

[DOI] 10.12016/j.issn.2096-1456.2020.05.012

· 综述 ·

上前牙美学区即刻种植的研究现状

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【摘要】 在牙齿拔除的同时将种植体立即植入新鲜拔牙窝的种植方式, 其具有减少手术次数和整体治疗时间、充分利用现有骨量、具有理想的美学效果等优点。然而, 即刻种植同样存在本身固有的缺点, 由于拔牙窝的存在, 创口的关闭较困难; 由于种植体的尺寸与拔牙窝不匹配, 较难达到良好的初期稳定性; 并且存在软组织退缩的风险。本文就上前牙美学区即刻种植的成功率、适应证及其扩展、手术要求、并发症及其防治等方面作一综述。文献复习结果表明, 即刻种植的5年成功率高于95%。其适应证包括: 拔牙窝完整; 唇侧骨壁厚度至少为1 mm; 厚龈生物型; 种植位点无急性感染; 根尖区足够骨量以提供良好初期稳定性。同时近年来随着种植外科技术的改良和骨替代材料性能的改善, 即刻种植已成为口腔种植诊疗中的常规手段之一, 并且其适应证有进一步扩大趋势。但其也有并发症, 包括种植体植入位置不佳, 牙龈退缩造成美学效果欠佳。此外即刻种植即刻修复和常规负荷表现出相似的结果, 并有利于获得更好的美学效果, 但关于即刻种植软组织美学的长期稳定性和患者满意度尚需进一步研究。

【关键词】 上前牙区; 美学区; 即刻种植; 即刻修复; 成功率; 适应证; 不翻瓣; 微创拔牙

【中图分类号】 R782.12 **【文献标志码】** A **【文章编号】** 2096-1456(2020)05-0331-05

 开放科学(资源服务)标识码(OSID)

【引用著录格式】 张邃, 何东宁. 上前牙美学区即刻种植的研究现状[J]. 口腔疾病防治, 2020, 28(5): 331-335.

Current status of immediate implant placement in the aesthetic zone of the anterior teeth ZHANG Sui, HE Dongning. Shanxi Medical University School and Hospital of Stomatology, Taiyuan 030001, China

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【Abstract】 The method of placing an implant immediately into the fresh extraction socket at the same time as tooth extraction has the advantages of reducing the number of operations and the overall treatment time, making full use of the existing bone mass, and resulting in ideal aesthetic effects. However, immediate implant placement also has its own inherent shortcomings. Due to the existence of the extraction socket, it is difficult to close the wound; because the size of the implant does not match the size of the extraction socket, it is difficult to achieve good initial stability, and there is a risk of soft tissue recession. This article reviews the success rate, indications and expansion of immediate implant placement, surgical requirements, complications and the prevention and treatment of anterior teeth in the aesthetic area. A literature review showed that the 5-year success rate of immediate implant placement was over 95%. The indications included intact socket walls, a facial bone wall at least 1 mm in thickness, the presence of thick, soft tissue, the absence of acute infection at the site, and the availability of bone apically and lingually to the socket to provide primary stability. In addition, in recent years, with the improvement of surgical implantation technology and the improvement of bone substitute material performance, immediate implant placement can be used as one of the conventional methods for oral implantation treatment, and its indications have shown a trend toward expansion. Immediate implant placement also has complications, including poor placement of implants and gingival receding that results in poor aesthetic outcomes. In ad-

【收稿日期】 2019-05-05 **【修回日期】** 2019-12-01

【基金项目】 山西省卫生与计划生育委员会资助项目(2015112)

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dition, immediate restoration and conventional loading protocols after immediate implant appear to have similar outcomes and result in better aesthetic effects. However, the long-term stability and patient satisfaction after immediate implant placement in terms of soft tissue aesthetics require more research.

【Key words】 maxillary anterior region; esthetics zone; immediate implant placement; immediate provisionalization; success rates; indication; flapless; minimally invasive tooth extraction

J Prev Treat Stomatol Dis, 2020, 28(5): 331-335.

传统的种植治疗为拔除患牙后需要等待数月后植入种植体,但是拔牙后牙槽嵴的吸收有可能会降低剩余骨量^[1],影响种植体植入至理想位置,最终未能达到最佳的修复效果。在上前牙区,由于其唇侧骨板菲薄,其吸收会更加显著^[2]。进而导致种植体唇腭向位置偏差,影响最终的美学效果^[3]。另一方面,缩短拔牙与种植体植入之间的等待时间以及减少手术次数也是临床患者的主要诉求,因此有学者提出了即刻种植,即在牙齿拔除的同时将种植体立即植入新鲜拔牙窝的种植方式,其具有减少手术次数和整体治疗时间、充分利用现有骨量、具有理想的美学效果等优点^[4-5]。然而,即刻种植同样存在本身固有的缺点,由于拔牙窝的存在,创口关闭较困难;由于种植体的尺寸与拔牙窝不匹配,较难达到良好的初期稳定性;并且存在软组织退缩的风险^[3]。本文就上前牙美学区即刻种植成功率与存留率、适应证及其扩展、手术要求、即刻种植即刻修复、并发症及其防治等方面作一简单综述,为临床提供参考。

