Arch. Soc. Amer. Oftal. Optom. (1983)-17-103

HYPERMETROPIC KERATOMILEUSIS FOR THE CORRECTION OF CONGENITAL HYPEROPIA*

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José I. Barraquer's hyperopic keratomileusis (KMH) is, at present, the only autoplastic surgical procedure designed to correct the refractive error of patients with monocular or binocular congenital hyperopia, who cannot tolerate contact lenses or do not wish to use thick eyeglasses. Moreover, this procedure helps correcting most of the accommodative esotropia usually suffered by these patients and provides satisfactory near vision without the use of any optical correction.

As stated in previous publications[1], in this surgical procedure the dioptric power of the cornea is increased by steepening the radius of its anterior surface, through the extraocular carving of a corneal disc, obtained from the anterior layers of the patient's own cornea.

The object of this presentation is to analize all the 31 cases operated with the mentioned procedure at the Clínica Barraquer, in Bogotá, Colombia, by Dr. José I. Barraquer and the author, between october 1977 and may 1982 (Fig. 1). The increase in the number of cases operated per year can be explained by the good results and improvements in instrumental and computer programs, because they have allowed obtaining better surgical results.

The 31 patients of the group have a minimum followup of 3 months. From these, 20 have a followup of 6 months and 11 have a followup of 25-49 months

* Trabajo presentado en la reunión del International Society of Refractive Keratoplasty, Las Vegas, octubre 1982.

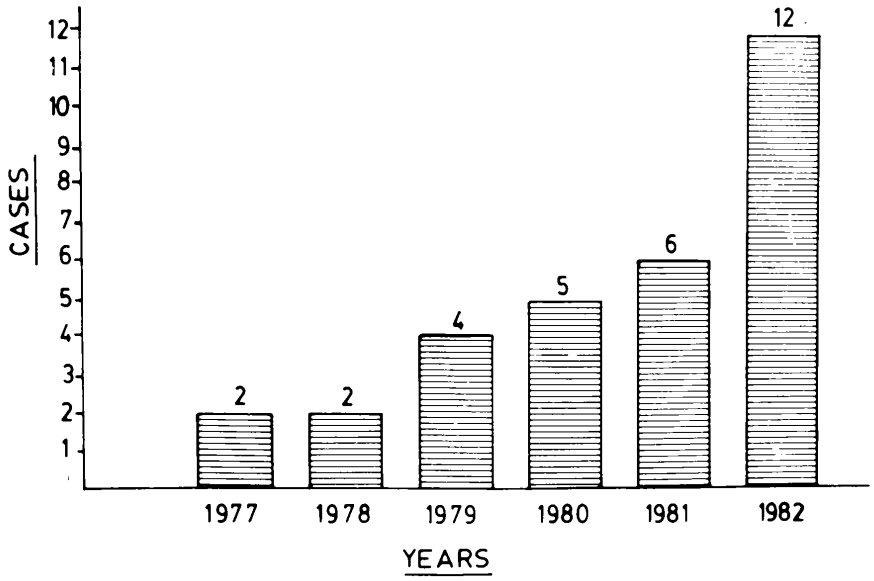

FIGURE 1

KMH for the correction of congenital hyperopia. Number of cases performed each year of the study.

(that we will call "late"), for an average of 34 months. The age of the group ranges from 5-53 years, for a mean age of 22.32.

The similarity of the results obtained in the 20 patients followed up for 6 months with the results obtained at the same time in the 11 patients of the late followup, allows presenting two comparative groups. We chose 11 eyes for each group, in order to show clearly the differences and their reason, because, although not too marked, they are nevertheless meaningful.

Group A is made up of the patients operated during the first 5 months of 1982 (all with 3 months' followup). All of these patients were operated using the automatic lathe. This lathe allows performing parabolic cuts, in order to obtain larger optical zones.

Group B is made up of the patients with 25-49 months' followup. In this group, the changes that take place with time can be analized.

