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· 论著 ·

微量玻璃体切除治疗激光笔致儿童全层黄斑裂孔 1 例并文献复习

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摘要:目的 报道 1 例激光笔致儿童全层黄斑裂孔的临床特征和微量玻璃体切除术治疗,并讨论黄斑裂孔的形成过程及手术治疗体会。**方法** 回顾该病例的诊疗过程,结合病例资料及相关文献进行分析讨论。**结果** 患眼黄斑区可见 1/4 视盘直径大小的圆形裂孔,裂孔基底部呈灰白色,裂孔鼻侧可见扇形淡黄色病变。行玻璃体后脱离后,切除后极部微量玻璃体并剥除约 1.5 视盘直径范围内的内界膜,术毕空气填充。术后 12 天复查见裂孔成功闭合。**结论** 修复仅有黄斑区病变的激光损伤性儿童全层黄斑裂孔,微量玻璃体切除术可以取得良好的效果。

关键词:激光损伤;黄斑裂孔;玻璃体切除术;儿童
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Minimal quantity vitrectomy for laser-pointer induced full-thickness macular hole in a child: a case report and literature review

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Abstract: Objective To report the clinical features and limited vitrectomy treatment of a child with full-thickness macular hole caused by a laser pointer. We also discuss the possible process of macular hole formation and the experience of surgical treatment. **Methods** The diagnosis and treatment of this case were reviewed, and the case data and relevant literature were analysed and discussed. **Results** A round hole with a diameter of 1/4 of the optic disc was observed in the macula of the affected eye. The base of the hole was gray-white and there was a yellowish fan-shaped lesion on the nasal side of the hole. After inducing posterior vitreous detachment, a small amount of vitreous body around the posterior pole was resected. The internal limiting membrane was peeled back in a radius of approximately 1.5 PD centred on the macula. and the surgery was completed with air-fluid exchange. 12 days after surgery, OCT showed a successful closure of the macular hole. **Conclusion** Minimal quantity vitrectomy is effective for the repair of laser-induced full-thickness macular hole in children with lesions limited to the macular region.

Key words: Laser injury; Macular hole; Vitrectomy; Children

近年来,随着高功率激光设备和激光笔的广泛应用,激光照射引起视网膜损伤的病例不断增加。激光笔常被误认为是一种玩具,儿童和青少年缺乏安全意识,好奇心强,因此特别容易受到伤害。激光能引起多种黄斑病变,如黄斑出血,黄斑水肿,黄斑裂孔和脉络膜新生血管等[1]。其中,黄斑裂孔并不常见,可能与较严重的视网膜损伤有关。本文报道 1 例激光笔诱发全层黄斑裂孔的儿童患者,黄斑区视网膜下可见大量视网膜色素上皮(retinal pigment epithelium, RPE)聚积,行微量玻璃体切除术,术中与常规手术切除全部玻璃体的原则不同,我们仅切除后极部少量玻璃体而尽可能多地保留中周部的玻璃体,术后裂孔成功闭合,视力改善。复习相关文献,讨论激光黄斑损伤的病理机制、临床特征及预后,并对其治疗进行探讨,以期为类似病例的诊疗工作提供参考。

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1 病历资料

患儿男,6 岁半,因“查体发现左眼视力差 1 个月”入院。既往健康状况良好。入院眼科检查:矫正视力:右眼 0.8,左眼 0.1。双眼眼压和眼前节均无异常。右眼黄斑中心凹反光(+),黄斑区上方可见一圆形淡黄色病变(图 1A);左眼黄斑区可见一 1/4PD 大小的圆形裂孔,裂孔基底部呈灰白色,裂孔鼻侧可见扇形淡黄色病变(图 1B)。光学相干断层扫描(optical coherence tomography, OCT)示:右眼可见与眼底照相所示病变对应的一边界清晰锐利的局灶性椭圆体带缺损(图 1C);左眼黄斑全层裂孔伴黄斑囊样水肿,孔缘翘起,裂孔直径 528 μm,可见视网膜下团状高反射及 Henle 纤维层高反射条带(图 1D)。

患儿系足月顺产出生,无眼部外伤史及相关家族性遗传病病史。当问及患儿眼睛是否曾被强光照射,其母亲报告了可能的红色激光笔照射史,当初购买该激光笔是为了远距离指示售楼处的沙盘,但已无法提供激光的规格以及照射眼睛的具体时间。结合双眼黄斑病变的特点,患儿诊断为“全层黄斑裂孔(左),激光黄斑病变(双)”。

