

doi: 10.13241/j.cnki.pmb.2022.09.026

全瓷冠、高嵌体与覆盖体对大面积牙体缺损后牙修复效果及牙周组织的影响*

符苏杰¹ 宋冬生² 孙凯莹² 陈 静³ 张晓卫^{1Δ}

(1 南京中医药大学第二附属医院 / 江苏省第二中医院口腔科 江苏 南京 210017;

2 南京医科大学第一附属医院口腔科 江苏 南京 210029; 3 南京医科大学第一附属医院麻醉科 江苏 南京 210029)

摘要 目的:探讨全瓷冠、高嵌体与覆盖体对大面积牙体缺损后牙修复效果及牙周组织的影响。**方法:**选择 2015 年 6 月到 2018 年 5 月选择在本院诊治的大面积牙体缺损后牙患者 144 例作为研究对象,根据随机抽签原则将其分为全瓷冠组、高嵌体组与覆盖体组各 48 例。全瓷冠组给予二氧化锆全瓷冠修复治疗,高嵌体组给予高嵌体修复治疗,覆盖体组给予覆盖体修复治疗,观察随访患者的预后情况。**结果:**三组修复后 3 个月的牙龈指数(GI)与探诊出血(BOP)阳性率低于修复前,高嵌体组、覆盖体组低于全瓷冠组($P<0.05$)。全瓷冠组、高嵌体组、覆盖体组修复后 3 年的龋齿、牙周炎症、牙体修复体折断等并发症发生率为 2.1%、16.7%、8.3%,对比有差异($P<0.05$)。高嵌体组、覆盖体组随访 3 年的修复体固位、修复体外形、修复体边缘适合性评分都高于全瓷冠组($P<0.05$)。随访 3 年,三组修复体固位对比无差异($P>0.05$),但修复体外形、修复体边缘适合性对比有差异($P<0.05$)。全瓷冠组、高嵌体组、覆盖体组随访 3 年的满意度分别为 87.5%、97.9%和 100.0%,对比有差异($P<0.05$)。**结论:**全瓷冠、高嵌体与覆盖体在大面积牙体缺损后牙修复的应用均具有一定的效果,对牙周组织也有一定的影响,在临床上要根据患者实际情况合理选择修复方法。

关键词:全瓷冠;高嵌体;覆盖体;牙体缺损;后牙修复;牙龈指数

中图分类号:R783.1 **文献标识码:**A **文章编号:**1673-6273(2022)09-1729-05

The Effect of All-ceramic Crowns, Onlays and Coverings on the Restoration of Large-scale Tooth Defects and the Influence of Periodontal Tissues*

FU Su-jie¹, SONG Dong-sheng², SUN Kai-ying², CHEN Jing³, ZHANG Xiao-wei^{1Δ}

(1 Stomatology department, The Second Affiliated Hospital of Nanjing University of Chinese Medicine / Jiangsu Second Chinese Medicine Hospital, Nanjing, Jiangsu, 210017, China; 2 Stomatology department, The first Affiliated Hospital of Nanjing University of Chinese Medicine, Nanjing, Jiangsu, 210029, China; 3 Anesthesiology department, The first Affiliated Hospital of Nanjing University of Chinese Medicine, Nanjing, Jiangsu, 210029, China)

ABSTRACT Objective: To investigate the effects of all-ceramic crowns, onlays and overlays on the restoration of large-scale tooth defects and periodontal tissues. **Methods:** From June 2015 to May 2018, 144 cases of patients with posterior teeth with large dental defects diagnosed and treated in our hospital were selected as the research objects. All the cases were equally divided into the all-ceramic crown group, onlay group and the covering group accorded to the principle of random lottery. The all-ceramic crown group were given zirconia all-ceramic crown restoration treatment, the onlay group were given onlay restoration treatment, and the covering group were given overdenture restoration treatment, observed the prognosis of the followed-up patients. **Results:** The gingival index (GI) and the positive rate of probing bleeding (BOP) at 3 months after restoration were lower in the three groups than before restoration, the onlay group and overlay group were lower than all porcelain crown group ($P<0.05$). The incidence of complications such as dental caries, periodontal inflammation, and tooth and prosthesis broken in the all-ceramic crown group, onlay group, and covering group were 2.1 %, 16.7 % and 8.3 % after 3 years of restoration, and compared the difference among the three groups were statistically significant ($P<0.05$). After 3 years of follow-up, there was no difference in the retention of prostheses among the three groups ($P>0.05$), however, there were differences in the shape and edge fitness of the restoration ($P<0.05$). The three-year followed-up satisfaction of the all-ceramic crown group, onlay group and covering group were 87.5 %, 97.9 % and 100.0 %, respectively, and the difference were statistically significant ($P<0.05$). **Conclusion:** All-ceramic crowns, onlays and overlays have certain effect in the restoration of large-area tooth defects, and also have certain influence on the periodontal tissue. In clinical practice, the reasonable choice of restoration methods should be based on the actual situation of the patient.

