kod 7 očiju sa svežim, teškim opekotinama oka, autor smatra da rezultati nisu čak ni ohrabrujući.