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纤维桩树脂核修复老年残根残冠的疗效及对炎性因子的影响

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摘要 目的:探讨纤维桩树脂核修复老年残根残冠的疗效及对炎性因子的影响。**方法:**抽取2012年1月至2013年4月期间行老年残根残冠修复的患者80例,共92颗患牙,按随机数字表法分为研究组和对照组各40例,其中研究组患牙47颗,采用纤维桩树脂核修复;对照组患牙45颗,采用金属铸造桩核修复。收集两组患者的血清和龈沟液样本,采用酶联免疫吸附法(Enzyme-Linked Immunosorbent Assay, ELISA)分别检测两组的IL-8、IL-6及TNF- α 水平。对比两组疗效及炎性因子水平。**结果:**研究组治疗患牙总体成功率明显高于对照组,失败率明显低于对照组($P < 0.05$);研究组不同牙位的治疗成功率均较对照组高,但差异不明显($P > 0.05$);修复前两组的IL-8、IL-6及TNF- α 的水平差异不明显;研究组修复后1周、1个月及1年的IL-8和IL-6水平均明显低于对照组($P < 0.05$),研究组修复后1年的TNF- α 水平明显低于对照组($P < 0.05$),两组患者修复后1周和修复后1月的TNF- α 水平相差不大($P > 0.05$);重复测量方差分析结果显示,两组IL-8、IL-6及TNF- α 的水平均随着修复时间的延长而降低($P < 0.05$)。**结论:**纤维桩树脂核修复老年残根残冠具有更好的疗效,对降低牙龈沟液中炎性因子水平的作用明显,值得在临床上应用和推广。

关键词:纤维桩树脂核;金属铸造桩核;老年残根残冠;疗效;炎性因子

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Curative Effect and the Effects on Inflammatory Factors of Glass Fiber Post and Core in the Repair of Elderly Residual Roots and Crown

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ABSTRACT Objective: To explore the curative effect and the effects on inflammatory factors of glass fiber post and core in the repair of elderly residual roots and crown. **Methods:** 80 patients of elderly residual roots and crown who accepted treatment from January 2012 to April 2013, a total of 92 offending teeth were included in this study. These patients were divided into the research group and control group by random number table method, each group had 40 patients. The research group had 47 offending teeth which were treated with glass fiber post and core and the control group had 45 offending teeth which were treated with metal post. The samples of serum and gingival crevicular fluid were collected. The level of IL-8, IL-6 and TNF- α were examined by ELISA, the curative effect and inflammatory factor level were compared between two groups. **Results:** The total success rate of the research group was significantly higher and the failure rate was significantly lower than that of the control group ($P < 0.05$). The success rates of different dental areas in research groups were all higher than the control group, but the differences were not significant ($P > 0.05$). The level of IL-8, IL-6 and TNF- α presented no obvious difference between two group before treatment. The level of IL-8 and IL-6 of research group were significantly lower than in the control group after 1 week, 1 month and 1 year post treatment ($P < 0.05$). The level of TNF- α of research group was significantly lower than that of the control group after 1 year ($P < 0.05$). The level of TNF- α showed no significant difference between the two groups after 1 week and 1 month. The results of the ANOVA for repeated measurement showed that the level of IL-8, IL-6 and TNF- α of both groups decreased with the extension of treatment time ($P < 0.05$). **Conclusion:** Glass fiber post and core has better curative effect in the repair of elderly residual roots and crown, and it has obvious effect on reducing the level of inflammatory factors in gingival groove liquid, it is worthy of popularization and application in clinic.

Key words: Glass fiber post and core; Metal post; Elderly residual roots and crown; Curative effect; Inflammatory factors

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前言

由于龋损或外伤等多种原因可导致牙体缺损,形成残根残

冠,严重影响患者的咀嚼功能、日常用牙和牙体美观^[1,2]。老年人易因过度倾斜、严重磨损等增龄性或口腔病理性的变化引起咬合距离太低从而增加形成修复困难的残根残冠的发生率^[3]。随着根管治疗及修复技术的不断成熟,更多的残根残冠得以保留。目前,桩核材料主要有纤维桩树脂核以及铸造金属桩核,然后进行冠修复^[4]。本次研究在完善根管治疗之后,分别对研究组

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和对照组行纤维桩树脂核及铸造金属桩核修复,比较两种不同的方法对修复老年残根残冠的疗效以及对炎症因子的影响,从而探讨纤维桩树脂核应用于老年残根残冠的疗效及对炎症因子的影响,现将结果报道如下。