Key words: All-ceramic crown; Onlay; Overlay; Tooth defect; Posterior tooth restoration; Gingival index

Chinese Library Classification(CLC): R783.1 **Document code:** A

Article ID: 1673-6273(2022)09-1729-05

* 基金项目:国家自然科学基金项目(82070521)

作者简介:符苏杰(1982-),女,硕士研究生,副主任医师,研究方向:口腔修复,电话:13605170984,E-mail:fusj0984@163.com

Δ 通讯作者:张晓卫(1972-),男,本科,副主任医师,研究方向:口腔修复,电话:13951704676,E-mail:458950675@qq.com

(收稿日期:2021-08-03 接受日期:2021-08-27)

前言

大面积牙体缺损多为后牙缺损,占 60.0 %以上,常常由于龋坏、牙齿折裂等导致缺损^[1-3]。大面积牙体缺损后牙,影响患者咀嚼功能、咬合关系,在临床上多数患者需要进行美学修复^[4]。大面积牙体缺损的修复主要以全瓷冠修复为主,多数全瓷冠不含金属,透光性较好,修复备牙需消除轴壁倒凹,可能导致牙冠缩短,牙体组织被磨除^[5,6]。高嵌体是一种嵌入牙体窝洞内,由粘接剂粘于窝洞内的修复体,多具有高透光性、良好生物相容性、耐腐蚀性等特点,常采用冠内及根内固位修复^[7,8]。其在临床上的应用能改善患者的口腔美观、语言、咀嚼功能,且加工技术相对简单,对基牙受力小^[9,10]。但高嵌体容易造成冠部保留的牙体组织及根部应力集中,易诱发牙体折裂或者修复体的折裂。覆盖体是指包绕整个牙冠各轴面及牙面的修复体,类似于全冠修复体,但是颈部边界止于龈上较高位置,保留了较多牙体组织,尽可能少磨切自身牙体组织,靠粘接剂固于缺损牙冠的修复体^[11,12]。本文具体对比了全瓷冠、高嵌体与覆盖体对大面积牙体

缺损后牙修复效果及牙周组织的影响,以明确这三类修复体的应用价值。

1 资料与方法

1.1 研究对象

选择 2015 年 6 月到 2018 年 5 月在本医院诊治的大面积牙体缺损后牙患者 144 例作为研究对象,纳入标准:均无手术禁忌症;择期手术;患者签署了知情同意书;后牙覆殆覆盖关系为正常;本院伦理委员会批准了此次研究;符合大面积牙体缺损的诊断标准,缺损部位为后牙;缺损范围 $\geq 1/2$ 牙冠;口腔卫生良好,牙周组织健康,牙槽骨吸收 $<1/3$,根尖区正常;根尖发育完全;年龄 20-65 岁;具有完整的临床与随访资料。

排除标准:患有口腔感染性疾病;患有传染性疾病患者;患有根尖周病变患者;处于妊娠、哺乳期的患者;凝血功能障碍者。

根据随机抽签原则把患者分为全瓷冠组、高嵌体组与覆盖体组各 48 例,三组一般资料对比无差异($P>0.05$)。见表 1。

表 1 三组一般资料对比
Table 1 Comparison of three groups of general data

Groups	n	Gender (male/female)	Age (years)	Body mass index (kg/m ²)	Defect range (proportion of crown)	Duration of disease (month)
All-ceramic crown group	48	26/22	45.16 $\pm$ 6.29	22.17 $\pm$ 2.58	0.56 $\pm$ 0.14	4.82 $\pm$ 0.45
Onlay group	48	25/23	45.62 $\pm$ 5.39	22.22 $\pm$ 3.18	0.57 $\pm$ 0.14	4.87 $\pm$ 0.32
Overlay group	48	25/23	45.29 $\pm$ 4.44	22.19 $\pm$ 1.47	0.54 $\pm$ 0.13	4.86 $\pm$ 0.44
F		0.056	0.313	0.083	0.599	0.111
P		0.972	0.766	0.945	0.511	0.897