RESULTS

So far, the overall results obtained with KMH for the correction of congenital hyperopia are very satisfactory. The following figures show them clearly and make possible a comparison between the two groups of patients in which the study was divided.

The improvement in uncorrected V. A. (Fig. 2) is considerable during the first 3 postoperative months and continues, although more slowly, in following months. It should be noted that by the third postoperative month, the patients operated in 1982 reached the same V. A. reached six months after the operation by the patients of past series.

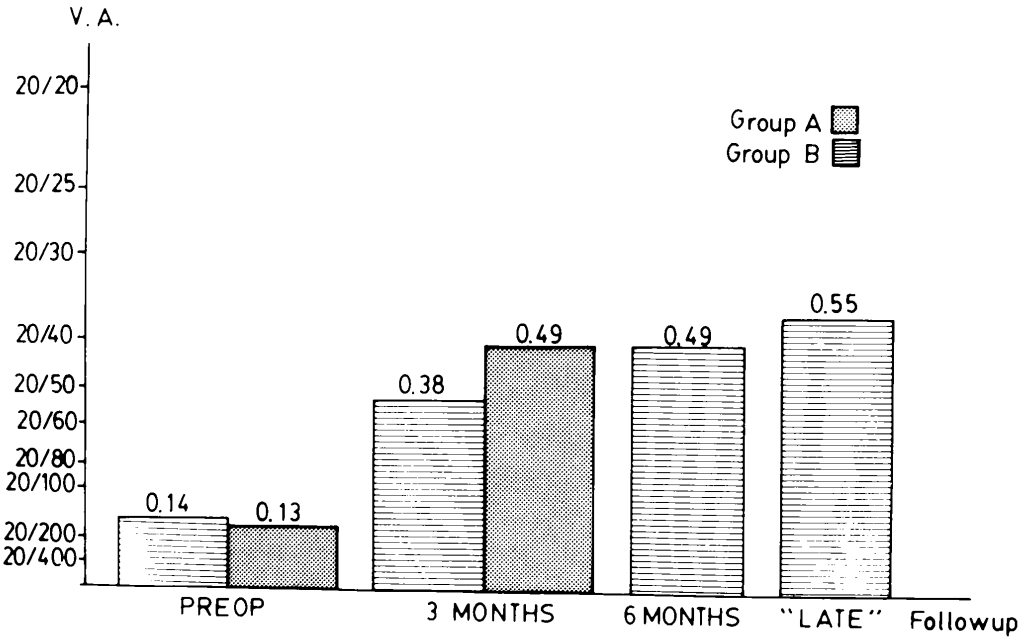

FIGURE 2

KMH for the correction of congenital hyperopia. Uncorrected V. A. in the two groups of the study.

The corrected visual acuity (Fig. 3) also shows a constant improvement during the postoperative period. This improvement is provided mainly by the amblyopic patients of each group. On the other hand, although the spherical equivalent of these patients shows a loss of correction of 0.3 diopters between the

third and sixth postoperative month, this loss is reduced to 0.2 diopters between the 6th and 34th postoperative month. This means that the corneal change induced by the procedure is very stable, something that is also true of other types of refractive procedures, such as KMM and KF, in which some cases have up to 20 years' followup.