1 资料与方法

1.1 对象选择及一般资料

抽取 2012 年 1 月至 2013 年 4 月期间进行老年残根残冠修复的患者 80 例,共 92 颗患牙。纳入标准^[9]:①患牙的剩余牙体组织至少需高于龈上 2 mm,或者经冠延长术后健康牙体组织都至少达到龈上 2 mm;②患牙的根管未出现明显弯曲,无牙周病以及明显的松动;③均成功进行根管治疗并自愿配合本次调查。按随机数字表法分为研究组和对照组,各 40 例,研究组患牙 47 颗,采用纤维桩树脂核修复。其中男 22 例(26 颗),女 18 例(21 颗),年龄 60~84 岁,平均(72.9±7.3)岁;47 颗患牙中,切牙 11 颗,尖牙 12 颗,前牙 14 颗,后牙 10 颗;对照组患牙 45 颗,采用金属铸造桩核修复;其中男 23 例(25 颗),女 17 例(20 颗),年龄 61~82 岁,平均(72.5±6.9)岁;45 颗患牙中,切牙 10 颗,尖牙 12 颗,前牙 13 颗,后牙 10 颗。两组患者的性别、年龄以及牙位等一般资料进行比较差异均不具有统计学意义($P>0.05$),资料具有可比性。

1.2 方法

所有患者经 X 线透片确定患牙之后采取逐步后退法进行根管的预备和填充。除去洞口处的封闭剂以及根管的口牙胶,依据牙根的粗细情况做桩道准备,采取垂直加压来压紧根尖处的填充材料。研究组采用合适的纤维桩树脂核行纤维桩核修复以及冠修复^[6,7],对照组采用适宜的铸造金属桩核进行金属桩核修复及冠修复。

血清样本的收集:两组患者在早晨空腹情况下行基础治疗前抽取 5 mL 外周静脉血,放置于非抗凝离心管中,将其静置 1 小时在 4℃ 的低温离心机(3K15 高速离心机,DAZER 公司,德国)离心 15 min 后收集血清。

龈沟液样本的收集:采用滤纸吸附法收集龈沟液样本并低温保存,经过低温离心后吸取离心后上的清液,采用人 IL-8、IL-6 和 TNF- α ELISA 试剂盒(北京晶美生物工程公司)保存,之后应用酶联免疫吸附法(Enzyme-Linked Immunosorbent Assay, ELISA)分别测定白细胞介素-8(IL-8)、白细胞介素-6(IL-6)和肿瘤坏死因子- α (TNF- α)的水平。

对两组患者的疗效及炎症因子的水平进行比较。

1.3 观察指标

分别于修复后的 1 周、6 个月和 1 年对患者进行随访,确定总体以及不同牙位的修复成功率,记录患者出现牙桩折断、牙桩脱落、松动及移位情况;根折断及根冠脱落情况;对患者修复前、修复后 1 周、1 个月和 1 年龈沟液中的炎症因子包括 IL-8、IL-6 和 TNF- α 的水平。

1.4 评价标准

通过牙体检查和 X 线透片来确定。成功:固位良好,无任何临床症状,边缘密合,咀嚼功能正常;冠无脱落,牙根无折断;X 线透片显示根尖未出现无病变,无牙龈退缩,修复体边缘牙龈未出现红肿;桩核无折断、脱落和松动情况。失败:成功的标准项中有一项不符合则视为失败。

1.5 统计学分析

采用 SPSS 18.0 统计软件建立数据库,计量资料以均数±标准差($\bar{x} \pm s$)表示;两组资料比较时,两独立样本的计量资料采用 t 检验,定性资料采用卡方检验进行统计分析,同组资料不同时间段的比较采用重复测量方差分析。检验水准 $\alpha=0.05$ 。

2 结果

2.1 两组患者患牙总体及不同牙位治疗成功情况

分别于修复后的 1 个月、6 个月和 1 年对两组患者进行随访,确定总体以及不同牙位的修复成功率。研究组治疗患牙总体成功率明显高于对照组,失败率明显低于对照组,差异均具有统计学意义($P<0.05$);研究组不同牙位的治疗成功率均较对照组高,但差异不明显($P>0.05$),详见表 1。

表 1 两组患者患牙总体及不同牙位治疗成功情况比较

Tabel 1 Comparison of successful treatment of overall and different teeth between two groups