1.2 治疗方法

全瓷冠组:给予二氧化锆全瓷冠修复治疗,完全按照常规操作规程进行二氧化锆全瓷冠牙体预备,轴面倒凹需全部磨除,轴面预留 1.0-1.5 mm 间隙,面预留 1.2-1.5 mm 间隙,在牙体颈部排龈线进行排龈处理,制备环形肩台。采用硅橡胶在的牙体部位制取印模,灌注超硬石膏,等石膏凝固后制备光学印模,然后制作修复体并进行咬合调整,粘接牙冠。

高嵌体组:给予高嵌体修复治疗,磨除龋坏充填物至髓腔,采用髓腔做冠内固位,于嵌体及牙体周边衔接处做直角肩台,髓室底形成连续而平滑的平面,面预备 1.5-2.0 mm 间隙,覆盖整个咬合面,硅橡胶取模,灌注人造石模型,加工后在模型上进行咬合调整,粘接于患者口内,调整咬合。

覆盖体组:预备全部轴面及面牙体组织,预留间隙类似于全冠预备,预备较高位置龈上肩台,尽可能多保留牙颈部牙体组织。制取印模,制作覆盖体义齿,试戴,粘接,调改咬合。

1.3 观察指标

1.3.1 牙周相关指标测定 在修复前与修复后 3 个月进行牙周相关指标的测定,包括牙龈指数(Gingival index, GI)、探诊出血(Bleeding on probing, BOP),GI:将牙周探针放于龈缘龈沟开口处,沿龈缘移动后观察牙龈出血情况,0= 牙龈正常,1= 轻度

颜色改变及水肿,2= 色红、水肿、探诊出血,3= 红肿明显或有溃疡,有自发出血倾向。BOP:用牙周探诊探入龈沟底或袋底,出血记为阳性,无出血记为阴性。

1.3.2 记录并发症 在修复后 3 年测定与记录患者的并发症情况,包括龋齿、牙周炎症、牙体修复体折断等。

1.3.3 随访评分 修复后随访 3 年,对患者的修复体固位、修复体外形、修复体边缘适合性进行评分,分为 0-3 分评分,分数越高,修复体状况越好。

1.3.4 满意度评定 修复后随访 3 年,对患者进行美观与功能方面的满意度评定,分为非常满意、比较满意、不满意三个级别,(非常满意+比较满意)/组内例数 $\times 100.0\%$ = 满意度。

1.4 统计方法

采用 SPSS 19.00 软件进行分析,计量资料用($\bar{x} \pm s$)表示,采用 t 检验,计数数据用 n %表示,采用卡方 χ^2 检验,检验水准为 $\alpha=0.05$ 。

2 结果

2.1 牙周指标变化对比

三组修复后 3 个月的 GI 值与 BOP 阳性率低于修复前,高嵌体组、覆盖体组低于全瓷冠组($P<0.05$)。见表 2。

表 2 三组修复前后牙周指标变化对比($\bar{x} \pm s$)Table 2 Comparison of changes of periodontal indexes before and after restoration in the three groups ($\bar{x} \pm s$)

Groups	n	GI		BOP positive rate (%)	
		Before the repair	3 months after repair	Before the repair	3 months after repair
All-ceramic crown group	48	1.30 $\pm$ 0.15	0.93 $\pm$ 0.10*	36.39 $\pm$ 4.33	23.01 $\pm$ 1.40*
Onlay group	48	1.32 $\pm$ 0.18	0.81 $\pm$ 0.10*	36.40 $\pm$ 4.13	18.38 $\pm$ 2.3*
Overlay group	48	1.30 $\pm$ 0.22	0.82 $\pm$ 0.09*	36.29 $\pm$ 3.48	18.60 $\pm$ 1.48*
F		0.089	22.719	0.011	104.0641
P		0.924	<0.001	0.989	<0.001

Note: compared with the before the repair, * $P < 0.05$.

