

不同修复材料用于前牙美容修复的远期对照研究

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【摘要】目的:观察不同修复材料用于前牙美容修复的效果及远期随访结果。**方法:**选择80例行前牙美容修复患者进行前瞻性研究,按随机数表法分为A组(40例,58颗患牙)与B组(40例,62颗患牙)。A组采取3M-Z350纳米复合树脂进行修复,B组采用3M-Z100复合树脂进行修复。比较两组术后1 d、术后1周、术后1个月及术后3个月的敏感发生率、疼痛[采用视觉模拟评分法(VAS)评估]及随访3年的边缘密合度、颜色匹配度、修复体完整度。**结果:**A组术后1 d、术后1周、术后1个月的患牙敏感发生率分别为8.62%、5.17%、3.45%,显著低于B组的22.58%、17.74%、14.52% ($P<0.05$)。两组术后3个月的患牙敏感发生率分别为6.91%与16.13%,差异无统计学意义 ($P>0.05$)。A组术后1 d、术后1周、术后1个月的VAS评分分别为 2.51 ± 0.54 、 2.03 ± 0.47 、 1.58 ± 0.38 ,均显著低于B组的 2.72 ± 0.59 、 2.35 ± 0.50 、 1.81 ± 0.42 ($P<0.05$)。两组术后3个月的疼痛VAS评分未见统计学意义 ($P>0.05$)。两组随访3年的修复体完整度差异无统计学意义 ($P>0.05$)。A组随访3年的边缘密合度与颜色匹配度显著优于B组 ($P<0.05$)。**结论:**3M-Z350纳米复合树脂用于前牙美容修复的术后敏感发生率低于3M-Z100复合树脂,疼痛更轻,且远期随访的良好边缘密合度与颜色匹配度均更佳,值得推广。

【关键词】前牙美容修复;纳米复合树脂;敏感发生率;视觉模拟评分;边缘密合;色泽

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Long-term follow-up outcomes of different repair materials for esthetic restoration of anterior teeth

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Abstract: Objective To observe the effect of different repair materials for esthetic restoration of anterior teeth and its long-term follow-up outcomes. **Methods** A total of 80 patients undergoing esthetic restoration of anterior teeth were selected for prospective study. The selected patients were divided into group A (40 cases, 58 teeth) and group B (40 cases, 62 teeth) by random number table. In group A, 3M-Z350 nanocomposite resin was applied for esthetic restoration, while in group B, 3M-Z100 composite resin was adopted. At 1 day, 1 week, 1 month, 3 months after operation, the incidences of dental hypersensitiveness and pain which was assessed by visual analogue scale (VAS) were compared between two groups. Moreover, after 3-year follow-up, the degrees of marginal adaptation, color matching and integrity were compared. **Results** The incidence of dental hypersensitiveness in group A at 1 day, 1 week and 1 month after operation were 8.62%, 5.17% and 3.45%, respectively, significantly lower than 22.58%, 17.74% and 14.52% in group B ($P<0.05$). The incidence of dental hypersensitiveness in group A and group B at 3 months after operation was 6.91% and 16.13%, with no significant differences ($P>0.05$). The VAS scores in group A at 1 day, 1 week and 1 month after operation were 2.51 ± 0.54 , 2.03 ± 0.47 and 1.58 ± 0.38 , respectively, significantly lower than 2.72 ± 0.59 , 2.35 ± 0.50 and 1.81 ± 0.42 in group B ($P<0.05$). The VAS scores in the two groups after 3 months of operation had no statistical significance ($P>0.05$). After 3-year follow-up, two groups didn't show any significant differences in integrity degree ($P>0.05$), however, group A was superior to group B in the degrees of marginal adaptation and color matching ($P<0.05$). **Conclusion** 3M-Z350 nanocomposite resin for esthetic restoration of anterior teeth achieves a lower incidence of postoperative dental hypersensitiveness as compared with 3M-Z100 composite resin, and is worthy of promotion for it has advantages of less pain and better long-term follow-up outcomes of good marginal adaptation and color matching.

Keywords: esthetic restoration of anterior teeth; nanocomposite resin; incidence of hypersensitiveness; visual analogue scale; marginal adaptation; color

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前言

龋齿为常见牙科口腔问题,随着人们物质水平的提高和对牙齿美容修复需求的增加,患者对前牙美容修复提出了更高要求。光固化树脂色泽逼真、易成形,且操作简单,在前牙美容修复中得到广泛应用,但术后敏感问题始终未能得到良好解决^[1]。20世纪90年代,材料科学获得快速发展,纳米技术被引入到树脂材料中,使前牙美容修复技术获得较大进步^[2]。目前有关传统光固化复合树脂与纳米复合树脂用于前牙美容修复的对比研究已有不少^[3],但远期随访研究则较为缺乏。本研究以80例前牙美容修复患者为例,对比两组近期修复效果的同时还对其进行了3年随访观察,现将结果报道如下。