左眼行玻璃体切除、内界膜剥离联合气液交换术。术中见玻璃体和视网膜粘附牢固,考虑到病变和手术操作都局限在黄斑区域,而视盘、视网膜血管及黄斑区外视网膜均未见异常,因此,在玻璃体后脱离(posterior detachment of vitreous, PVD)诱导成功后我们将其范围限制在鼻侧略超过视盘、颞侧略超过上下大血管弓范围,其后切除视野内可见的浮动玻璃体,整个过程尽量减少对中周部玻璃体的骚扰。随后,吲哚菁绿染色后以裂孔为中心剥离约 1.5 PD 半径范围内的内界膜,气液交换后关闭切口。术后 12 天,OCT 证实黄斑裂孔成功闭合(图 1E,F),视力较术前无改善。对患眼进行弱视训练 2 个月后视力提升至 0.25,黄斑裂孔保持闭合。

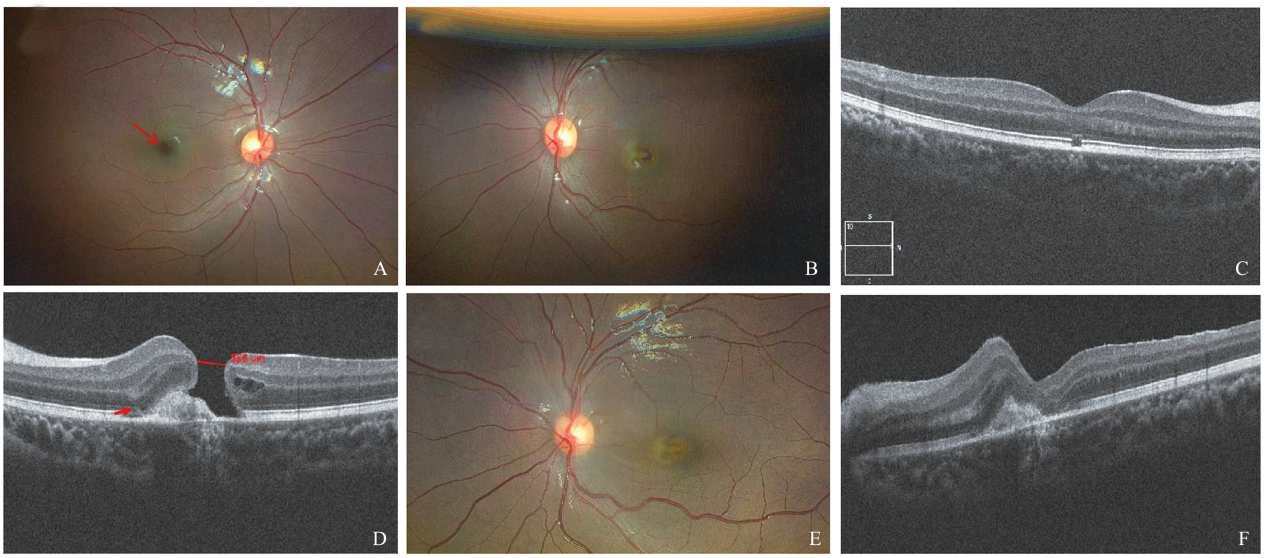

图 1 术前和术后检查

A:右眼术前眼底照相可见黄斑区上方一圆形淡黄色病变(长箭头);B:左眼术前眼底照相显示黄斑区一 1/4PD 大小圆形裂孔伴周边视网膜轻微放射状皱褶,裂孔基底部呈灰白色,裂孔鼻侧可见扇形淡黄色病变;C:右眼术前 OCT 可见黄斑区一边界清晰锐利的局灶性椭圆体带缺损,与眼底照相所示病变对应;D:左眼术前 OCT 显示黄斑全层裂孔伴黄斑囊样水肿,孔缘翘起,裂孔直径 528 μm,可见视网膜下团状高反射以及 Henle 纤维层高反射条带(短箭头);E:左眼术后眼底照相显示裂孔闭合,黄斑区色素紊乱,中心凹反光消失;F:左眼术后 OCT 显示中心凹区域外层视网膜严重缺损,视网膜下高反射病灶较前平坦,囊样水肿消退,Henle 纤维层高反区域依然存在,脉络膜反射增强

Figure 1 Pre- and post-operative examinations

A: Preoperative fundus photography of the right eye showed a round yellowish lesion above the macula (long arrow); B: Preoperative fundus photography of the left eye showed a 1/4PD round hole in the macula with slight radial contraction of the peripheral retina. The base of the hole was gray-white and a fan-shaped yellowish lesion was observed on the nasal side of the hole; C: Preoperative OCT of the right eye showed focal ellipsoid zone defects with clear and sharp borders, corresponding to the lesion seen on fundus photography; D: Preoperative OCT of the left eye showed a full-thickness macular hole with cystoid edema, hole edge upturned, hole diameter 528 μm, subretinal hyperreflective plaque and Henle fiber layer with high reflective band (short arrow). E: Postoperative fundus photography of the left eye showed successful closure of the macular hole, pigmentary disturbance in the macular region, and no foveal reflex; F: Preoperative OCT of the left eye showed severe retinal defects in the outer layer of the foveal region, subretinal foci flattened, edema regressed, high reflection in the Henle fiber layer still present and choroidal reflex enhanced