1 即刻种植的成功率与存留率

成功率是指按照严格的成功标准,对所有符合成功标准的种植体数量与所有种植体数量相比较而得出的,而存留率则是指一定时间内种植体仍存在于颌骨内并行使功能但不一定符合成功标准的情况,二者并不相同^[6]。Lang等^[7]对即刻种植的存留率进行了评估,结果显示即刻种植2年的存留率为98.4%,4年的存留率为97.5%。其他学者的研究显示了相似的结果,即刻种植的5年成功率为97.96%,存留率为98.25%,并且即刻种植和早期种植的存留率相似^[8]。由于目前尚缺乏统一的成功标准,多数临床研究均采用存留率作为评价标准。上前牙区作为美学区,其成功率应有更高的标准,如不包括任何生物、机械、美学并发症。所以,上前牙区的即刻种植应根据成功率来评估,而非存留率。

2 即刻种植的适应证及其扩展

2.1 适应证

根据ITI的共识和推荐的临床程序,即刻种植的适应证包括:①牙拔除后唇侧骨壁完整,厚度 ≥ 1 mm;②牙龈为厚龈生物型;③拔牙位点无急性感染;④拔牙位点根方和腭侧有足够的骨量以利于种植体获得良好的初期稳定性。对上颌前牙区唇侧骨壁的CBCT研究显示只有约15%的牙齿唇侧骨壁大于1 mm^[9]。对498颗拟行即刻种植的上前牙研究发现,上前牙的平均厚度约0.5~0.6 mm^[10]。而当唇侧骨壁厚度小于1 mm时,则会发生明显的进行性骨吸收^[11]。可见在上前牙区满足上述适应证的患者非常少,这也限制了即刻种植在临床中的应用。

2.2 适应证的扩展

薄龈型比厚龈型更易出现牙龈退缩,从而导致美学并发症^[12]。对于薄龈型患者,以往并不建议行即刻种植。有学者提出的牙片屏障技术则为薄龈型患者提供了另一种选择,其通过在种植体的颊侧保留部分牙根,进而保存种植体唇侧靠近牙龈区域的牙周组织^[13]。相对于其他用于保留骨组织和软组织的技术,牙片屏障技术理论上可减少甚至避免唇侧骨组织及软组织的吸收改建,进而维持软硬组织的外形轮廓^[14]。有研究回顾了使用牙片屏障技术的128例患者,4年存留率为96.1%,与传统即刻种植和延期种植无明显区别^[15]。但是此技术现仍存在争议,文献报道成功应用此技术的临床结果仅为3~5年的观察结果^[13],其长期效果尚不明确,并且由于种植体周围保留牙片具有一定感染风险,因此牙片屏障技术的应用条件比较严格,并不适用所有美学区的种植病例。

对于有缺损的牙槽嵴即刻种植则更具有挑战性,有研究者提出即刻牙槽嵴修复技术,使用上颌结节处采集的自体皮质骨和松质骨移植到即刻种植位点的唇侧和邻面骨缺损处即刻重建缺损^[16]。

由于自体骨的良好生物学特性,其有益于加速在受损的牙槽嵴区域的硬组织愈合和种植体骨结合。此外,研究者进一步提出“三层移植”,从上颌结节采集的带有结缔组织的皮质骨和松质骨复合体使得唇侧骨和软组织受损拔牙窝得到即刻重建,同时对18例患者进行了58个月随访,最终美学效果和组织稳定性达到了满意的效果^[17]。但是即刻牙槽嵴修复技术同样存在比较高的并发症风险,并具有较高的技术敏感性,需要经验丰富的医生完成。

对于牙周和根尖周存在感染的患者,由于细菌的存在可能干扰愈合过程,因此曾被认为是即刻种植的禁忌证^[18]。但临床研究发现牙周感染区域的即刻种植也能获得较好的临床效果,3年存留率达到98.66%,与正常位点即刻种植无明显区别^[19]。对无症状根尖周炎位点的即刻种植进行研究,对比了拔牙时肉芽组织去除和保留行即刻种植的效果,最终种植体存留率为100%,两组间无显著性差异^[20]。由此可见,对于无症状的根尖周炎亦可行即刻种植,但由于观察时间有限,还需进一步对反应性软组织进行临床和组织学研究,并不能作为临床常规推荐。

