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不同咬合板接触点对颞下颌关节紊乱病咀嚼肌肌电的影响 *

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摘要 目的：探讨不同咬合板接触点对颞下颌关节紊乱病（Tempromandibular disorders, TMD）咀嚼肌肌电的影响分析。**方法：**选取陕西中医药大学附属医院自 2016 年 3 月 ~2019 年 3 月间收治的颞下颌关节紊乱病患者 40 例，按照佩戴咬合板接触点不同分为两组，A 组（18 例）咬合板与下前牙呈点状均匀接触；B 组(22 例)咬合板与对颌牙功能尖呈点状接触，对比佩戴前、后 1 个月时两组患者双侧颞肌前束(Temporal anterior, TA)和咬肌(Masseter muscle, MM)肌电电位变化。**结果：**静息状态戴咬合板前两组 TA、MM 两项指标差异无统计学意义（$P>0.05$），戴板 1 个月后两组 TA、MM 指标均明显下降，组间对比 B 组患者 TA 显著高于 A 组，MM 显著低于 A 组（$P<0.05$）；咬紧状态下戴板一个月后两组患者 TA、MM 值均明显升高（$P<0.05$），组间对比 A 组 TA、MM 值略高于 B 组，但对比无统计学意义（$P>0.05$）；戴板后两组视觉模拟评分(Visual analogue scale, VAS)均明显下降，A 组评分显著低于 B 组（$P<0.05$）。**结论：**下前牙和舌侧平板呈点状均匀接触的咬合板治疗 TMD 可更好改善咬肌功能，缓解疼痛症状。

关键词：颞下颌关节紊乱病；咬合板；咀嚼肌；肌电

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Effects of Different Occlusal Splints on Masticatory Muscles Electromyography of Temporomandibular Disorders*

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ABSTRACT Objective: To investigate the effect of occlusal splints on masticatory muscles electromyography of temporomandibular disorders (TMD). **Methods:** Forty patients with temporomandibular disorders admitted to Affiliated Hospital of Shaanxi University of Traditional Chinese Medicine from March 2016 to March 2019 were enrolled in the study. They were divided into two groups according to the different points of wearing the occlusal splints. Patients in the group A (18 cases) were occluded. The splint and the lower anterior teeth were in point-like uniform contact; In the group B (22 cases), the occlusal splint was in point contact with the function of the right dentition, and the bilateral anterior tibiofibular fascia was compared between the two groups before and after wearing temporal anterior (TA), masseter muscle (MM) changes in masticatory muscles electromyography. **Results:** There was no significant difference in TA and MM between the two groups before the wearing of the occlusal splint ($P>0.05$). After one month of wearing the splint, the TA and MM indexes of the two groups were significantly decreased, and the TA of the group B was significantly higher than that of the group B, MM was significantly lower than group A ($P<0.05$). The TA and MM values of the two groups were significantly increased after one month of wearing the splint ($P<0.05$), and the TA and MM values of the group A were slightly higher than those of the group B, but the comparison was not statistically significant ($P>0.05$). The VAS scores of the two groups were significantly decreased after wearing the splint, and the score of group A was significantly lower than that of group B ($P<0.05$). **Conclusion:** The treatment of TMD with a occlusal splint and a point-like uniform contact between the lower anterior teeth and the lingual side splint can improve the masticatory muscles function and relieve pain symptoms.

Key words: Temporomandibular disorders; Occlusal splint; Masticatory muscle; Electromyography

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前言

颞下颌关节紊乱病（Tempromandibular disorders, TMD）是青壮年较为常见的口腔疾病之一，其病因机制尚未完全明确，

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但国际公认其为多因素诱因导致,其中尤以心理、环境和行为因素影响较甚[1,2];在口腔领域的研究中,人们发现后退接触位与牙尖交错位间侧向合力、单侧反合导致的侧向合力等都与TMD发病、进展关系密切[3,4]。鉴于此,佩戴咬合板以协调、稳定牙合关系,起到恢复受损组织健康的目的[5,6]。目前,咬合板治疗颞下颌关节紊乱病的研究较多,但大多数都是分析不同咬合板材料对咀嚼肌功能、疼痛缓解的作用[7,8],本文主要分析不同咬合板接触点在TMD患者治疗中的应用价值。