2.2 并发症情况对比

全瓷冠组、高嵌体组、覆盖体组修复后 3 年的龋齿、牙周炎

症、牙体修复体折断等并发症发生率为 2.1 %、16.7 %、8.3 %，

对比有差异($P < 0.05$)。见表 3。

表 3 三组修复后 3 年的并发症情况对比(n)

Table 3 Comparison of complications 3 years after repair in the three groups (n)

Groups	n	Dental caries	Periodontal inflammation	Tooth and prosthesis broken	The total rate
All-ceramic crown group	48	0	1	0	1(2.1%)
Onlay group	48	3	1	4	8(16.7%)
Overlay group	48	2	0	2	4(8.3%)
F					6.257
P					0.044

2.3 修复体随访情况对比

随访 3 年,三组修复体固位对比无差异($P > 0.05$),但高嵌

体组、覆盖体组的修复体外形、修复体边缘适合性评分都高于

全瓷冠组($P < 0.05$)。见表 4。

表 4 三组修复体随访评分情况对比(分, $\bar{x} \pm s$)Table 4 Comparison of follow-up scores of prostheses in the three groups (points, $\bar{x} \pm s$)

Groups	n	Retention of prosthesis	Shape of prosthesis	Edge fitness of the prosthesis
All-ceramic crown group	48	2.73 $\pm$ 0.21	2.18 $\pm$ 0.28	2.11 $\pm$ 0.31
Onlay group	48	2.76 $\pm$ 0.19	2.74 $\pm$ 0.19	2.76 $\pm$ 0.33
Overlay group	48	2.78 $\pm$ 0.33	2.73 $\pm$ 0.28	2.76 $\pm$ 0.22
F		0.428	9.183	11.472
P		0.619	0.001	0.000

2.4 满意度对比

全瓷冠组、高嵌体组、覆盖体组随访 3 年的满意度分别为

87.5 %、97.9 %和 100.0 %，对比差异有统计学意义($P < 0.05$)。见

表 5。

表 5 三组随访满意度对比(n)

Table 5 Comparison of follow-up satisfaction among the three groups (n)

Groups	n	Very satisfied	Satisfied	Not satisfied	Satisfaction
All-ceramic crown group	48	30	12	6	42(87.5%)
Onlay group	48	41	6	1	47(97.9%)
Overlay group	48	43	5	0	48(100.0%)
F					9.310
P					0.010

3 讨论

当外界暴力、意外创伤与内在感染等因素作用于牙齿,牙齿将发生龋坏或折断,从而可见大面积牙体缺损。大面积牙体缺损在临床上较常见,可严重影响口腔及全身健康,降低患者的生活质量,且该缺损对于修复治疗的要求比较高^[13,14]。大面积牙体缺损后牙修复多采用全瓷冠进行修复,特别是二氧化锆全瓷冠修复现已成为口腔修复治疗中重要的部分,二氧化锆能良好地与周围组织相协调,其生物相容性好,能排除变态反应^[15]。该材料具有耐磨损、耐高温、极高抗弯曲强度等特点^[16],但其边缘位于牙龈组织以下,不利于患者自洁,有牙龈炎症的可能性发生。全瓷冠对余留牙体组织预备的要求比较高,要去除牙颈部倒凹,磨除牙体组织较多,在临床上的应用存在一定的不足^[17,18]。