2 讨 论

激光笔致儿童全层黄斑裂孔临床少见,既往多为个例报道[2-7]。儿童安全意识低,容易在好奇心驱使下玩耍激光笔而导致眼睛受到照射[3]。激光损伤视网膜的主要机制是光热效应,激光辐射能量的吸收使视网膜组织局部发热,引起蛋白质变性、细胞完整性丧失和继发性炎症反应,继而导致光感受器凝固和疤痕形成[8]。黄斑裂孔是激光损伤视网膜的罕见表现,可以在激光暴露后即刻形成或者在损伤后数周逐渐发展,后者的机制可能是激光照射使视网膜内部发生亚临床的轻微破裂或损害,随后玻璃体后界膜牵拉内界膜致使破坏区域逐渐扩大进而形成累及全层的裂孔[6,9]。

激光损伤的眼底表现可能为卵黄样病变或类似于遗传性黄斑营养不良[10],严重者伴有萎缩性视网膜疤痕。OCT 的典型特征之一是 Henle 纤维层的急性混浊[11]。由于本例患者年龄较小,无法提供最初损伤的细节,但其双眼视网膜均有不同程度的激光灼伤表现,结合激光笔接触史,证实左眼黄斑裂孔继发性于激光损伤,而 OCT 所示视网膜下高反射病灶,可能与 RPE 细胞等代偿性增生修复有关[8,12]。

对于激光引起的全层黄斑裂孔,早期可以密切观察,较小的裂孔可能因为视网膜的自我恢复而自发闭合[2,13-14]。如果黄斑裂孔进一步扩大,则需要手术干预,研究表明,玻璃体切除术(PPV)可以修复激光导致的黄斑裂孔,最终的视力预后取决于黄斑损伤的程度[8,12,15],受到激光特性(类型、功率、波长和光斑大小等)、暴露程度和病程等多种因素影响[16]。Wang 等[17]报告了 10 例激光致黄斑裂孔的 PPV 治疗,术后所有眼睛成功闭合裂孔并获得视力改善。Alsulaiman 等[6]研究中,14 只接受治疗的激光损伤性黄斑裂孔眼睛中有 11 只(78.6%)在最终随访时表现出裂孔闭合。然而,常规 PPV 修复黄斑裂孔需要进行广泛的 PVD 并切除全部的玻璃体,而儿童由于玻璃体后界面与内界膜粘连很强,术中进行完全的 PVD 非常困难[18],如果诱导 PVD 和切割周围玻璃体时的牵引造成视网膜裂孔或脱离[19],则需要进行视网膜光凝或视网膜脱离手术,这无疑给患者带来额外的创伤和负担。因此,与常规 PPV 不同,我们在小范围 PVD 的基础上切除后极部微量的玻璃体,以此减少对中周部健康玻璃体和视网膜的骚扰,并相应地填充了较少量的眼内气体,术后裂孔成功闭合,说明这种微量玻璃体切除方式对治疗病变局限的儿童黄斑裂孔是有效。经过弱视训练,患眼视力得到一定改善,其黄斑形态和功能的恢复可能受限于 RPE 增生和外层视网膜结构的破坏[3,20]。

既往采用部分玻璃体切除术治疗成人黄斑裂孔已经被讨论。Özkan 等[21]建议对特发性黄斑裂孔患者进行保留周边玻璃体的部分玻璃体切除术,术中 PVD 范围推进至赤道部后停止,以此降低周边视网膜裂孔和脱离的风险。Kim 等[21-22]研究发现,与常规 PPV 手术相比,部分玻璃体切除术可以避免 PVD 诱导相关的医源性视网膜裂孔,其中 PVD 的范围被限制在颞侧大血管拱廊边缘外约 2PD 内[22]。与部分玻璃体切除需要清除中周部玻璃体不同,由于本例患者年龄小,玻璃体透明均一,术中未见炎症征象,黄斑裂孔边缘翘起,综合评估后我们选择在不影响手术操作的前提下尽可能多地保留中周部的玻璃体凝胶,这不仅降低了医源性视网膜裂孔的风险,还保留了玻璃体对眼球的支撑作用。当然,未来玻璃体液化可能引起飞蚊症,而玻璃体收缩或增殖有可能导致视网膜脱离[23]等并发症。我们研究的局限性在于随访时间较短,对患者的长期解剖和视觉预后还需要进一步观察评估。

综上所述,对于激光损伤引起的儿童全层黄斑裂孔,病变仅局限在黄斑区域,采取微量玻璃体切除术修复裂孔是有效的。

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