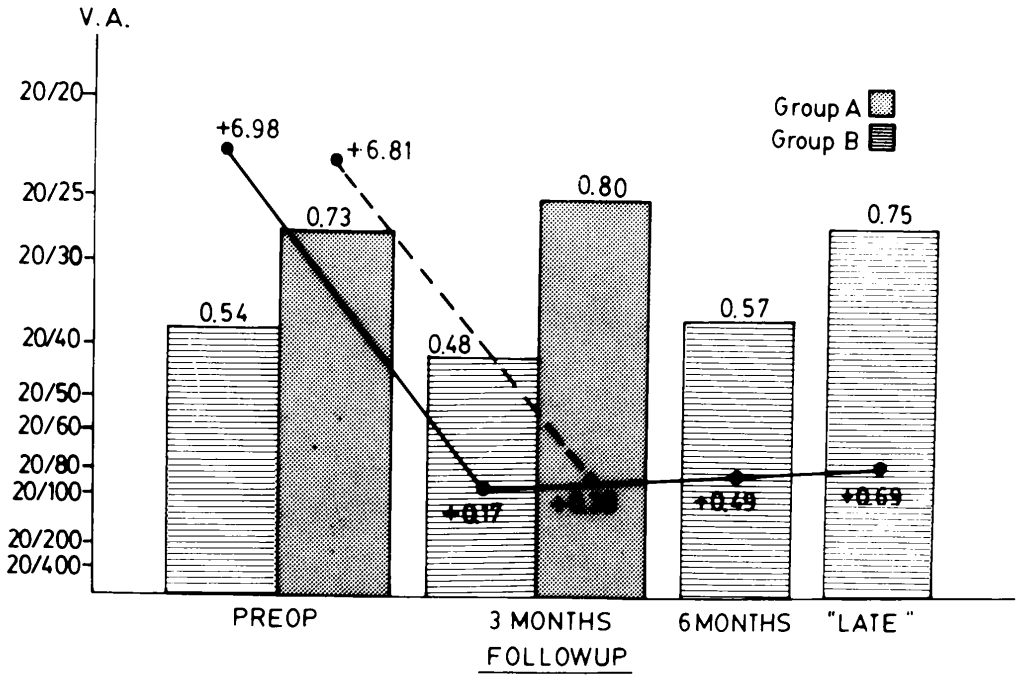

FIGURE 3

KMH for the correction of congenital hyperopia. Corrected V. A. and spherical equivalent of the two groups of the study.

The postoperative astigmatism (Fig. 4) shows a slight increase, as compared to preoperative figures. However, this problem is expected to decrease with the keratoscopic adjustment of the sutures and the use of the pneumatic balloon recently introduced by J. I. Barraquer[2], to provide better adaptation of the disc to the base. The results obtained with these innovations will be published in a future date.

One of the most important objectives of refractive surgery is correcting accurately an existing ametropia, or being able to foretell the postoperative residual ametropia. The progress made in this aspect can be observed by comparing the groups of the study. Table I shows that the correction obtained in

Group A is almost 100% the correction requested, as compared to the cases of Group B, in which it had been necessary to request a hypercorrection of 15%, in order to obtain the necessary emetropia. This current accuracy was made possible by the changes introduced in the computer programs and the parabolic cut performed with the automatic lathe.

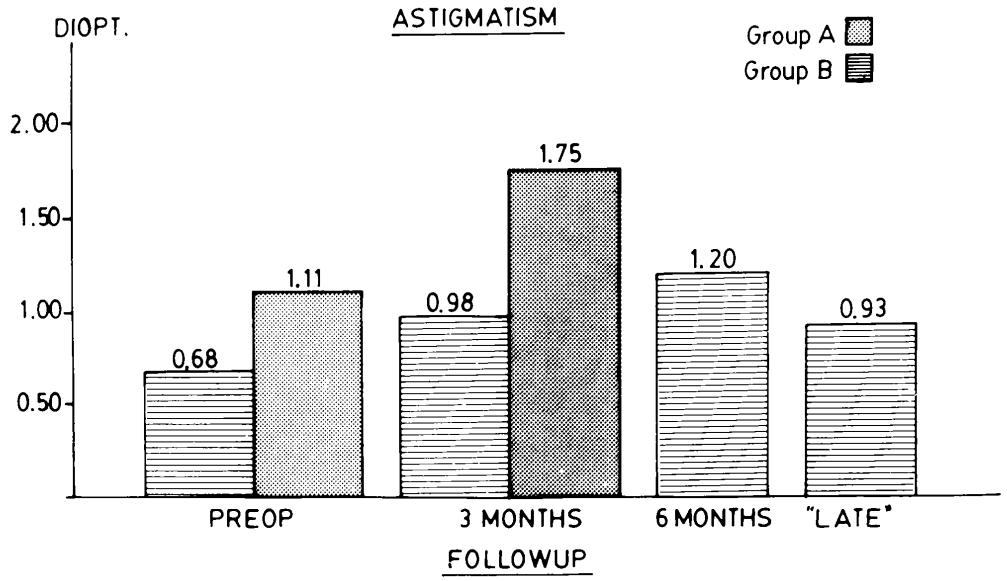

FIGURE 4

KMH for the correction of congenital hyperopia. Astigmatism in the two groups of the study.

