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人工骨表面覆盖口腔修复膜对颌骨囊性缺损人工骨植入术患者植入腔感染的预防作用 *

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摘要 目的:探讨人工骨表面覆盖口腔修复膜对颌骨囊性缺损人工骨植入术患者植入腔感染的预防作用。**方法**:将我院 2012 年 4 月~2016 年 2 月收治的 78 例颌骨囊性缺损患者按治疗时间分为对照组 38 例与观察组 40 例,均行开窗人工骨植入术,其中对照组采取常规抗感染,观察组采取人工骨表面覆盖口腔修复膜。比较两组的囊腔体积、面积缩减率、人工骨植入量、骨厚度及植入腔感染率。**结果**:两组的囊腔体积、面积缩减率及人工骨植入量比较差异无统计学意义(*P>0.05*)。但观察组的骨厚度明显大于对照组(*P<0.05*),植入腔感染率明显低于对照组(*P<0.05*)。**结论**:在开窗人工骨植入术的基础上使用口腔修复膜不仅能引导骨组织再生,而且能够显著降低植入腔的感染率。

关键词:颌骨缺损;囊性;人工骨;修复膜;口腔;感染

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Preventive Effect of Artificial Bone Surface Covering Oral Repair Film on the Cavity Infection in Patients with Mandibular Cystic Defect Undergoing Artificial Bone Implantation*

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ABSTRACT Objective: To investigate the preventive effect of artificial bone surface covering oral repair film on the infection of implant in patients with mandibular cystic defect undergoing artificial bone implantation. **Methods:** 78 cases of patients with cystic defect of jaw in our hospital from April 2012 to February 2016 were divided into the control group (38 cases (and the observation group (40 cases) according to the time of treatment, all the patients were treated with fenestration and artificial bone implantation. The control group was treated with conventional anti infection, and the observation group was treated with artificial bone surface covering the oral repair membrane. The volume, area reduction rate, artificial bone implantation volume, bone thickness and infection rate of the implanted cavity were compared between the two groups. **Results:** No significant difference was found in the volume, area reduction rate and amount of artificial bone between two groups (*P>0.05*), but the bone thickness of observation group was significantly higher than that of the control group (*P<0.05*), the infection rate of implanted cavity of observation group was significantly lower than that of the control group (*P<0.05*). **Conclusion:** Fenestration artificial bone implantation is an effective method for the treatment of jaw cystic defect. On the basis of this, using oral repair membrane can not only guide bone regeneration, but also significantly reduce the infection rate of the implanted cavity.

Key words: Jaw defect; Cystic; Artificial bone; Repair film; Oral cavity; Infection

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前言

颌骨囊肿虽然是一种良性病变，但由于早期症状不明显，发现时往往已出现了严重的骨破坏,骨缺损面积大,且愈合过程比较复杂,其修复机制主要包括成骨细胞的产生、骨诱导及骨引导[1-3]。对于直径＜2 cm 的颌骨囊肿,临床常采取刮治术，而对于较大范围的颌骨囊肿以手术摘除治疗为主，术后遗留的骨腔自身修复缓慢,难以恢复原有的生理结构及外形,对患者咀嚼、吞咽、言语等功能甚至外形美观及后续治疗造成严重的影响,需妥善处理。对于体积较大的骨缺损需进行自体骨或人工骨移植,以达到消除死腔、促进或引导骨再生的目的。而植入腔局部较易出现黏膜红肿、瘘管等症状,严重者甚至会出现人工骨颗粒从瘘管处排出，严重影响患者的后期康复及生活质量[4-6]。

根尖囊肿是牙源性颌骨囊肿的一种，其是由于根尖肉芽肿、慢性炎症的刺激引起。对于根尖囊肿导致的骨组织缺损,如

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何提高骨组织的再生能力,避免软组织塌陷,以及降低感染风险,一直是口腔医学领域面临的问题[7-9]。膜引导组织再生术的出现极大地推进了口腔修复学的发展,口腔修复膜具有机械屏障作用、诱导作用、血管化作用及参与代谢作用,已被广泛认可[10-12],目前已在该领域逐步推广。本研究采取开窗术减压二期刮除并联合人工骨植入术,在此基础上使用口腔修复膜,旨在探讨其引导骨再生作用及预防植入腔感染作用,结果报道如下。

