

CAUSES AND MANAGEMENT
OF RECURRENCE OF RHEGMATOGENOUS
RETINAL DETACHMENT

ESSAY

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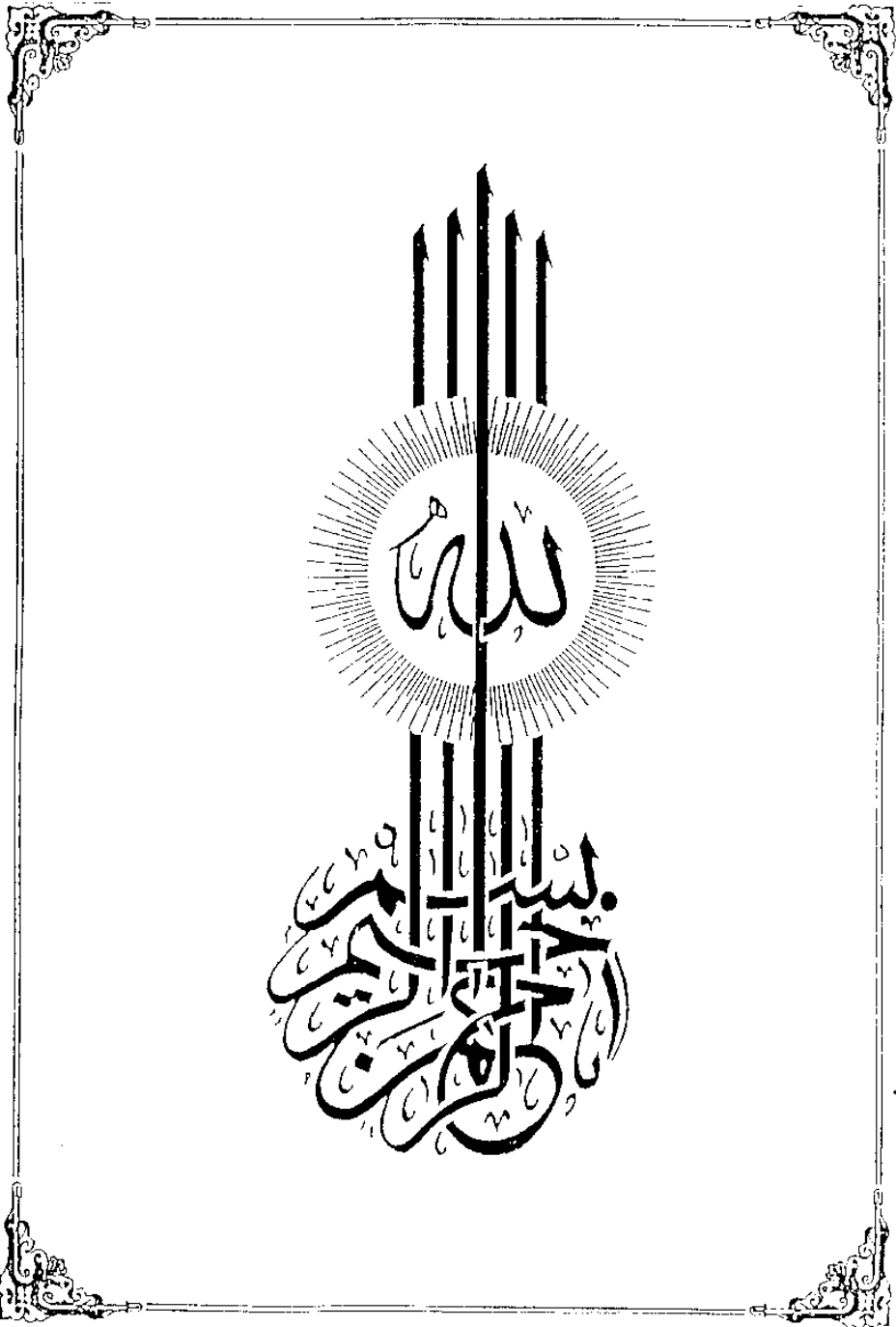
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LIST OF ABBREVIATIONS

"PVR"	:	Proliferative vitreoretinopathy
"MVR"	:	Massive vitreous retraction.
"MPP"	:	Massive periretinal proliferation
"MPR"	:	Massive preretinal retraction.
"MPF"	:	Massive preretinal fibroplasia
V.I.S.C.	:	Vitreous infusion suction cutter.

INTRODUCTION

INTRODUCTION AND AIM OF THE WORK

Recurrent rhegmatogenous retinal detachment which is caused by reaccumulation of subretinal fluid after complete dryness and reposition of the retina following surgery, represents a major obstacle facing all retinal surgeons. It is necessitating proper evaluation of the condition to plane properly for the adequate mode of interference.

Schepens in 1983 attributed causes of recurrent rhegmatogenous retinal detachment after surgery to two main groups which are : faulty surgical technique and excessive traction on the retina.

Causes due to faulty surgical technique include : faulty induced chorioretinal reaction, iatrogenic breaks as a result of faulty drainage of subretinal fluid, mistakes in the location of the buckle, and failure to detect all the retinal breaks.

The most common cause of failure due to excessive traction on the retina is the development of proliferative vitreoretinopathy which is the leading cause of failed surgical procedures for the correction of rhegmatogenous retinal detachment.

In 1983 the Retina Society Terminology committee proposed the term proliferative vitreoretinopathy (PVR) to designate the clinical condition formerly known as "massive vitreous retraction" (MVR), or massive periretinal proliferation (MPP).

As a result of the multiplicity of factors responsible for the recurrence, treatment will differ according to the cause. A considerable advance has been achieved in the prognosis and treatment of recurrent cases, due to the improvement in the various techniques employed in diagnosis and management.