本研究显示三组修复后3个月的GI值与BOP阳性率低于修复前,高嵌体组、覆盖体组高于全瓷冠组;高嵌体组、覆盖体组随访3年的修复体外形、修复体边缘适合性评分都高于全瓷冠组。这一结果与Murata T等人^[19]及Andrade GS^[20]等人的结果具有一致性,其原因如下:牙周炎是由牙菌斑中的微生物所引起的牙周支持组织的慢性感染性疾病,完善的牙周治疗主要在于彻底清除牙菌斑和牙周致病菌^[21]。高嵌体可利用已有窝洞、髓腔,在临床操作中能少磨牙,使牙体有较大抗力,防止食物嵌塞,维护牙龈乳头健康^[22]。高嵌体的部分边缘线远离牙龈,保留牙颊舌面天然外形凸度,避免刺激牙周组织^[23]。覆盖体修复边缘浅位于牙龈上患者自洁得以保障,减少对牙龈的刺激,有利于牙周组织的健康,高嵌体与覆盖体边缘线位于龈上,不受血液龈沟液影响,取模容易获得精准位置和形态,有利于获得良好的修复体边缘适合性和修复体形态^[24,25];全瓷冠组、高嵌体组、覆盖体组修复后3年的龋齿、牙周炎症、牙体修复体折断等并发症发生率对比有差异,这一结果与Cantner F等人^[26]及De Angelis F等人的报道^[27]一致,进一步分析可知,高嵌体可提高患者修复后的咀嚼功能,其覆盖整个咬合面的修复体,用粘接剂直接粘于窝洞内,能提高患牙在行使功能时的抗力,也能恢复牙体的解剖形态及生理功能。但大多金属嵌体为冷热良导体,较嵌体备牙多,在修复期间易出现各种并发症。全瓷冠将冠部整个包绕,避免了修复体与牙体交界处以及冠部未磨切牙体继发龋的发生。覆盖体组由于修复体材质及厚度的因素,在应力集中处也可能发生修复体牙体折断^[28,29]。

现今随着现代居民中对美的追求逐渐升高,对大面积牙体缺损修复治疗不仅有恢复功能的需求,对美观的要求也逐步增高。二氧化锆的生物相容性好,颈部边缘相对密合,且没有金属内层,能良好衔接维持美观性,也能更好地保护牙龈,不容易对牙龈组织造成不良刺激^[30,31]。本研究显示全瓷冠组、高嵌体组、覆盖体组随访3年的满意度分别为87.5%、97.9%和100.0%,对比有差异。该结果与Sharka R^[32]及Aloy-Prósper A^[33]一致,进一步分析其原因可知:高嵌体与覆盖体修复保留了较多的牙体组织,更有效提高患牙的咀嚼能力,也较好的恢复患牙的外形和美观,从而提高满意度。同时高嵌体与覆盖体可减少龈沟液的渗出对粘结强度产生的不良影响,对缺损牙的牙周组织和软硬组织刺激小,与牙体颜色接近,能达到美观的要求。特别是使用高嵌体与覆盖体能减少牙根吸收的发生,有利于牙周膜纤维

的重新结合,可对牙周膜愈合产生一定的正面影响^[34,35]。本研究也存在一定的不足,未进行相关机制的进一步分析,且纳入患者数量较少,将在后续研究中进行探讨。

总之,全瓷冠、高嵌体与覆盖体在大面积牙体缺损后牙修复的应用都有一定的效果,对牙周组织也有一定的影响,在临床上要根据患者实际情况合理选择修复方法。

参考文献(References)