1 资料与方法

1.1 纳入与排除标准

纳入标准:①患牙为中龋或深龋,X线片示龋坏离髓腔在1 mm以上,不伴牙髓炎症状或牙髓充血;②牙髓活力正常,咬合关系基本正常,行前牙美容修复。排除标准:①有牙敏感史者;②伴磨牙症、隐裂牙、牙周疾病者;③伴全身系统性疾病者。

1.2 临床资料

采取临床随机对照,选择佛山市禅城区人民医院2012年1月~2014年12月收治的80例行前牙美容修复患者进行前瞻性研究,按随机数表法分为A组(40例,58颗患牙)与B组(40例,62颗患牙)。A组男23例、女17例;年龄14~56岁,平均 (39.61 ± 8.59) 岁;Ⅰ类洞牙31颗、Ⅱ类洞牙27颗。B组男21例、女19例;年龄12~58岁,平均 (40.22 ± 9.35) 岁;Ⅰ类洞牙36颗、Ⅱ类洞牙26颗。两组基线资料的差异均无统计学意义($P > 0.05$),具有可比性。

1.3 方法

①牙体预备:彻底去除龋坏组织,于窝洞边缘牙釉质上预备宽1 mm左右的短斜面,用Dentsply Dycal双糊剂型氢氧化钙(Dentsply生产)护髓。以聚酯薄膜条将患牙分隔、辅助成形。②酸蚀粘接:用3M自酸蚀粘结剂进行酸蚀,时间为30 s,冲洗10 s,用棉粒拭干后涂布粘接剂,光照固化20 s。③树脂:A组用3M-Z350纳米复合树脂分层填充,B组用3M-Z100复合树脂分层填充,每层固化40 s。按前牙美容修复操作规定进行修复,恢复前牙美观。调颌,3M复合树脂由粗到细逐步抛光颌面、磨光邻面。用3%双氧水、无菌生理盐水冲洗、止血,1周后复诊、予常规干燥。

1.4 观察指标

1.4.1 术后敏感 采用Ryge评价标准^[4]评估两组患者

的术后敏感情况。Ryge评价标准:在距患牙修复体2.0~3.0 m处用压缩空气吹2 s,用棉球遮挡相邻牙齿。A级:不敏感;B级:去除刺激后敏感消失;C级:去除刺激后敏感未消失。以B级与C级判定为术后患牙敏感。比较两组术后1 d、术后1周、术后1个月及术后3个月的敏感发生率。

1.4.2 术后疼痛 采用视觉模拟评分法(VAS)对两组患者的术后疼痛进行评估^[5]。VAS评估方法:用10 cm刻度的标尺代表疼痛,0为无疼痛,10为剧烈疼痛。由患者根据自觉疼痛情况指出代表其疼痛程度的刻度。比较两组术后1 d、术后1周、术后1个月及术后3个月的VAS疼痛评分。

1.4.3 远期随访 两组均通过电话结合门诊复查的形式随访3年,比较两组随访3年的远期疗效,评价指标包括边缘密合度、颜色匹配度、修复体完整度。①边缘密合度。A级:不卡或稍卡探针,修复体与基牙无间隙;B级:修复体与基牙有较小间隙,卡探针,牙本质未暴露;C级:探针可进入间隙探到牙本质。②颜色匹配度。A级:修复体颜色明暗度、透光度与邻牙基本一致;B级:修复体颜色明暗度及透光度与邻牙出现轻微差异;C级:修复体颜色明暗度、透光度与邻牙存在较大差异。③修复体完整度。A级:完整无微裂;B级:裂纹完整但出现肉眼可见微裂;C级:折裂部分或全部破裂。

1.5 统计学处理

采用SPSS19.0统计学软件对数据进行处理,计量资料采用均数±标准差表示,比较采取 t 检验;计数资料用率表示,比较行 χ^2 检验,等级资料采取秩和检验。以 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 术后敏感

A组术后1 d、术后1周、术后1个月的患牙敏感发生率显著低于B组($P < 0.05$),两组术后3个月的患牙敏感发生率差异无统计学意义($P > 0.05$),见表1。

2.2 术后疼痛

A组术后1 d、术后1周、术后1个月的疼痛VAS评分均显著低于B组($P < 0.05$),两组术后3个月的疼痛VAS评分未见统计学意义($P > 0.05$),见表2。

2.3 远期随访

3年随访期间,A组分别于随访14、25个月时各失访1例,B组分别于随访11、20、27个月各失访1例。两组随访3年的修复体完整度的差异无统计学意义($P > 0.05$),A组随访3年的边缘密合度与颜色匹配度显著优于B组($P < 0.05$),见表3。