组别 Groups	牙位 Tooth position	颗数 Number	成功 Success	失败 Failure	成功率(%) Success rate(%)	失败率(%) Failure rate(%)
研究组 (n=40) Research group (n=40)	切牙 Incisor	11	11	0	100.00	0.00
	尖牙 Canine	12	11	1	91.67	8.33
	前牙 Front teeth	14	13	1	92.86	7.14
	后牙 Posterior teeth	10	10	0	100.00	0.00
	总体 Total	47	45	2	95.74*	4.26*
对照组 (n=40) Control group (n=40)	切牙 Incisor	10	9	1	90.00	10.00
	尖牙 Canine	12	11	1	91.67	8.37
	前牙 Front teeth	13	9	4	69.23	30.77
	后牙 Posterior teeth	10	8	2	80.00	20.00
	总体 Total	45	37	8	82.22	17.78

注:* 与对照组相比较 $P<0.05$ 。

Note:*compared with control group $P<0.05$.

2.2 两组患者修复前后牙龈沟液中炎性因子的影响

由表 2 可知,修复前两组的 IL-8、IL-6 及 TNF- α 的水平相差不多;研究组修复后 1 周、一个月及 1 年的 IL-8 和 IL-6 水平均明显低于对照组的水平,差异均有统计学意义($P < 0.05$),研究组修复后 1 年的 TNF- α 水平明显低于对照组,差异有统

计学意义($P < 0.05$),两组患者修复后 1 周和修复后 1 月的 TNF- α 水平相差不多,尚不具有统计学意义($P > 0.05$);两组患者不同时间段的 IL-8、IL-6 及 TNF- α 的水平重复测量方差分析结果显示,各炎性因子的水平均随着修复时间的延长而降低($P < 0.05$)。

表 2 两组患者修复前后牙龈沟液中炎性因子的影响比较

Table 2 Comparison of the effect on the level of inflammatory factor in gingival groove liquid after and before repair between two groups

组别 Groups	时间段 Time period	IL-8 (ng/L)	IL-6 (ng/L)	TNF- α (ng/L)
研究组 (n=40) Research group	修复前 Before repair	128.95 $\pm$ 21.93	76.29 $\pm$ 11.50	9.30 $\pm$ 2.56
	修复后 1 周 After 1 week	77.39 $\pm$ 12.60*	51.99 $\pm$ 9.34*	7.11 $\pm$ 2.19
	修复月 1 月 After 1 month	49.00 $\pm$ 9.17*	32.01 $\pm$ 5.20*	6.25 $\pm$ 1.44
	修复后 1 年 After 1 year	31.60 $\pm$ 6.40*#	14.60 $\pm$ 2.27*#	4.40 $\pm$ 1.79*#
对照组 (n=40) Control group	修复前 Before repair	128.87 $\pm$ 21.94	76.32 $\pm$ 11.48	9.29 $\pm$ 2.49
	修复后 1 周 After 1 week	90.72 $\pm$ 14.58	65.87 $\pm$ 9.69	7.59 $\pm$ 2.45
	修复月 1 月 After 1 month	75.34 $\pm$ 8.56	49.01 $\pm$ 9.28	6.89 $\pm$ 1.56
	修复后 1 年 After 1 year	49.01 $\pm$ 9.09#	30.20 $\pm$ 5.13#	5.93 $\pm$ 1.90#

注:* 与对照组比较 $P < 0.05$; # 重复测量方差分析 P 时间 < 0.05 。

Note:*compared with control group $P < 0.05$; # repeated measures analysis of variance P time < 0.05 。

3 讨论

牙冠的大部分缺损称为残冠,残冠基本上却是,仅剩牙根称为残根^[8]。牙体损伤是导致老年人牙齿丧失,从而影响老年人口腔基本功能的常见疾病之一^[9]。保存牙根的修复治疗对口颌系统的功能恢复具有很大意义^[10,11]。同时,老年人常出现牙列缺损的情况,保留老年残根残冠,行桩核冠修复之后作为基牙,通过固定修复或者固定活动的联合修复,可以增加固位力,能够提高修复体的修复效果^[12,13]。

