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间接眼底镜下外路手术治疗孔源性视网膜脱离对患者视力与黄斑水肿的影响 *

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摘要 目的：探讨间接眼底镜下外路手术治疗孔源性视网膜脱离对患者视力与黄斑水肿的影响。**方法**：选择 2018 年 8 月到 2021 年 9 月在本院诊治的孔源性视网膜脱离患者 84 例作为研究对象，根据 1:1 随机数字表法把患者分为眼底镜组与对照组各 42 例，对照组采用巩膜扣带术治疗，眼底镜组给予间接眼底镜下外路手术治疗，测定患者视力与黄斑水肿情况。**结果**：两组术后 3 个月的最佳矫正视力好于术前 1 d，眼底镜组好于对照组（P<0.05）。眼底镜组术后 3 个月的总有效率为 97.6 %，高于对照组的 76.2 %（P<0.05）。眼底镜组术后 3 个月的眼内出血、视网膜坏死、眼内炎、高眼压等并发症发生率为 4.8 %，低于对照组的 23.8 %（P<0.05）。两组术后 3 个月的视网膜下液高度低于术前 1 d，眼底镜组低于对照组（P<0.05）。眼底镜组术后 3 个月的自理等生活质量评分较对照组高（P<0.05）。**结论**：间接眼底镜下外路手术治疗孔源性视网膜脱离能改善黄斑水肿提高，促进恢复患者的视力，提高总体治疗效果，减少并发症，有利于患者视网膜下液高度降低，从而提高生活质量。

关键词：间接眼底镜；孔源性视网膜脱离；黄斑水肿；视力

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The Effects of External Surgical Treatment of Rhegmatogenous Retinal Detachment under Indirect Ophthalmoscope on Patients' Vision and Macular Edema*

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ABSTRACT Objective: To investigate the effects of external surgical treatment of rhegmatogenous retinal detachment under indirect ophthalmoscope on patients' vision and macular edema. **Methods:** From August 2018 to September 2021, A total of 84 patients with rhegmatogenous retinal detachment who were diagnosed and treated in our hospital were selected as the research objects, and the patients were divided into the ophthalmoscope group and the control group with 42 cases each groups accorded to the 1:1 random number table method. The control group were treated with scleral buckling, and the ophthalmoscope group were treated with indirect ophthalmoscope external surgery, and the visual acuity and macular edema of the patients were measured. **Results:** The best corrected visual acuity of the two groups at 3 months after operation were better than that of the preoperative 1 day, and the ophthalmoscope group were better than the control group (P<0.05). The total effective rates in the ophthalmoscope group at 3 months after surgery were 97.6 %, which were higher than 76.2 % in the control group (P<0.05). The incidence of complications such as intraocular hemorrhage, retinal necrosis, endophthalmitis, and high intraocular pressure in the ophthalmoscope group were 4.8 %, which were lower than 23.8 % in the control group (P<0.05). The height of the subretinal fluid in the two groups at 3 months after operation were lower than the preoperative 1 day, and that in the ophthalmoscope group were lower than that in the control group (P<0.05). Fundus endoscopic group had higher quality of life scores such as self-care 3 months after operation than the control group (P<0.05). **Conclusion:** Indirect ophthalmoscope external surgical treatment of rhegmatogenous retinal detachment can improve macular edema, promote the restoration of patients' vision, improve the overall treatment effect, reduce the occurrence of complications, and help reduce the height of the patient's subretinal fluid, thereby improving the patient Quality of life.

Key words: Indirect ophthalmoscope; Rhegmatogenous retinal detachment; Macular edema; Visual acuity