- [1] Hötte G J, Koudstaal M J, Verdijk R M, et al. Intracranial actinomycosis of odontogenic origin masquerading as auto-immune orbital myositis: a fatal case and review of the literature [J]. BMC Pediatr, 2019, 19(1): 763-767
- [2] Iwasaki K, Washio K, Meinzer W, et al. Application of cell-sheet engineering for new formation of cementum around dental implants [J]. Transl Neurodegener, 2019, 5(6): 1991-1999
- [3] Helal O, Göstemeyer G, Krois J, et al. Predictors for tooth loss in periodontitis patients: Systematic review and meta-analysis [J]. J Clin Periodontol, 2019, 46(7): 699-712
- [4] Amaroli A, Colombo E, Zekiy A, et al. Interaction between Laser Light and Osteoblasts: Photobiomodulation as a Trend in the Management of Socket Bone Preservation-A Review [J]. Biology (Basel), 2020, 9(11): 1114-1119
- [5] Angellotti G. Quercetin-Based Nanocomposites as a Tool to Improve Dental Disease Management [J]. Am J Med Genet A, 2020, 8(11): 223-229
- [6] Badavannavar A N, Ajari S, Nayak K U S, et al. Abfraction: Etiopathogenesis, clinical aspect, and diagnostic-treatment modalities: A review[J]. Indian J Dent Res, 2020, 31(2): 305-311
- [7] Cerqueira T S, Correia K V D. Study and evaluation of the gubernacular canal by means of cone beam computed tomography[J]. Stomatologija, 2020, 22(3): 86-91
- [8] Chouchene F, Hammami W, Ghedira A, et al. Treatment of pre-eruptive intracoronal resorption: A scoping review [J]. Eur J Paediatr Dent, 2020, 21(3): 227-234
- [9] Craciun D, Bratu E A, Babucea M, et al. Molar incisor hypomineralisation: current knowledge and practice [J]. Materials (Basel), 2020, 9(12): 781-789
- [10] Derwich M, Mitus-Kenig M, Pawlowska E. Interdisciplinary Approach to the Temporomandibular Joint Osteoarthritis-Review of the Literature[J]. Stem Cell Rev Rep, 2020, 56(5): 1145-1149
- [11] Höfner S J. Bargain with the tooth fairy-The savings accounts for dental stem cells[J]. Biomed J, 2020, 43(2): 99-106
- [12] Onizuka S, Iwata T. Application of Periodontal Ligament-Derived Multipotent Mesenchymal Stromal Cell Sheets for Periodontal Regeneration[J]. Braz Oral Res, 2019, 20(11): 224-229
- [13] Beijer D, Sisto A, Van Lent J, et al. Defects in Axonal Transport in Inherited Neuropathies[J]. J Neuromuscul Dis, 2019, 6(4): 401-419
- [14] Machiulskiene V, Campus G, Carvalho JC, et al. Terminology of Dental Caries and Dental Caries Management: Consensus Report of a Workshop Organized by ORCA and Cariology Research Group of IADR[J]. Caries Res, 2020, 54(1): 7-14
- [15] Nothdurft FP. All-Ceramic Zirconium Dioxide Implant Abutments for Single-Tooth Replacement in the Posterior Region: A 5-Year Outcome Report[J]. Int J Prosthodont, 2019, 32(2): 177-181

