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LONG TERM RESULTS IN THE SURGICAL TREATMENT OF HIGH MYOPIA

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Although pathological myopia is one of the main causes of blindness or invalidity, up to the present its therapy is unsatisfactory. None of the manifold drugs recommended is effective [1, 2, 5, 9, 13], because none of them influence the pathogenic substratum of the disease: the alteration of the collagen fibers of the eye, especially that of the sclera.

Since this alteration produces an excessive dilatation of the posterior pole of the myopic eye, as well as a chorioretinal degeneration, the reinforcement of the posterior pole represents the only method available at present to stop or slow down the progression of the myopia. With this purpose, I followed two surgical procedures: a) lamellar resections and; b) scleral reinforcements [11, 12].

MATERIALS AND METHODS

This papers is a report of 41 scleral resections (followup: 8-13 years) and 50 scleral reinforcements (followup: 4-7 years).

In the group of scleral resections, the ocular refraction ranged from —16 to —38 diopters, and the age between 10 and 30 years.

The surgery, consisted in the resection of a 4 mm wide lamellar flap from the temporal part of the eye, posterior from the equator. The flap was left adhered from its superior end and placed and sutured over the macular area; the scleral wound was sutured after the application of diathermy over the surface. With this procedure a shortening of the stretched temporal part of the eye is obtained, as well as scleral indentation against the possibility of retinal detachment and a scleral reinforcement in its weakest part.

Each followup visit included examination of the ocular refraction, axis, rigidity, visual acuity and fundus.

The scleral reinforcements were performed following Miller's simplified technique[6]. In this procedure, a 7 mm wide scleral strip is placed over the posterior pole of the myopic eye (over the macular area), between the optic nerve and the scleral insertion of the inferior oblique muscle. The scleral strip (homograft prepared after the method of Paufique et al.) is placed under all of the extraocular muscles, except the medial rectus muscle. Its ends are sutured to the sclera, between the insertion of the superior rectus and medial rectus muscles, resp. the inferior and medial rectus muscles.

The age of the patients in this group ranged from 7-38 years. In all cases, the myopia was bilateral and ranged from —10 to 31 diopters.

All of the cases operated had extensive myopic crescent, 8 eyes had marked retinal degeneration and pigment epithelium changes in the macular area, 25 eyes had disseminated atropic focci, 3 eyes had tyical Fuchs' spots and 3 eyes had severe atrophia of the pigment epithelium and choriocapillaris with marked sclerosis of the choroidal vessels. In 25 cases, the ERG showed a decrease or an absence of responses.

The evaluation of the results with this procedure included the comparison of the visual acuity, ocular refraction and scleral rigidity before the surgery and after the followup period.

RESULTS

Three months after the scleral resections, the myopia was reduced as an average 5.7 diopters and the ocular axis 2.93 mm. The mean ocular rigidity increased from 0.0186 to 0.0208. In 55.5% of the patients the visual acuity improved 0.13, in 37.2% it remained unchanged from the initial figures and in 7.3% it became worse.

With the exception of 3 cases, with macular lesions that became real Fuchs spots, the ocular fundus did not change.

During the years of followup, the myopia increased as an average 0.35 diopters, the ocular axis 0.20 mm and the ocular rigidity 0.009. In 39.47% of the patients the visual fields improved, in 43.36% they remained stable and in 17.17% they became worse. None of the patients developed retinal detachment.

After the scleral reinforcement, the visual acuity improved 1 or 2 lines in 14 eyes, it became worse in 2 eyes and remained unchanged in the rest. the increase in ocular rigidity was not significative and the refraction remained unchanged.

COMMENTS

The improvement of the visual functions after a scleral resection could be explained not so much by the shortening of the eye and the reduction of the degree of the myopia, as by the exclusion of a retinal surface from the functional circuit. This way, the surface unit irrigated by the same flow capacity is reduced and there is an improvement of the chorioretinal trophycity by the neovascularization resulting from the diathermy and the healing of the scleral wound.

Scleral resections were performed by Salgado[8] and Bignell[4] with good results. Olivella[8] reports functional improvements in 95% of the operated eyes. With the scleral reinforcements, Miller[7] obtained an improvement of the visual acuity in 41% of the operated eye and no change in visual acuity in 49% of the cases operated. Belayaev and Ilyna[3] reported noticeable results in 102 cases. In a recent study, Thomson[10] reports his simplified sclereal reinforcement in 52 eyes with degenerative myopia (followup: 1-80 months). The operation prevented further visual loss and the fluorescein angiograms taken many years postoperatively show "little change in the macular deterioration".

After both surgical procedures, I observed mild transient inflammations of the conjunctiva and Tenon's capsule.

Since in both procedures the lateral rectus muscle was resected and reinserted, a transient muscular imbalance was observed.

None of the eyes operated showed retinal detachment during the years of followup up.

Although both procedures are useful, latetly I tend to prefer the scleral reinforcement because it has a lower risk and is more physiological.

CONCLUSIONS

In our cases, the modest objective of both operations was achieved. First, the amount of the myopia decreased after the scleral resections and did not increase after the scleral reinforcements. Last, but not least, none of the eyes operated developed retinal detachments.

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