Table I

KMH FOR CONGENITAL HYPEROPIA
RELATION BETWEEN DIOPTERS OF AMETROPIA, DIOPTERS REQUESTED AND DIOPTERS CORRECTED

	Group A	Group B
Preoperative ametropia	6.81	6.98
Dc	6.77 (99.41%)	8.07 (115.62%)
Sph. equiv. (3 months)	0.38	0.17
% corrected	94.42	97.56
Total correction	94.98%	84.38%

From the 31 eyes of the study, 8 were amblyopic, with a corrected preoperative V. A. averaging 20/100 (0.21) (0.08-0.33) (Fig. 5). The corrected V. A. of these 8 eyes 3 months postoperatively was in average 20/60 (0.34) (0.20-0.60). Six of these eyes were examined 6 months postoperatively, showing an average V. A. of 20/40 (0.45) (0.25-0.67) and only 4 were examined in the late followup, showing an average V. A. of 20/30 + (0.68) (0.40-1.00).

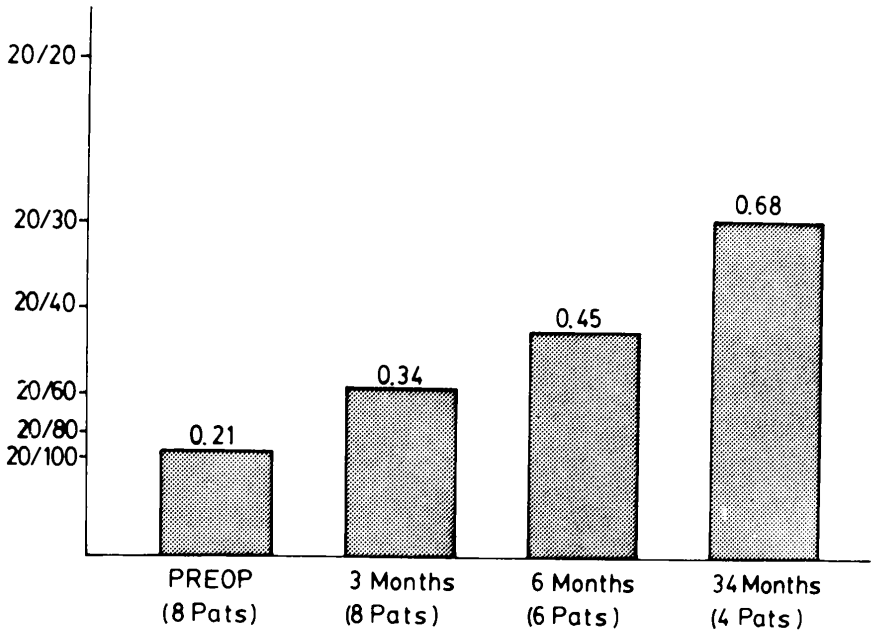

FIGURE 5

KMH for the correction of congenital hyperopia. Eyes with a corrected preoperative V. A. under 20/50 and their improvement.

CONCLUSIONS

KMH is a reliable method to treat patients with congenital hyperopia or hyperopic refractive amblyopia who cannot tolerate contact lenses or do not wish to use thick eyelasses. The results obtained with this procedure in the mentioned cases is yielding better and more predictible results in V. A. and a faster visual recuperation.

REFERENCES

1. BARRAQUER, J. I.: *Queratomileusis y queratofaquia.* Litografía Arco. Bogotá, 1980.

2. BARRAQUER, J. I.: *Resultados de la queratomileusis hipermetrópica.* Arch. Soc. Amer. Oftal. Optom., 16, 161.