表1 两组术后敏感发生率比较[例(%)]

Tab.1 Comparison of incidence of postoperative dental hypersensitiveness between two groups [cases(%)]

Group	n	Dental hypersensitiveness			
		1 day after operation	1 week after operation	1 month after operation	3 month after operation
A	58	5 (8.62)	3 (5.17)	2 (3.45)	4 (6.90)
B	62	14 (22.58)	11 (17.74)	9 (14.52)	10 (16.13)
χ^2 value	-	4.382	4.594	4.409	2.479
P value	-	0.036	0.032	0.036	0.115

3M-Z350 nanocomposite resin was applied in group A, and 3M-Z100 composite resin was applied in group B

表2 两组术后疼痛VAS评分比较($\bar{x}\pm s$)

Tab.2 Comparison of postoperative pain assessed by VAS between two groups (*Mean±SD*)

Group	n	VAS score			
		1 day after operation	1 week after operation	1 month after operation	3 month after operation
A	58	2.51±0.54	2.03±0.47	1.58±0.38	1.08±0.34
B	62	2.72±0.59	2.35±0.50	1.81±0.42	1.14±0.36
t value	-	2.030	3.606	3.138	0.937
P value	-	0.045	0.001	0.002	0.351

VAS: Visual analogue scale

表3 两组远期随访情况比较[例(%)]

Tab.3 Comparison of long-term follow-up outcomes between two groups [cases(%)]

Group	n	Marginal adaptation			Color matching			Integrity	
		Level A	Level B	Level C	Level A	Level B	Level C	Level A	Level B
A	55	53 (96.36)	2 (3.64)	0 (0.00)	49 (89.09)	6 (10.91)	0 (0.00)	50 (90.91)	5 (9.09)
B	57	46 (80.70)	9 (15.79)	2 (3.51)	33 (57.89)	21 (36.84)	3 (5.27)	51 (89.47)	6 (10.53)
Z value	-	6.916			12.062			0.065	
P value	-	0.031			0.002			0.799	

3 讨论

目前认为牙髓敏感主要与牙本质损伤有关^[6],而造成牙本质损伤的原因则包括修复过程中的牙本质-牙髓复合体受到热量刺激、细菌侵袭牙本质、充填体边缘微渗漏等。Kolte等^[7]研究显示边缘吻合性是降低术后牙髓敏感发生率的重要影响因素。本研究A组采取3M-Z350纳米复合树脂,B组应用3M-Z100复合树脂,结果显示A组术后1 d、术后1周、术后1个月的敏感发生率分别为8.62%、5.17%、3.45%,显著低于B组的22.58%、17.74%、14.52%,且疼痛VAS评分也低于B组。3M-Z100复合树脂为常见光固化复合树脂,粒度直径1~10 μm,颗粒较大,易准确塑形,但牙体修复尤其是抛光过程中易出现肉眼难以发现的微

小缝隙,可使口腔内细菌、水分等发生微渗漏而损害牙髓^[8-9]。3M-Z350材料为纳米复合树脂,直径显著小于3M-Z100复合树脂,仅为0.005~0.010 μm,粒度小,可进入聚合链,抛光性能良好,抛光后表面光洁度明显更高,可避免口腔内细菌、水分的微渗漏,减轻修复体对牙髓的刺激与损伤,从而减轻疼痛、降低术后敏感发生率^[10-11]。阮文仲^[12]研究显示3M-Z350复合树脂较之3M-Z100可大幅降低牙髓敏感发生率、减轻术后疼痛,效果更理想,与本研究结论一致。为比较两种修复材料的远期疗效,本组对A、B两组均进行了3年随访,结果显示两组修复体完整度相当,A组随访3年的边缘密合度与颜色匹配度显著优于B组,具体表现为A组随访3年的边缘密合度及

颜色匹配度的A级患者占比明显多于B组。3M-Z350纳米复合树脂的抗压强度大,颗粒直径小,具有良好的边缘适合性与可抛光性,可避免凝聚成丛现象,故可获得理想的边缘密合度,并使修复体与基牙形成完整整体,故边缘密合度优于3M-Z100复合树脂^[13]。有报道指出,修复体边缘不密合会导致基牙继发龋及边缘着色等问题,最终影响牙齿美观^[14]。微渗漏的有效避免还可防止继发龋、边缘着色,最终改善患者颜色匹配度^[15]。国外有研究报道,3M-Z350纳米复合树脂充填后的色泽接近牙齿颜色,且固位能力良好,膨胀系数与牙体硬组织接近,即便时间长了也不会受外界环境的明显影响,修复后远期随访也可取得良好色泽协调性与边缘密合度^[16-17],与本研究结论相符。

综上所述,3M-Z350纳米复合树脂可降低修复后敏感与疼痛,获得长时间的良好边缘密合度与颜色匹配度,效果理想。

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