随着口腔种植材料的发展,种植技术的提高,许多不满足条件的病例也可通过即刻种植获得理想的治疗效果,在一定程度上扩展了即刻种植的适应证。

3 即刻种植的手术要求

3.1 微创拔牙

在即刻种植拔牙时应采用微创拔牙技术,以最小的创伤拔除牙齿,不破坏菲薄的唇侧骨壁,最大限度保留牙周组织。使用牙周膜分离器切断牙周韧带可达到微创目的,并可减轻患者的不适。但因其同样是使用楔力,因此应避免向唇侧施力,减小对唇侧骨壁的影响^[21]。此外,目前已有牙根牵引装置应用于临床,如Benex拔牙系统。通过对25例上前牙无法保留的患者行Benex微创拔牙,不翻瓣即刻种植,平均随访52个月,均达到良好的骨结合,并且粉红美学评分(pink esthetic score, PES)与术前无统计学差异。相关研究也发现相较于后牙区,前牙区应用Benex拔牙成功率更高,对牙槽骨的损伤最小^[22],但该方法需依靠邻牙,因此也存在较大的局限性。

3.2 手术切口

即刻种植时需要考虑翻瓣还是不翻瓣,在上

前牙区,唇侧骨壁主要由束状骨构成^[10],内部无骨髓质,所以血供仅来源于牙周膜和外侧的黏骨膜,拔牙后首先失去牙周膜来源的血供,而此时若采取翻瓣,也会失去仅剩的黏骨膜血供,进而促进唇侧骨壁的吸收。翻瓣手术会破坏唇侧骨壁的血供供应,对黏膜边缘退缩是一个促进因素^[23]。因此对于上前牙区,许多学者推荐最小翻瓣或者不翻瓣的情况下行即刻种植,其优势是可以最大限度地保留软组织的结构,使其最接近拔牙前的状态^[24]。在对39例患者行上前牙不翻瓣即刻种植的回顾性研究中,34例患者达到了较为满意的美学效果,提示不翻瓣可能有利于维持唇侧软组织的水平^[3]。

3.3 种植体的选择及植入位置

在即刻种植中不同形态的种植体对种植体的初期稳定性也有一定影响,以往认为锥柱状和根形种植体可能达到更好的初期稳定性,但研究发现即刻种植时不同形状的种植体间并未见明显差异^[25]。而关于直径的选择,起初大多倾向于选择较粗的种植体以适应拔牙窝的大小,但长期观察发现越来越多的病例出现唇侧骨质吸收后种植体的暴露。在6只比格犬中即刻种植4.1 mm的种植体,12周后颊侧垂直骨吸收量为 $(2.1 \pm 0.4) \text{ mm}$ ^[26]。有研究者采用3.25 mm的种植体进行了类似的实验,颊侧骨吸收为 $(0.8 \pm 0.3) \text{ mm}$ ^[27],提示采用较细直径的种植体进行即刻种植可减少颊侧牙槽骨的吸收。在正确的三维方向上植入种植体是获得美学治疗效果的关键因素之一,Buser等^[28]提出了“安全带”和“危险带”的概念,唇腭向安全带位于理想外形高点的腭侧,宽约1.5~2.0 mm,危险带则位于安全带的唇腭侧;而近远中向危险带位于接近邻牙根面的区域,宽1.0~1.5 mm,中间则为安全带。在三维上注重安全带可使种植体位于理想位置,进而获得具有长期稳定的美学种植修复效果。

3.4 种植体周围骨缺损的处理

在即刻种植时,由于种植体的外形与拔牙窝不一致,种植体周围常常存在不规则的缺损区,也称为跳跃间隙。一项研究发现跳跃间隙内植入去蛋白牛骨基质(deproteinized bovine bone mineral, DBBM)和在此基础上联合应用胶原膜,可降低水平向的骨吸收,并建议避免使跳跃间隙小于2 mm^[29]。临床实验结果也显示间隙植骨可减少牙槽嵴的吸收^[30]。关于即刻种植同期间隙植骨的随机对照试验显示在使用植骨材料的位点颊侧骨吸收减少

1.1 mm,而在未植骨处吸收为1.6 mm,因此在即刻种植时使用骨替代材料可减少唇侧骨壁的水平吸收^[31]。Noelken等^[32]随机对照试验也显示使用DBBM充填跳跃间隙可以获得更好的美学效果。

4 即刻种植即刻修复

对于即刻种植,采用种植体埋入式可以有效防止愈合过程中外界对创口的干扰,促进伤口的愈合,尤其对于一些需要同期引导骨再生的病例。但由于存在软组织缺损,达到创口的初步愈合非常关键,即刻种植即刻修复^[33]既可以达到关闭创口的作用,又可以对周围的软组织以支撑作用,获得较好的美学效果。通过对比不翻瓣即刻种植后对唇腭向组织厚度的影响,结果发现植骨及临时修复同时进行唇腭向厚度变化量最小^[34]。可见骨移植和临时修复对维持软组织形态具有重要作用。Yang等^[35]研究显示,对于唇侧骨壁厚度0.5~1 mm时,术后软组织变化量与唇侧骨壁厚度大于1 mm时相似,建议行即刻修复。由此可见,美学区的即刻种植,只要条件允许,应尽量采用即刻临时修复或使用个性化愈合基台,以对牙龈软组织进行引导和塑形,最大限度维持原有形态。