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前言

孔源性视网膜脱离（Rhegmatogenous retinal detachment, RRD）为临床上比较常见的眼科疾病，也是视网膜脱离中最为常见的一种，具有极高的致盲率[1,2]。视网膜脱离是指视网膜组织的神经上皮层和色素上皮层的分离，孔源性视网膜脱离是一种液化的玻璃体经视网膜裂孔进入视网膜神经上皮层下导致上皮层与色素上皮层分离的眼部疾病，是玻璃体和视网膜两种组织变性共同作用的结果。孔源性视网膜脱离常发病于中老年人，男性患者比例较高[3,4]。孔源性视网膜脱离多伴随有黄斑水肿，对于治疗要求很高[5]。孔源性视网膜脱离的手术目的是封闭裂孔、缓解黄斑水肿，创造条件进而促使已经发生脱离的视网膜神经上皮与色素上皮重新贴附，最大限度地恢复视功能[6,7]。巩膜扣带术可促使脱离的视网膜神经上皮层与色素上皮层接触，缓解或消除玻璃体的牵拉，但是可能影响眼球结构特别是眼前节的结构，术后并发症发生率较高[8]。间接眼底镜下手术为当前微创的手术方法，也属于外路手术方法之一，对周围组织的损伤较小，具有很好的安全性，其可促使视网膜复位与封闭视网膜裂孔，恢复患者视功能[9-11]。本文具体探讨了间接眼底镜下外路手术治疗孔源性视网膜脱离对患者视力与黄斑水肿的影响，以促进间接眼底镜下外路手术的应用，改善患者预后。

1 资料与方法

1.1 研究对象

以 2018 年 8 月到 2021 年 9 月在本院诊治的孔源性视网膜脱离患者 84 例作为研究对象。

纳入标准：裂隙灯显微镜下确诊为 RRD，光学相干断层扫描技术检查证实脱离累及黄斑中心凹；本院伦理委员会批准了此次研究；增殖性玻璃体视网膜病变（Proliferative vitreoretinopathy, PVR）C 级及其以下；单眼发病；择期手术；具有手术指征；患者签署了知情同意书；视网膜脱离范围 1-4 个象限。

排除标准：巨大裂孔性视网膜脱离患者；屈光间质不清明显者；临床资料不齐者；伴有其他黄斑疾病者；伴随有视网膜血管阻塞性疾病者；弱视、斜视患者；既往行内眼手术史者。

根据 1:1 随机数字表法将患者分为眼底镜组与对照组，各 42 例，两组资料对比无差异（P>0.05）。见表 1。

表 1 一般资料对比

Table 1 Comparison of general data

Groups	n	Course of disease (month)	Age (years)	Location of onset (Left/Right)	Gender (Male/female)	PVR Classification (A /B /C)	Diopter(D)
Ophthalmoscope group	42	1.53± 0.25	54.10± 3.18	22/20	28/14	11/19/12	-5.80± 0.45
Matched group	42	1.52± 0.13	54.22± 2.18	21/21	29/13	13/18/11	-5.82± 0.32

1.2 治疗方法

对照组：采用巩膜扣带术治疗，术前选择复方托品酰胺滴眼液散瞳，常规球后神经阻滞麻醉，切开球结膜，置直肌牵引线。缝外加压缝线，行巩膜外放液，放液后行裂孔定位。外加压物为环形硅胶，结扎、加压缝线；然后进行巩膜环扎术，于角膜缘后 3.5 mm 左右注入无菌空气 0.5 mL 左右，以考虑到能够顶压裂孔为准，术后患者保持俯卧位或侧卧位。

眼底镜组：给予间接眼底镜下外路手术治疗，球后麻醉，对铺巾进行消毒，剪开结膜。手术人员间接眼底镜，于肉眼下进行穿刺放液，冷凝视网膜裂孔。缝合固定硅胶块、环扎带，检查视网膜状况，封闭视网膜裂孔封闭。根据患者视网膜复位情况，决定是否眼内注入七氟丙烷或者无菌空气。

1.3 观察指标

1.3.1 最佳矫正视力测定 于术前 1 d 与术后 3 个月，调查与测定所有患者进行最佳矫正视力（Best corrected visual acuity, BCVA），采用国际标准视力表进行测定，分为 <0.02、0.02-0.1、>0.1 三个级别。

1.3.2 疗效分析 在术后 3 个月进行总体疗效评价，（显效 + 有效）/ 组内例数× 100.0 %= 总有效率。显效：临床各项临床症状、体征消失，视力改善明显；有效：临床各种症状、体征明显改善，视力改善；无效：无达到上述标准甚或恶化。

1.3.3 并发症分析 术后 3 个月，对两组患者出现的视网膜坏死、眼内出血、高眼压、眼内炎等并发症进行记录。

1.3.4 视网膜下液高度变化分析 所有患者在术前 1 d 与术后 3 个月进行频域相干光断层深度增强成像检查，嘱患者内固视，对后极部黄斑中心凹处进行扫描，测定黄斑中心凹下视网膜下液高度（Subfoveal fluid, SF），即上皮层外界光带至色素上皮层内侧光带的距离。