1 资料与方法

1.1 一般资料

选择我院 2012 年 4 月 ~2016 年 2 月收治的 78 例颌骨囊性缺损患者,按治疗时间分为对照组与观察组。对照组中,男性 21 例,女性 17 例,年龄 22~68 岁,平均(37.04± 5.16)岁,颌骨囊性缺损大小 0.7~3.1 cm,平均颌骨囊性缺损大小(1.92± 0.45)cm,上颌骨 11 例,下颌骨 27 例;上颌骨 22 例,上颌骨 16 例。观察组中,男性 21 例,女性 19 例,年龄 19~69 岁,平均(38.24± 7.04)岁,颌骨囊性缺损大小 0.8~3.4 cm,平均颌骨囊性缺损大小(2.11± 0.51)cm,上颌骨 13 例,下颌骨 27 例;上颌骨 26 例,下颌骨 14 例。两组的性别、年龄、颌骨囊性缺损大小、病变部位及类型等比较无统计学意义,具有可比性(*P>0.05*)。

1.2 纳入与排除标准

纳入标准:① 颌骨囊性缺损患者;② 单囊单发性;③ 行开窗人工骨植入术者;④ 颌骨囊性缺损大小为 1~4 cm;⑤ 经医院伦理委员会同意,并签署知情同意书。

排除标准:① 合并全身感染者;② 合并神经性障碍疾病者;③ 患有严重肝肾功能障碍者。

1.3 方法

1.3.1 术前准备 术前行血常规、凝血常规、心电图、肝肾功能、电解质等常规检查,排除手术禁忌证,行颌骨全景断层片明确囊肿的最大径、范围及其与周围的关系,囊肿范围在 2.6 cm× 2.1 cm~8.5 cm× 2.8 cm。对合并感染者使用抗生素控制,对根尖位于囊腔内者先行根管治疗。告知患者家属手术风险及相关注意事项,签订知情同意书。

1.3.2 开窗人工骨植入术操作 局麻下选择在唇、舌侧,尽可能靠近牙槽突的位置,作一个大小合适的开窗口,作一个粘骨膜瓣大小约 2 cm× 1.5 cm,蒂在前庭沟方向。将粘骨膜瓣掀起,显露囊壁,切取创内囊壁组织,送病理学检查。剥离舌形粘骨膜瓣向囊腔推进以作开窗口的边缘。囊腔冲洗,适当填入碘仿纱条,10~14d 更换一次,更换 3~4 次后则可不必再填入纱条。6 个月后复诊,囊腔显著缩减,此时将粘骨膜瓣掀起,生理盐水纱布覆盖保护,将残存的囊壁组织充分地予以刮除。将囊腔彻底冲洗,将适量的密多晶羟基磷灰石微粒人工骨放入专用输送器内注入受植区内,观察组选择大小合适的口腔修复膜 Bio-Gide(瑞士 GeistlichPharmaAG)覆盖在人工骨表面,再将粘骨膜瓣缝合覆盖伤口,术后抗感染 3d,术后 7d 拆线。对照组除了不放置口腔修复膜,其余操作同观察组。

1.4 观察指标

① 囊腔体积、面积测量:开窗术后 6 个月复诊,囊腔冲洗处理后将其内的内体充分吸净,将生理盐水注入,注入的生理盐水量即囊腔体积,重复 3 次取平均值。囊腔体积缩减率 =(开窗术前囊腔体积—开窗术后囊腔体积)/ 开窗术前囊腔体积× 100%。开窗术前后曲面体层片扫描,校正双侧髁突间的距离和灰度,测量病变区像素点,然后计算面积。囊腔面积缩减率 =(开窗术前囊腔面积—开窗术后囊腔面积)/ 开窗术前囊腔面积× 100%。② 骨再生情况观察,人工骨植入术后 6 个月用 10 分度游标卡尺测量骨厚度。③ 感染判断标准[13]:人工骨植入术后 6 个月,无任何感染性表现为无感染;创周组织红肿为轻度感染;创周组织红肿,有脓性分泌物,肉芽组织增生,张口、吞咽困难为重度感染。

1.5 统计学方法

应用 SPSS13.0 统计软件进行,计量资料以均值± 标准差表示,组间比较采用 t 检验,计数资料用百分比表示,组间比较采用卡方检验(x^2),以 *P<0.05* 为差异具有统计学意义。

2 结果

2.1 两组囊腔体积、面积缩减率的比较

两组的囊腔体积、面积缩减率比较差异无统计学意义(*P>0.05*),见表 1。

表 1 两组囊腔体积、面积缩减率比较(%)

Table 1 Comparison of the cystic volume and area reduction rate between two groups(%)

Groups	Cavity volume reduction rate	Cavity area reduction rate
Observation group(n=40)	57.04± 7.93	63.89± 10.08
Control group(n=38)	56.08± 9.13	64.86± 9.91
P	0.620	0.669

2.2 两组人工骨植入量及骨厚度比较

两组的人工骨植入量比较差异无统计学意义 (*P>0.05*),观察组的骨厚度明显大于对照组(*P<0.05*),见表 2。

2.3 两组植入腔感染率比较

无感染:观察组 38 例(95.00%),对照组 29 例(76.32%);轻度感染:观察组 2 例(5.00%),对照组 7 例(18.42%);重度感染:观察组 0 例(0%),对照组 2 例(5.26%)。观察组的植入腔感染率明显低于对照组(*P<0.05*),见表 3。