目前,用于老年残根残冠修复治疗的桩核材料很多,但纤维桩的弹性模量和牙体组织接近,它具有优良的机械性能,同时具有耐疲劳和腐蚀、生物相容性好、利于保护牙龈且容易拆除等多种优点,被广泛应用在修复牙体缺损的病例中,尤其是老年残根残冠的修复,国内外相关研究^[14-16]表明纤维桩的应用降低了修复的失败率,这与本次研究结果显示研究组治疗患牙总体成功率明显高于对照组,失败率明显低于对照组,差异均具有统计学意义($P < 0.05$),研究组不同牙位的治疗成功率均较对照组高相一致。对研究组患者的随访中,失败的 2 颗牙中有 1 颗松动,1 颗出现牙周炎症状,均未见纤维桩脱落和牙桩折断现象;对照组患者失败的 8 颗牙中,有 3 颗金属桩脱落,1 颗牙桩折断,2 颗松动,1 颗出现牙周炎症状。纤维桩不同于金属桩核,在必要的时候可用根管内钻将树脂材料和牙桩磨碎,有利于对失败的牙齿进行重新修复^[17,19]。上述均表明与铸造金属桩核相比,纤维桩树脂核用于修复老年残根残冠能够有效地提高治疗成功率,避免患者二次手术从而降低患者痛苦。

纤维桩的另一个优点是其临床操作技术简单易行,可有效的缩短手术时间,从而减少由于手术过程牙体损失而引发的炎

症反应^[18,20]。本次研究结果显示两组患者不同时间段的 IL-8、IL-6 及 TNF- α 的水平重复测量方差分析结果显示,各炎性因子的水平均随着修复时间的延长而降低($P < 0.05$);且研究组修复后 1 周、一个月及 1 年的 IL-8 和 IL-6 水平均明显低于对照组的水平($P < 0.05$),研究组修复后 1 年的 TNF- α 水平明显低于对照组($P < 0.05$)。表明与铸造金属桩核相比,纤维桩树脂核在降低修复后的炎症因子水平方面作用明显。本研究结果显示,两组患者修复后 1 周和修复后 1 月的 TNF- α 水平相差不多($P > 0.05$),考虑是样本量太小得出尚不具有统计学差异的结论,还需进一步研究。

综上所述,与铸造金属桩核相比,纤维桩树脂核修复老年残根残冠疗效较好,且能够更好的降低修复后的炎症因子水平,值得在临床上推广和应用。

参考文献 (References)

- [1] Ma H, Shen L, Liu K, et al. Clinical evaluation of residual crowns and roots restored by glass fiber post and core, cast metal post and core or directly[J]. West China Journal of Stomatology, 2013, 31(1):45-48
- [2] Kim Y K, Son J S, Kim K H, et al. A simple 2-step silane treatment for improved bonding durability of resin cement to quartz fiber post[J]. J Endod, 2013, 39(10):1287-1290
- [3] Dikbas I, Tanalp J. An overview of clinical studies on fiber post systems[J]. ScientificWorldJournal, 2013, 2013:171380
- [4] Lamichhane A, Xu C, Zhang F Q. Dental fiber-post resin base material: a review[J]. J Adv Prosthodont, 2014, 6(1):60-65
- [5] Inaba Y, Teraoka F, Nakagawa M, et al. Development of a new direct core build-up method using a hollow fiber-reinforced post [J]. Dent Mater J, 2013, 32(5):718-724
- [6] Soejima H, Takemoto S, Hattori M, et al. Effect of adhesive system on