1 资料与方法

1.1 一般资料

本研究选取陕西中医药大学附属医院口腔科自2016年3月~2019年3月间收治的TMD患者40例,按照咬合板接触点的不同分成两组,A组18例,男性11例、女性7例,年龄在18~52岁间,平均(34.2±3.6)岁;病程在2~17个月间,平均(8.3±2.2)个月;B组22例,男性14例、女性8例,年龄在21-57岁间,平均(33.7±4.2)岁;病程在1~22个月间,平均(7.9±2.0)个月,两组基本资料差异无统计学意义($P>0.05$)。

1.2 纳入和排除标准

纳入标准:所入选患者均符合TMD国际诊断标准[9,10],牙列比较完整无错颌畸形现象,牙周组织健康;近3个月内未接受其他相关治疗患者;对实验知情且自愿参与临床研究者;经医院伦理委员会批准。排除标准:治疗前经X线检查显示颞下颌关节区器质性病变或出现占位性病变者;合并精神疾病患者,或无法与医护人员正常沟通者等。

1.3 方法

A组:取上下颌全牙列印模,制作石膏模型并修整,对位咬合后上牙合架,于牙合架上抬高咬合高度,确保上颌、下颌第一磨牙中央窝间抬高咬合2 mm。整个咬合板由腭托、固定卡环以及覆盖于双侧尖牙的舌侧平板3部分构成,安装成功后下前牙和舌侧平板呈点状均匀接触。B组:印模、石膏模型制作以及上牙合架等均与A组一致。制作固位卡环、马蹄形基托、上切牙区/中切牙区咬合板。现将小咬合板置于患者口中,并在上颌全牙列牙合面放置条状自凝塑胶,舌侧延伸至马蹄形基托并施加压力使其贴近牢固。牙尖交错位咬合直至下切牙与上颌中切牙区的咬合板相接触为宜,形成一个咬合板的咬合面,在完全硬固后去除多余自凝塑胶。咬合板厚度为第二磨牙中央窝处2 mm左右,正中咬合时仅和对颌牙功能尖呈点状接触,无尖窝交错关系[11,12]。

注意事项:所有患者均严格遵照医嘱佩戴咬合板,一般仅在夜间佩戴,治疗过程中不要大张口、啃咬硬质食物等。

1.4 观察指标

(1)肌电检查。于治疗前、戴咬合板1个月后使用肌电图仪(丹麦丹迪KEYPOINT型)检测患者双侧MM、TA在静息、咬紧状态下的肌电值。检测时患者处于屏蔽室中,用75 %酒精擦拭两侧颞肌前束和咬肌区皮肤,贴附表面电极,收集双侧颞肌前束、咬肌肌电信号[13,14]。(2)疼痛程度。使用视觉模拟评分(VAS)量表对两组患者治疗前后疼痛程度进行评估,0分为无痛,1-3分为轻度疼痛,4-7分为中度疼痛,8-10分为重度疼痛[15]。

1.5 统计学方法

采用SPSS20.0统计学软件处理实验数据,计数资料用%表示,用χ^2检验,计量资料用($\bar{x}\pm s$)表示,符合正态分布数据用独立样本t检验,不符合正态分布数据使用非参数检验,$P<0.05$,数据差异有统计学意义。

2 结果

2.1 静息状态下戴咬合板前、后1个月时肌电值对比

戴咬合板前两组患者TA、MM两项指标差异无统计学意义($P>0.05$),戴板1个月后两组患者TA、MM指标均明显下降,组间对比B组患者TA显著高于A组,MM显著低于A组($P<0.05$),见表1。

表1 静息状态下戴咬合板前、后1个月时肌电值对比(μV, $\bar{x}\pm s$)

Table 1 Comparison of myoelectric values before and after wearing the bite plate at rest (μV, $\bar{x}\pm s$)

Groups	Before wearing the board		After wearing the board	
	TA	MM	TA	MM
A group(18)	3.47±1.45	2.36±0.78	2.20±1.05*	1.29±0.52*
B group(22)	3.51±1.33	2.38±1.02	2.83±0.93*#	1.81±0.60*#

Note: *$P<0.05$ compared with before treatment, #$P<0.05$ compared with A group.