In some cases rebuckling of the original tear or another iatrogenic one may be the solution, sometimes reoperation for appropriate extension of the buckle anteriorly or posteriorly to cover the new developed tear or widening of the implant.

In cases of proliferative vitreoretinopathy, there is great controversy in its management. Some believe that ordinary buckling with drainage of subretinal fluid is sufficient while others see that vitrectomy, peeling off the membranes, and complete vitreous replacement is the treatment of choice especially in advanced cases.

The aim of this essay is to make a study on the various aetiological factors responsible for recurrent retinal detachment and utilised methods and up to date surgical techniques used in order to reattach the retina.

REVIEW OF LITERATURE

APPLIED ANATOMY AND PHYSIOLOGY

1. The Retina:

The eye is developed as a pouch of the two layers of the invaginated optic vesicle. The innermost one becomes the neural layer of the retina and the outermost the pigment layer. The embryological space between these two layers is reopened when a retinal detachment occurs. Normally in the adult the two retinal layers are only joined by fine fibrils of the pigment cells which go to lie between the visual cells, so that there exists only a potential space. This light attachment is easily broken down and the embryological space reopened. This is the site of the subretinal fluid. (Fison, 1972).

The retina is the photosensitive membrane that extends from the optic disc to the ora serrata. The attached retina is transparent except for its blood vessels, when detached, it appears as a translucent grey veil with darker than normal blood vessels. A transparent detached retina is the result of atrophy or stretching. When the macula is attached, it is darker red than its surroundings. Because the inner macular layers contain yellow pigment, detached or oedematous macula is yellow and of a vividness that probably varies with the carotenoid content of the patient's diet.

Retinal attachment:

Apart from its continuity with the optic nerve where all the nerve fibres collect, the retina has two principal attachment:

- a) A strong one at the ora serrata.
- b) A weak one that maintains close contact between the photoreceptors and the pigment epithelium. (Schepens, 1983).

Another lesser attachment is present at the fovea where the two layers of the retina seem to cling together. This can often be demonstrated clinically by the way the fovea stays in place where there is present a shallow central extension of a retinal detachment (Fison, 1972).

The strong retinochoroidal attachment at the ora is coextensive with the more pigmented band located at the ora serrata and anterior to it. Temporally, this pigment band and the corresponding retinochoroidal attachment are one and half to two mm. broad. There are reinforcement of the retinochoroidal attachment along the striaeciliaris. Nasally, the retinochoroidal attachment and its corresponding pigment band are very narrow and follow exactly the scallops of the ora serrata. As a result of this anatomic arrangement, the retinochoroidal attachment is strong temporally and weak nasally. As a consequence, extension of a retinal detachment under the ciliary epithelium occurs more readily nasally than temporally because the retinochoroidal attachment is narrower on the nasal side. (Schepens, 1983).

Blood supply of the retina:

It's broadly derived from two sources :

- a. By direct vessels running in the substance of the retina from the central retinal vessels.
- b. By diffusion indirectly from the choroidal vessels.

It is often thought that the retina, once it has been detached, immediately undergoes some degenerative process from lack of blood supply, but this will take place only if the branches from the central vessels are inadequate. In many instances it is possible to replace the retina which has been detached for a long period, reaching years, with apparently complete restoration of peripheral function.

The macula :

Is special in its blood supply , in that it has no retinal vessels actually coursing through it. It derives its nutrition by diffusion partly from choroidal vessels on which it lies and partly from the surrounding retinal vessels. If the macula becomes separated from the choroid in a retinal detachment it is immediately severed from half its blood supply. In most cases the macula suffers greatly from this ischaemia but sometimes when detachment is replaced, the macular function returns to a remarkable extent (Fison, 1972).

There are gross pathological changes in the neural elements and permanent damage 15 minutes after section of both the central retinal and posterior ciliary arteries. Moreover by clamping the retinal circulation (in rats and cats) for some hours the blood retinal barrier is broken down, the endothelial cells degenerate and disappear, there is pronounced intra and extracellular oedema and complete atrophy and gliosis of the retina result. (Duke Elder, 1967).

2. Vitreous:

The vitreous body occupies the vitreous cavity and is a transparent intraocular tissue that has the physical properties of a gel. It has a volume of about 4.5 ml. It accounts for two thirds of the volume of the eye and three fourths of the weight.

Normally the vitreous fibrils insert into and blend with fibrillary material of the internal limiting lamina of the retina.

It is spherical posteriorly and saucer shaped anteriorly owing to patellar fossa, a depression caused by the convexity of the posterior lens surface (Newell, 1978). (Fig. -1)

Vitreous attachment:

The vitreous must be regarded as a very definite factor in the mechanism of a retinal detachment. Its mass is capable of considerable momentum and therefore its attachments are of interest.

Principally it is attached to :

1. Vitreous Base : (Anterior vitreous attachment)

It is attached to the retina over an area about 1.5 mm. in breadth at the ora serrata. A firm adhesion exists between, the vitreous cortex, the retina and pars plana ciliaris, this area of adhesion is termed the vitreous base. (Schepens, 1954).

The strength of it is adequately demonstrated in injuries from a direct blow to the eye where the retina becomes torn at the ora producing adialysis rather than the seperation of this vitreous attachment. (Sorsby , 1972).

In microscopic studies, the vitreous base appears as a complex system of fibers originating in the region of the posterior pars plana ciliaris and the ora (Grignolo, 1952). These fibers are agglomerated into microscopically visible fibers in an annular area at the vitreous base. (Fig.-1) They are attached to the innar limiting membrane, and are often oriented perpendicular to it, the fibers forming the anterior border of the base