

Management of patients with macula – on retinal detachment in the retinal department of a tertiary hospital in Spain

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西班牙某医院波及黄斑的视网膜脱离患者手术时机与术后视力的关系

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摘要

目的:分析西班牙某三级医院视网膜科接受手术治疗的黄斑裂孔性视网膜脱离患者。着重强调诊断与手术之间的时间间隔,试图寻找术前时间与视力下降之间的关系。

方法:回顾性研究。包括 77 例在 Universitario Fundación Jiménez Díaz 医院接受手术治疗的黄斑裂孔性视网膜脱离患者。

结果:77 例患者中有 72 例(72 眼)参与了该研究。初步手术成功率为 94.44% (68/72),采取 1 或 2 次干预措施后,全部患者成功率为 98.61% (71/72)。术前平均时间为 5.3±2.26d。7(9.72%) 例患者视力下降 2 行或更多。视力下降与患者年龄之间具有统计学意义($P=0.001$)。研究表明进一步手术干预使视网膜再次附着与视力下降检测之间存在相关联系($P=0.045$)。而研究未能发现视力下降与术前时间($P=0.100$),手术类型($P=0.578$)或晶状体状态($P=0.413$)之间具有统计学意义。

结论:每家医院都应该研究治疗此类型视网膜脱离治疗的方式,以优化利用现有资源,确保最佳的解剖结构复位和功能恢复。

关键词:视网膜脱离;黄斑;手术;结果;视力下降

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Abstract

• **AIM:** To analyze the management of patients with

macula – on retinal detachment who received surgical treatment in our department. Placing special emphasis on the time elapsed between diagnosis and surgery, we sought to establish whether a relationship exists between time to surgery and loss of visual acuity.

• **METHODS:** A retrospective study in which the medical records of 77 patients with macula–on retinal detachment who underwent surgery in Hospital Universitario Fundación Jiménez Díaz were reviewed.

• **RESULTS:** A total of 77 patients, 72 were included in the study. The primary anatomic success rate was 94.44% (68/72), and the success rate in all patients after either 1 or 2 interventions was 98.61% (71/72). The mean time before surgery was 5.3±2.26d. Seven patients (9.72%) lost two or more lines of vision. A statistically significant relationship was found between loss of visual acuity and patient age ($P=0.001$). Our findings also suggest a possible link between the need for further surgical intervention to reattach the retina and decline in visual acuity test ($P=0.045$). We failed to find a statistically significant relationship between loss of visual acuity and days until surgery ($P=0.100$) or type of surgery ($P=0.578$) or status of the crystalline lens ($P=0.413$).

• **CONCLUSION:** It is important that each hospital study how this type of retinal detachment is being managed in order to optimize the use of available resources and guarantee the most favorable anatomic and functional outcomes possible.

• **KEYWORDS:** retinal detachment; macula–on; surgery; outcomes; visual loss

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INTRODUCTION

Numerous studies have described the need for surgical treatment of macula – on retinal detachment within the first 24 – 48h^[1–2]. Indeed, the American Academy of Ophthalmology sees even greater urgency, recommending surgery in 24h, and where there is risk of macular involvement, within the first few hours^[3]. However, few ophthalmology departments in the Spanish National Health

Table 1 Description of visual acuity before and after surgery in patients with and without vision loss (median and quartiles)

Parameters	Baseline visual acuity	Visual acuity postoperatively
Total patients (<i>n</i> =72)	0.8 (0.67-1)	0.9 (0.7-1)
Patients without decreased VA (<i>n</i> =65)	0.8 (0.6-1)	0.9 (0.8-1)
Patients with decreased VA (<i>n</i> =7)	0.9 (0.7-0.95)	0.4 (0.075-0.6)

VA: Visual acuity.