1.3.5 生活质量分析 所有患者在术后 3 个月采用中文版低视力者生活质量量表进行调查，包括活动、自理、社交以及心理等四个维度，分数与生活质量成正比。

1.4 统计方法

选择 SPSS24.00 进行分析，以 P<0.05 为差异有统计学意义，计数数据采用 n %表示，计量数据采用均数± 标准差表示，对比采用卡方 x^2 检验分析和 t 检验分析。

2 结果

2.1 最佳矫正视力变化对比

两组术后 3 个月的最佳矫正视力好于术前 1 d，眼底镜组好于对照组（P<0.05）。见表 2。

2.2 总有效率对比

眼底镜组术后 3 个月的总有效率为 97.6 %，高于对照组的 76.2 %（P<0.05）。见表 3。

2.3 并发症情况对比

眼底镜组术后 3 个月的眼内出血、视网膜坏死、眼内炎、高眼压等并发症发生率为 4.8 %，低于对照组的 23.8 %（P<0.05）。见表 4。

表 2 最佳矫正视力变化对比(n)

Table 2 Comparison of best corrected visual acuity (n)

Groups	n	Preoperative 1 d			Three months after surgery		
		<0.02	0.02-0.1	>0.1	<0.02	0.02-0.1	>0.1
Ophthalmoscope group	42	34(81.0%)	5(11.9%)	3(7.1%)	1(2.4%)*	10(23.8%)	31(73.8%)*
Matched group	42	34(81.0%)	4(9.5%)	4(9.5%)	9(21.4%)	12(28.6%)	21(50.0%)

Note: Compared with the control group, *P<0.05; Compared with preoperative 1 d, #P<0.05, the same below.

表 3 总有效率对比(n)

Table 3 Comparison of total effective rate (n)

Groups	n	Excellent	Valid	Invalid	Total effective rate
Ophthalmoscope group	42	38	3	1	41(97.6%)*
Matched group	42	25	7	10	32(76.2%)

表 4 并发症情况对比(n)

Table 4 Comparison of complications (n)

Groups	n	Endophthalmitis	Ocular hypertension	Intraocular hemorrhage	Retinal necrosis	Summation
Ophthalmoscope group	42	1	1	0	0	2(4.8%)
Matched group	42	2	3	3	2	10(23.8%)

2.4 视网膜下液高度变化对比

两组术后 3 个月的视网膜下液高度低于术前 1 d，眼底镜组低于对照组(P<0.05)。见表 5。

表 5 手术前后视网膜下液高度变化对比(μm,均数± 标准差)

Table 5 Comparison of height changes of subretinal fluid before and after surgery (μm, mean ± standard deviation)

Groups	n	Preoperative 1 d	Three months after surgery
Ophthalmoscope group	42	954.02± 72.10*	12.38± 1.48#*
Matched group	42	954.98± 98.14	28.93± 3.33#

2.5 生活质量评分对比

眼底镜组术后 3 个月的自理等生活质量评分较对照组高(P<0.05)。见表 6。

表 6 生活质量评分对比(分,均数± 标准差)

Table 6 Comparison of quality of life scores (score, mean ± standard deviation)

Groups	n	Psychology	Social contact	Activity	Self-care
Ophthalmoscope group	42	53.40± 6.55*	69.38± 5.22*	70.39± 4.78*	79.34± 5.0*
Matched group	42	35.17± 7.01	58.91± 5.96	54.33± 5.33	70.83± 6.18

3 讨论

孔源性视网膜脱离是严重的致盲性眼病，发病率呈现逐年明显上升的趋势[12]。孔源性视网膜脱离发生发展有关的病理过程包括视网膜裂孔的形成、玻璃体视网膜牵拉等，而随着年龄的增加，玻璃体的液化视网膜神经上皮层与色素上皮层的粘着力减弱，为此在裂孔存在的情况下，易出现视网膜脱离[13,14]。