3 讨论

目前,临床上多采用人工骨植入修补和治疗颌骨囊性缺损。对于根尖囊肿引起的骨组织缺损,本研究采用的先开窗缩小囊肿后在行人工骨植入能够避免一次性刮治术引发出血、感染、骨折及人工骨植入过多而造成的自身骨量生长受限,有利

表 2 两组人工骨植入量及骨厚度比较

Table 2 Comparison of implanted bone volume and bone thickness between two groups

Groups	IImplanted bone volume(g)	Bone thickness(mm)
Observation group(n=40)	15.76± 5.48	3.619± 0.466
Control group(n=38)	15.94± 4.24	3.327± 0.504
P	0.803	0.009

表 3 两组植入腔感染率比较[例(%)]

Table 3 Comparison of the infection rate of implanted cavity between two groups[n(%)]

Groups	No infection	Mild infection	Severe infection
Observation group(n=40)	38(95.00)	2(5.00)	0(0)
Control group(n=38)	29(76.32)	7(18.42)	2(5.26)
P		0.005	

于颌骨缺损愈合[14-16],但其仍存在术后植入腔感染问题。瘘管和黏膜红肿是术后植入腔感染较为常见的情况,严重者还可发生人工颗粒从瘘管排出的现象,严重影响患者后期康复[17,18]。

口腔修复膜是一种支架材料,其建立在软组织与骨缺损之间，能使来自骨膜或骨髓的成骨细胞附着在其表面并增殖分化,从而增加骨缺损区一些促骨生长因子(如促进骨形态发生蛋白)的含量,并能选择性地阻止非骨生长细胞(如上皮细胞、成纤维细胞等)向骨缺损区迁移,最终促进新骨生成,有效解决了术后植入腔感染的问题,还满足了患者对口腔的美学要求[19-21]。口腔修复膜最初主要用于牙周损伤修复及种植手术中,以解决拟种植区的骨量不足、即刻种植中骨缺损以及术后炎性骨吸收等问题,后来在牙槽嵴裂植骨中也取得较好的效果[22-24]。

口腔修复膜可分为可吸收性膜和不可吸收性膜,本研究采用的是目前比较流行的可吸收性膜 Bio-Gide。Bio-Gide 是胶原类膜,由Ⅰ型和Ⅲ型胶原组成,具有良好的机械屏障作用、组织相容性、可生物降解性、引导骨再生能力及血凝作用等优点[25]。既往研究显示使用口腔修复膜治疗下颌骨缺损,术后 5 个月即见大量新骨长成,半年骨缺损基本修复[26]。其具有较好的通透性,可黏附于植骨周围的软组织,使创口愈合加快。本研究中,观察组人工骨植入术后 1w 的骨厚度明显大于对照组,明确了口腔修复膜引导骨组织再生的作用。

在人工骨表面覆盖口腔修复膜不仅能引导骨再生,有助于骨细胞生长,阻止缺损处上皮和结缔组织的生长,促进骨缺损区修复，而且还可在颌骨囊性缺损区和粘骨膜瓣中形成屏障,有利于预防感染[27]。口腔修复膜可在骨缺损和软组织之间产生相对封闭的骨再生环境,不会阻止伤口愈合,具有良好的生物相容性，又可选择性阻挡成纤维细胞和上皮细胞进入骨缺损处。有研究者采用人工骨表面覆盖可吸收性膜预防阻生智齿拔除术后牙槽窝感染,获得良好的效果[28]。本研究亦发现人工骨植入术后 6 个月观察组的植入腔感染率明显低于对照组。研究表明,吸收性膜具有一定的凝血保护作用与抗感染作用。同时,口腔修复膜能在骨缺损区与粘骨膜瓣间建立生物屏障,有利于抵御外界致病微生物的入侵,且其血管化作用能够为骨缺损区提供良好的供血系统,可吸收性膜还能在其生物降解过程中参与代谢的调节,允许营养物质和组织液自由交换[30,31],这不仅有利于促进新骨的生成,而且也能一定程度上提高局部抗感染能力。这些作用可能是口腔修复膜能预防植入腔感染的原因。

综上所述,开窗人工骨植入术是治疗颌骨囊性缺损的有效方法，在此基础上使用口腔修复膜不仅能引导骨组织再生,而且能够显著降低植入腔感染率。但由于本研究样本量较少,随访时间较短,后期还需扩大样本量进行长期随访以评估口腔修复膜对骨组织的修复效果及机理,并比较不同口腔修复膜对颌骨囊性缺损人工骨植入术患者植入腔感染的预防作用,以期为临床上植入腔感染率的降低提供进一步的参考依据。

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