Table 2 Description and comparison between quantitative variables, in patients with and without visual loss

Parameters	Patients without decreased VA (<i>n</i> =65)	Patients with decreased VA (<i>n</i> =7)	<i>P</i>
Age	52.7±11.6	68.0±11.2	0.001
DS	3.0 (1.0-7.0)	3.0 (2.0-4.0)	0.852
DUS	5.5±2.3	4.0±1.7	0.100

VA: Visual acuity; DS: Days of symptom; DUS: Days until surgery.

System have specialist retinal surgeons or specialist nursing staff on call, thus limiting their ability to perform these procedures within 24h^[4]. As in many other hospitals, in our department these surgical interventions are scheduled for the first available operating room, which sometimes requires postponing elective retinal surgery. The aim of this study is to analyze the management of patients with macula-on retinal detachment so as to identify any necessary improvement measures.

SUBJECTS AND METHODS

A retrospective study was carried out in which the medical records of all patients presenting to our department with macula-on retinal detachment between January, 2013 and August, 2015 were reviewed. Protocols and the procedure followed were in accordance with Helsinki Declaration of 2008. Of a total of 77 patients with the condition, 5 were excluded due to lack of follow-up for at least 6mo, pneumatic retinopexy as first-line treatment, or trauma-induced retinal perforation. The mean time of follow-up was 21.9±9.37mo. The following measurements were obtained: best corrected visual acuity (BCVA) using a decimal scale, duration of symptoms before presenting to the emergency department, age, days between diagnosis and surgery, pre-existing ophthalmological diseases, type of surgery, and need for subsequent surgical treatment. BCVA were measured before and after surgery (6mo postoperatively or 1mo after cataract surgery in cases where cataract surgery was required during follow-up). Diagnosis of retinal detachment and assessment of the state of the macula were performed by a retina specialist using ophthalmoscopy.

Normally distributed quantitative variables (i.e. age and days before surgery) were described using mean and standard deviation, and comparisons were performed using Student's *t*-test. Those variables that were not normally distributed (i.e. BCVA, symptom duration) were analyzed for median and quartile and were compared using the Mann-Whitney test.

In addition, the state of the crystalline lens (phakic/pseudophakic), type of surgery, and need for a second intervention were compared against loss of vision. Comparison of frequencies was performed using Fisher's exact test.

Finally we used Spearman correlation test to determine if there was association between visual acuity after surgery and days to

procedure.

RESULTS

A total of 72 patients were included in the study. Twenty-four were female and 48 were male, and mean age was 54y. The average duration of symptoms (e.g. myodesopsia, photopsia) before presenting to the emergency department was 4.4d. Forty-five patients were phakic and 27 pseudophakic. Forty-five were myopic, 20 of whom presented high myopia (≥6 diopters). Twelve of the patients had developed previous contralateral retinal detachment.

The mean time before surgery was 5.3±2.26d. Eight of the patients only received scleral buckling as treatment. The other sixty four patients underwent vitrectomy. We associated an encircling band in 38 of these cases.

Sixty-eight patients (94.44%) had successful anatomic repair of the retina with one procedure, while 3 of the 4 remaining patients obtained reattachment following a second intervention (total of 98.61%). In one patient, reattachment failed after several surgical attempts.

Of the 45 phakic patients, 18 underwent cataract surgery during the follow-up period. One of the patients underwent epiretinal membrane surgery.

We determined a postoperative decline in vision to be loss of two or more lines of vision following surgery. Seven patients experienced this loss.

An analysis of the factors behind loss of visual acuity revealed an intraoperative complication to be the cause in 1 patient, leading to failure following several surgical attempts. Vein thrombosis in the macular branch appeared 2mo postoperatively in 1 patient, while another was diagnosed with postoperative cystoid macular edema. The cause of visual acuity loss was not identified in the remaining patients, although in 2 of them initial surgery involved the use of 5000 centistokes silicone oil as endotamponade due to the characteristics of the detachment. Silicone oil was removed at 6 and 18wk respectively. Unexplained visual loss following removal of silicone oil has already been described in literature^[5-8].