- retention in posts comprising fiber post and core resin[J]. Dent Mater J,2013,32(4):659-666
- [7] Soejima H, Takemoto S, Hattori M, et al. Effect of adhesive system on retention in posts comprising fiber post and core resin[J]. Dent Mater J,2013,32(4):659-666
- [8] Makarewicz D, Le Bell-Ronnlof A M, Lassila L V, et al. Effect of cementation technique of individually formed fiber-reinforced composite post on bond strength and microleakage [J]. Open Dent J, 2013,7:68-75
- [9] Saraiva L O, Aguiar T R, Costa L, et al. Effect of different adhesion strategies on fiber post cementation: Push-out test and scanning electron microscopy analysis [J]. Contemp Clin Dent,2013,4 (4): 443-447
- [10] Alaghemand H, Mirzae M, Ahmadi E, et al. Effect of different post-space pretreatments on fiber post bonding to root dentine [J]. Dent Res J (Isfahan),2013,10(4):545-552
- [11] Mobilio N, Borelli B, Sorrentino R, et al. Effect of fiber post length and bone level on the fracture resistance of endodontically treated teeth[J]. Dent Mater J,2013,32(5):816-821
- [12] Mirmohammadi H, Gerges E, Salameh Z, et al.Effect of post diameter and cement thickness on bond strength of fiber posts [J]. Quintessence Int,2013,44(10):801-810
- [13] Aktemur T S, Uzunoglu E, Yilmaz Z. Effects of dentin moisture on the push-out bond strength of a fiber post luted with different self-adhesive resin cements [J]. Restor Dent Endod,2013,38 (4): 234-240
- [14] Arslan H, Kurklu D, Ayranci L B, et al. Effects of post surface treatments including Er:YAG laser with different parameters on the pull-out bond strength of the fiber posts[J]. Lasers Med Sci,2013
- [15] Scotti N, Bergantin E, Alovizi M, et al. Evaluation of a simplified fiber post removal system[J]. J Endod,2013,39(11):1431-1434
- [16] Vichi A, Carrabba M, Goracci C, et al. Extent of cement polymerization along dowel space as a function of the interaction between adhesive and cement in fiber post cementation [J]. J Adhes Dent,2012,14(1):51-57
- [17] Sterzenbach G, Karajouli G, Naumann M, et al. Fiber post placement with core build-up materials or resin cements-an evaluation of different adhesive approaches [J]. Acta Odontol Scand,2012,70 (5): 368-376
- [18] 苏丽芹. 玻璃纤维桩核及瓷甲冠修复青少年上前牙冠折临床疗效观察[J]. 辽宁医学院学报,2011,32(2):159-160
Su Li-jin. Observation on the Clinical Effect of Glass Fiber Pile Core and Porcelain Amour Crown Restoration of Teenagers' Anterior Crown Fracture [J]. Journal of Liaoning Medical University,2011,32 (2):159-160
- [19] Braga N M, Souza-Gabriel A E, Messias D C, et al. Flexural properties,morphology and bond strength of fiber-reinforced posts: influence of post pretreatment[J]. Braz Dent J,2012,23(6):679-685
- [20] Zogheib L V, Vasconcellos L G, Salvia A C, et al. Fracture resistance of bovine incisors restored with different glass fiber posts:effect of the diameter of fiber post[J]. Indian J Dent Res,2012,23(5):623-627

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- [11] She W H, Poon J T C, Fan J K M, et al. Outcome of laparoscopic colectomy for cancer in elderly patients [J]. Surgical endoscopy, 2013,27(1):308-312
- [12] Hida K, Hasegawa S, Kinjo Y, et al. Open versus laparoscopic resection of primary tumor for incurable stage IV colorectal cancer:a large multicenter consecutive patients cohort study [J]. Annals of surgery,2012,255(5):929-934
- [13] Hatwell C, Bretagnol F, Farges O, et al. Laparoscopic resection of colorectal cancer facilitates simultaneous surgery of synchronous liver metastases[J]. Colorectal Disease,2013,15(1):e21-e28
- [14] Wu Z, Zhang S, Aung L H H, et al. Lymph node harvested in laparoscopic versus open colorectal cancer approaches:a meta-analysis [J]. Surgical Laparoscopy Endoscopy & Percutaneous Techniques,2012,22(1):5-11
- [15] Taylor E F, Thomas J D, Whitehouse L E, et al. Population-based study of laparoscopic colorectal cancer surgery 2006-2008[J]. British Journal of Surgery,2013,100(4):553-560
- [16] Bagshaw P F, Allardyce R A, Frampton C M, et al. Long-term outcomes of the Australasian randomized clinical trial comparing laparoscopic and conventional open surgical treatments for colon cancer: the Australasian Laparoscopic Colon Cancer Study trial [J]. Annals of surgery,2012,256(6):915-919
- [17] Day A, Smith R, Jourdan I, et al. Retrospective analysis of the effect of postoperative analgesia on survival in patients after laparoscopic resection of colorectal cancer [J]. British journal of anaesthesia, 2012,109(2):185-190
- [18] Cianchi F, Cortesini C, Trallori G, et al. Adequacy of lymphadenectomy in laparoscopic colorectal cancer surgery:a single-centre, retrospective study[J]. Surgical Laparoscopy Endoscopy & Percutaneous Techniques,2012,22(1):33-37
- [19] Roscio F, Bertoglio C, De Luca A, et al. Outcomes of laparoscopic surgery for colorectal cancer in elderly patients [J]. JSLS,Journal of the Society of Laparoendoscopic Surgeons,2011,15(3):315-321
- [20] Verheijen P M, Stevenson A R L, Lumley J W, et al. Laparoscopic resection of advanced colorectal cancer[J]. British Journal of Surgery, 2011,98(3):427-430