黄斑水肿是孔源性视网膜脱离的常见的并发症，也使视网膜脱离变得更加复杂[15]。孔源性视网膜脱离伴黄斑水肿临床多表现为视力下降，当脱离范围累及黄斑时，中心视力严重受损，出现视物变形[16]。手术治疗孔源性视网膜脱离伴黄斑水肿的目的是为了寻找并封闭视网膜裂孔，与此同时，创造核实的条件使得视网膜神经上皮与色素上皮贴近[17]。本研究显示：两组术后 3 个月的最佳矫正视力好于术前 1 d，眼底镜组好于对照组；眼底镜组术后 3 个月的总有效率为 97.6 %，高于对照组的 76.2 %，表明间接眼底镜下外路手术治疗孔源性视网膜脱离可对患者

视力有改善作用,提高疗效。该结果与 Li XJ 等人[18]的报道具有相似性。从机制上分析,巩膜外加压术通过硅胶海绵的推顶作用使视网膜贴向加压物而封闭裂孔,防止来自玻璃体腔的液体再次进入视网膜下,缓解裂孔周围动态的和固定的玻璃体视网膜牵拉,防止嵴后的视网膜脱离,但其创伤较大[19]。而间接眼底镜下外路手术可利用光线照明、放大及正像作用,尽量减小损伤程度与手术范围,可提高手术效率,从而促进恢复患者视力[20]。

视网膜脱离是指视网膜组织的神经上皮层和色素上皮层的分离, 而孔源性视网膜脱离是指以视网膜裂孔形成为基础,因液化的玻璃体经视网膜裂孔进入视网膜神经上皮,进而造成其与视网膜色素上皮的分离,该结果由玻璃体与视网膜两种组织变性共同作用[21]。本研究显示眼底镜组术后 3 个月的眼内出血、视网膜坏死、眼内炎、高眼压等并发症发生率为 4.8 %,低于对照组的 23.8 %;眼底镜组术后 3 个月的自理等生活质量评分较对照组高,表明间接眼底镜下外路手术治疗孔源性视网膜脱离能减少并发症,提高生活质量。这一结果与 Choi SY 等人[22]的报道具有相似性。从机制上分析,巩膜扣带术能改善患者的术后视力,但是患者的术后并发症比较多,易发生巩膜穿孔及缝线撕脱 [23]。间接眼底镜下外路手术可借助间接眼底进行手术,减少了对组织的损伤,使得每一步操作更加精确,有利于术中、术后对视网膜和裂孔的仔细观察和及时处理,避免了过量光凝和冷冻导致的相应并发症的发生。特别是眼底镜具有操作精细准确、照明好、影像清晰等优点,可减少巩膜穿孔、缝线撕脱等相关并发症的发生[24,25]。

眼球作为一个密闭的光学系统,在巩膜环扎加压等外力的作用下,对眼部许多系统可造成影响。视网膜脱离是主要的致盲眼病之一,孔源性视网膜脱离是其最常见的一种类型[26]。近年来,随着近视眼发病率升高、人口逐渐老龄化,孔源性视网膜脱离的发病率也在逐年上升[27,28]。孔源性视网膜脱离患者常伴随有光感受器内外节层连接缺失、视网膜水肿、神经上皮层间分离、内外核层囊肿,进而对于患者的术后视力恢复产生消极影响。本研究显示:与术前 1 d 相比,两组术后 3 个月的视网膜下液高度较低, 且眼底镜组较对照组低。这一结果与等人 Douglass A[29]的报道具有相似性。从机制上分析,巩膜扣带术的目的在于寻找视网膜裂孔并对其实施封闭,进而消除或缓解玻璃体视网膜牵拉,但持续效果不佳[30]。间接眼底镜下外路手术可避免不必要的手术意外,可直接观察到冷凝程度以及与裂孔位置,减少盲目性,避免因遗漏裂孔而导致视网膜不能复位,可恢复患者视力,从而更有利于患者视网膜下液高度降低[31]。但由于人力资源与物力资源的限制,本研随访时间较短,且对比方法较少,也未进行机制分析,将在后续研究中探讨。

总之,间接眼底镜下外路手术治疗孔源性视网膜脱离能改善黄斑水肿提高,促进恢复患者的视力,提高总体治疗效果,减少并发症,有利于患者视网膜下液高度降低,从而提高生活质量。

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