Following our analysis, the only statistically significant relation found was between patient age and loss of vision. The group with loss of vision had a higher mean age (*P*=0.001), though the results of the study also suggest a correlation

Table 3 Description and comparison between type of surgery, need of second surgery to reattach the retina and pseudophakia in patients with and without visual loss

Parameters	Patients without decreased VA (<i>n</i> =65)	Patients with decreased visual VA (<i>n</i> =7)	<i>P</i>
Vitrectomy			
Yes	58 (89%)	6 (86%)	0.578
No	7 (11%)	1 (14%)	
Second intervention			
Yes	2 (3%)	2 (29%)	0.045
No	63 (97%)	5 (71%)	
Pseudophakia			
Yes	42 (65%)	3 (43%)	0.413
No	23 (35%)	4 (57%)	

VA: Visual acuity.

between additional surgery to reattach the retina and decreased visual acuity.

No relation was found between loss of vision and days until surgery or crystalline lens status, and nor was a relation found between type of surgery performed and decreased visual acuity.

Spearman correlation coefficient between visual acuity after surgery and days until procedure was 0.14 (*P* = 0.255) therefore it doesn't seem to exist an statistical dependence between these two variables.

DISCUSSION

Several studies have found that one of the most important factors for surgical success (measured in rates of redetachment) is that the procedure be performed by an experienced team of surgeons, nurses, and other staff^[9-12]. The current organizational makeup and resources of the Spanish national health system are not conducive to the existence of the type of surgical teams – retinologists and specialist nursing staff – required to provide surgical treatment for all cases of macula-on retinal detachment within 24h, and much less on weekends and during vacation times^[13].

There are few studies that analyze time to surgery and visual loss in macula on retinal detachments^[1,2,9,14-15], although all of them show a shorter time to surgery than our study.

We believe that vision loss in our seven patients wouldn't have been avoided by prompt surgery. The factors leading to vision loss in these patients were not related to the time from diagnosis to surgery.

We observed a relation between age and loss of vision. It is likely that vision loss is closely linked to tolerance of decline in retinal function in cases of retinal detachment. Nevertheless the size of the group with vision loss is too small to establish a definitive conclusion.

Surgical techniques have advanced substantially since the first recommendations on wait times for surgical intervention in cases of retinal detachment, and this has had a great impact on anatomic and functional outcomes. An interesting piece of information that came out of our study was the lower rate of use of sclera buckle alone compared with other studies^[16].

Prospective studies comparing different patient characteristics

with visual prognosis are needed, and should not only take into account presence of macular detachment. Such studies would allow for the time between diagnosis and surgery to be adjusted to individual patient needs, thereby optimizing the use of resources.

Based on the results of our study, we made modifications to our operations so that all patients with primary macula-on retinal detachment could be operated on in 3d or less, although we were unable to justify establishing an on-call surgical team for this purpose. Patients view this condition as requiring urgent treatment, and this merits more efficient organization and use of our resources in order to meet this need.

Certain patients may benefit from urgent surgery, especially those with certain parameters such as the proximity of the subretinal fluid to the fovea, advanced age, recent macular detachment, among others. Due to this potential benefit, further studies are needed to properly identify these patients and thus optimally utilize our resources.

Though the rate of anatomic success in our study is slightly higher than that reported in other published series^[17-20], these other authors made no distinction between different types of detachment, including all of them in their series.

One of the main limitations of our study stems from the fact that the group that experienced loss of visual acuity is small, therefore making it difficult to establish differences applicable to cases in which patients do lose vision.

Also limiting our study is the fact that we did not perform preoperative optical coherence tomography in all patients so as to ensure that there was no fluid below the fovea and in order to obtain an exact measurement of the distance between the detachment and the fovea. In addition, patients were not examined again before surgery to be able to monitor for detachment of the fovea before surgery. However, other studies have found a low risk of progression to the fovea during the first 3d of symptoms provided the patient adheres to a rather strict program of preoperative bed rest^[11,14,20].

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