- [16] Hu D. Chitosan-Based Biomimetically Mineralized Composite Materials in Human Hard Tissue Repair [J]. *Biomedicines*, 2020, 25 (20): 223-229
- [17] Innocentini L, Santos T T, Reis M B L, et al. Juvenile Spongiotic Gingival Hyperplasia: Clinicopathological Features of Eight Cases and a Literature Review[J]. *J Int Med Res*, 2020, 18(1): 953-958
- [18] Needleman I, Worthington H V, Giedrys-Leeper E, et al. WITHDRAWN: Guided tissue regeneration for periodontal infra-bony defects [J]. *Cochrane Database Syst Rev*, 2019, 5 (5): 1724-1729
- [19] Murata T, Maseki T, Nara Y. Effect of immediate dentin sealing applications on bonding of CAD/CAM ceramic onlay restoration[J]. *Dent Mater J*, 2018, 37(6): 928-939
- [20] Andrade GS, Pinto ABA, Tribst JPM, et al. Does overlay preparation design affect polymerization shrinkage stress distribution? A 3D FEA study[J]. *Comput Methods Biomech Biomed Engin*, 2021, 7(1): 1-10
- [21] Kumar S. Evidence-Based Update on Diagnosis and Management of Gingivitis and Periodontitis [J]. *Dent Clin North Am*, 2019, 63(1): 69-81
- [22] Abduo J, Sambrook RJ. Longevity of ceramic onlays: A systematic review[J]. *J Esthet Restor Dent*, 2018, 30(3): 193-215
- [23] Pulyodan M K, Paramel Mohan S, Valsan D, et al. Regenerative Endodontics: A Paradigm Shift in Clinical Endodontics [J]. *J Pharm Bioallied Sci*, 2020, 12(Suppl 1): 20-26
- [24] Spencer P, Ye Q, Song L, et al. Threats to adhesive/dentin interfacial integrity and next generation bio-enabled multifunctional adhesives [J]. *Immunol Rev*, 2019, 107(8): 2673-2683
- [25] Tadakamadla S K, Connelly S T, Sforza C, et al. Middle distal canal of mandibular first molar: A case report and literature review[J]. *Ther Adv Drug Saf*, 2019, 22(2): 285-288
- [26] Cantner F, Cacaci C, Mücke T, et al. Clinical performance of tooth- or implant-supported veneered zirconia single crowns: 42-month results [J]. *Clin Oral Investig*, 2019, 23(12): 4301-4309
- [27] De Angelis F, D'Arcangelo C, Malísková N, et al. Wear Properties of Different Additive Restorative Materials Used for Onlay/Overlay Posterior Restorations[J]. *Oper Dent*, 2020, 45(3): E156-E166
- [28] Yu N. Personalized scaffolding technologies for alveolar bone regenerative medicine[J]. *J Funct Biomater*, 2019, 22(Suppl 1): 69-75
- [29] Ren Q, Li Z, Zhang L, et al. Strategies for Managing the Risk of Mucogingival Changes During Impacted Maxillary Canine Treatment [J]. *Molecules*, 2020, 33(2): 123-132
- [30] Um I W, Ku J K, Kim Y K, et al. Histological Review of Demineralized Dentin Matrix as a Carrier of rhBMP-2 [J]. *Turk J Orthod*, 2020, 26(3): 284-293
- [31] Serra-Pastor B, Loi I, Fons-Font A, et al. Periodontal and prosthetic outcomes on teeth prepared with biologically oriented preparation technique: a 4-year follow-up prospective clinical study [J]. *J Prosthodont Res*, 2019, 63(4): 415-420
- [32] Sharka R, Abed H, Hector M. Oral health-related quality of life and satisfaction of edentulous patients using conventional complete dentures and implant-retained overdentures: An umbrella systematic review[J]. *Gerodontology*, 2019, 36(3): 195-204
- [33] Aloy-Prósper A, Peñarrocha-Oltra D, Peñarrocha-Diágo M, et al. Peri-implant Tissues and Patient Satisfaction After Treatment of Vertically Augmented Atrophic Posterior Mandibles with Intraoral Onlay Block Bone Grafts: A Retrospective 3-Year Case Series Follow-up Study [J]. *Int J Oral Maxillofac Implants*, 2018, 33 (1): 137-144
- [34] Yadav N, Kumar A. Palatoradicular groove: The hidden predator and etiological factor - Advanced proposed classification and literature review[J]. *Indian J Dent Res*, 2020, 31(4): 656-661
- [35] Silva L M, Brenchley L, Moutsopoulos N M. Primary immunodeficiencies reveal the essential role of tissue neutrophils in periodontitis[J]. *Orthod Craniofac Res*, 2019, 287(1): 226-235

(上接第 1699 页)

- [23] 邓开智, 冷明敏, 唐建. 马应龙麝香痔疮膏联合地奥司明片对混合痔术后创面水肿的防治效果[J]. *世界中医药*, 2019, 14(4): 946-949
- [24] Hnátek L. Therapeutic potential of micronized purified flavonoid fraction (MPFF) of diosmin and hesperidin in treatment chronic venous disorder[J]. *Vnitr Lek*, 2015, 61(9): 807-814
- [25] 张红涛. 痔疮自动套扎术联合地奥司明对混合性痔疮的治疗效果及对炎性因子水平的影响 [J]. *中华保健医学杂志*, 2018, 20(6): 510-512
- [26] 刘史佳, 申龙树, 戴国梁, 等. IL-17、IL-6、TNF- α 细胞因子在痔疮患者中的表达[J]. *药学与临床研究*, 2016, 24(3): 201-204
- [27] 张涛. 微创痔疮手术联合地奥司明片治疗痔疮的效果观察 [J]. *山西医药杂志*, 2019, 48(9): 1085-1088
- [28] Bashankaev BN, Wexner SD, Arkharov AV. Common sense of diosmin administration in combined treatment of hemorrhoids [J]. *Khirurgiia (Mosk)*, 2018, (8. Vyp. 2): 83-89
- [29] 蓝菲, 赵刚. 地奥司明联合麝香痔疮膏治疗痔疮疗效及对患者生活质量影响[J]. *辽宁中医药大学学报*, 2016, 18(4): 225-227
- [30] 应江伟, 朱锦德. 地奥司明联合麝香痔疮膏治疗痔疮疗效及对患者疼痛和生活质量影响 [J]. *药物流行病学杂志*, 2014, 23(6): 360-362