2.2 咬紧状态下戴板前后肌电值对比

咬紧状态下戴板一个月后两组患者TA、MM值均明显升高($P<0.05$),组间对比A组TA、MM值略高于B组,但对比无统计学意义($P>0.05$),见表2。

表2 咬紧状态下戴板前后肌电值对比(μV, $\bar{x}\pm s$)

Table 2 Comparison of EMG values before and after wearing the plate(μV, $\bar{x}\pm s$)

Groups	Before wearing the board		After wearing the board	
	TA	MM	TA	MM
A group(18)	105.34±41.50	140.25±23.62	122.07±30.52*	156.42±27.53*
B group(22)	103.84±38.28	138.54±27.43	109.65±33.74*	153.36±30.85*

Note: *$P<0.05$ compared with before treatment.

戴板前两组 VAS 评分＞3 分，组间无显著差异（P>0.05）；戴板 1 个月后两组 VAS 评分均下降，且 A 组评分显著低于 B 组（P<0.05），见表 3。

表 3 两组戴板前后 VAS 评分对比（分，$\bar{x}\pm s$）

Table 3 Comparison of VAS scores before and after wearing the two groups of patients (score, $\bar{x}\pm s$)

Groups	Before wearing the board	After wearing the board
A group(18)	3.17±0.26	1.47±0.50*
B group(22)	3.08±0.33	1.96±0.41*#

Note: *P<0.05 compared with before treatment, #P<0.05 compared with A group.

3 讨论

TMD 是一种病因复杂的口腔类疾病，其病因学说从最初的牙合因素学说到心理因素、创伤因素、自身免疫系统等，直至现在人们普遍认可其是由多种因素共同导致的牙合损伤性口腔疾病[16-18]。TMD 保守治疗很多，包括肌功能锻炼、局部封闭药物、肌电反馈等，在诸多方法中咬合板以其无创、可逆等优点成为该症保守首选疗法[19,20]。咬合板能够调整颌关节形态和功能，恢复损伤组织，消除牙合干扰的激惹因素等优点受到医生和患者的青睐[21,22]。目前人们研究的重点主要集中在咬合板类型、材质对患者治疗效果的影响，而咬合板类型的差异也体现了不同接触点对效果的影响[23]，而本实验则主要探究不同咬合板接触点对 TMD 患者咀嚼肌肌电的影响，为以后咬合板的改良提供指导。

咀嚼肌的作用是在神经支配下通过收缩、舒张产生下颌运动来实现咀嚼肌的各项功能，因此咀嚼肌肌电活动能够准确反映咀嚼肌的状态[24,25]。有研究发现绝大多数 TMD 患者咀嚼肌肌电图出现异常现象，推测咀嚼肌功能紊乱是 TMD 的早期阶段；研究发现相较于健康人群 TMD 患者 TA、MM 电位均显著较高[26]。本研究显示静息态 TMD 患者的 TA、MM 值也均高于陈婷[27]实验中的健康人常数值，而咬紧状态下 TA、MM 电位值也明显较低。戴板治疗 1 个月后，静息态下两组患者 TA、MM 较治疗前均明显下降，组间对比 B 组患者 TA 显著高于 A 组，MM 显著低于 A 组，提示 A 组患者咀嚼肌松弛作用更明显。从表 2 的结果来看在戴咬合板 1 个月后两组患者咬紧状态下 TA、MM 电位均显著升高，说明咬合板可以通过抬高正中咬合垂直距离的方式起到降低咀嚼肌肌张力的目的，相较而言 A 组 TA、MM 值略高于 B 组，但对比无统计学意义，可能是因为下前牙和舌侧平板呈点状均匀接触方式所产生的传入信息增加了张口反射，促使升颌肌松弛，降颌肌的活跃性增强，所以该种咬合板接触点对紧张的咀嚼肌有更为明显的放松效果[28-30]。试验中对比了两组患者戴板后疼痛程度的变化，发现 A 组患者 VAS 评分明显低于 B 组，提示下前牙和舌侧平板呈点状均匀接触可更好的缓解 TMD 患者的疼痛症状。可能是因为对咀嚼肌放松效果显著，缓解了肌肉紧张状态从而消除疼痛反应。

虽然相较于对颌牙功能尖呈点状接触方式，下前牙和舌侧平板呈点状均匀接触方式在改善咬肌功能和缓解疼痛症状的效果显著[31]，但是临床实践发现该种方式可能会造成牙移位的情况，所以推荐应用 TMD 短期治疗患者。

综上所述，TMD 患者咬合板治疗时下前牙和舌侧平板呈点状均匀接触方式可更好的改善咬肌功能，缓解疼痛症状，在患者早期咬合板治疗或短期治疗值得推广应用。

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