5 并发症及其防治

即刻种植也有并发症,天然牙拔除后行即刻种植最常见的并发症包括:种植体植入位置不佳;愈合后角化龈宽度不足;牙龈退缩造成美学效果欠佳^[36]。故在植入时尽量使用理想的诊断蜡型和数字化外科导板来定位,如因骨量不足而无法准确植入种植体,则应通过引导骨再生进行骨增量后种植^[37]。在种植体植入同时或之后通过瓣的复位和结缔组织移植可获得足够的角化组织。若因植入位置偏向唇侧和角化龈带过窄引起的牙龈退缩,则应在术前提前预防,如:牙槽嵴顶略偏腭侧做切口,植入位点唇腭向适宜,植体穿出牙龈的位置位于舌面隆突,采用小直径种植体避免距唇侧骨壁过近。若已发生牙龈退缩,小于2 mm的种植体周围牙龈退缩可采用冠向复位瓣+上皮下结缔组织移植的方法来修复^[38]。

综上所述,美学区即刻种植已成为常规治疗手段应用于临床,随着口腔种植学的不断发展,即刻种植的理念也在不断更新。其适应证在不断扩大,但同时对于即刻种植后软组织的长期稳定性

还存在争议。而近年来通过应用结缔组织移植、即刻临时修复、一次性安放永久基台等措施,即刻种植获得了长期美学效果。随着数字化外科和修复流程的进步,即刻种植的应用将更加普遍。

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(编辑 罗燕鸿)



官网



公众号

[DOI]10.12016/j.issn.2096-1456.2020.05.013

· 综述 ·

早期舌鳞癌颈淋巴转移的规律及评估因素研究进展

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【摘要】 早期舌鳞癌易发生隐匿性淋巴转移,因此早期舌鳞癌是否进行颈淋巴清扫一直是众多学者争议的问题。为了准确评估患者颈部情况,确定是否同期进行颈淋巴清扫,本文就性别、年龄、原发灶部位、术前辅助检查、浸润深度、病理分级、神经以及血管淋巴管浸润等评估因素进行综述。文献复习结果表明,早期舌鳞癌颈淋巴主要回流至 I、II、III 区,跳跃性转移较为罕见,早期舌鳞癌的颈淋巴转移主要受浸润深度、病理分级、神经浸润、血管淋巴管浸润等因素影响,为了使早期舌鳞癌患者获得较高的生存率,对于术前通过超声或磁共振成像(magnetic resonance imaging, MRI)显示肿瘤浸润深度超过 5 mm、病理分级高、已经存在麻木或者疼痛等临床症状的患者以及在冰冻结果中已存在神经、血管淋巴管浸润的 T1 期和 T2 期患者,应考虑切除原发灶同时行选择性颈淋巴清扫。

【关键词】 舌; 癌; 鳞状细胞癌; 肿瘤分期; T1 期; T2 期; 颈淋巴转移; 浸润深度; 神经侵犯; 血管淋巴管浸润; 评估因素; 颈淋巴清扫

【中图分类号】 R78;R738.9 **【文献标志码】** A **【文章编号】** 2096-1456(2020)05-0336-05 开放科学(资源服务)标识码(OSID)

【引用著录格式】 张海峰,南欣荣,华永晴.早期舌鳞癌颈淋巴转移的规律及评估因素研究进展[J].口腔疾病防治,2020,28(5):336-340.

Research progress on the consistency and evaluation factors of cervical lymphatic metastasis in early tongue cancer ZHANG Haifeng¹, NAN Xinrong², HUA Yongqing¹. 1. Shanxi Medical University School and Hospital of Stomatology, Taiyuan 030001, China; 2. First Hospital of Shanxi Medical University of Oral and Maxillofacial Surgery, Taiyuan 030001, China.

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【Abstract】 Early tongue cancer is more prone to occult lymphatic metastasis than other oral cancers. Therefore, the decision of whether to perform neck dissection in the early stage of tongue cancer has been a controversial issue among many scholars. To accurately evaluate the neck condition of patients and determine whether neck dissection should be performed, this article reviews evaluation factors such as sex, age, tumor site, preoperative auxiliary examination results, depth of invasion, pathological grade, and nerve, lymphatic and vascular invasion. A literature review showed that the cervical lymphatics of early tongue cancer mainly migrated to regions I, II and III, and distant metastasis was rare. The cervical lymphatics of early tongue cancer were mainly affected by the depth of invasion, pathological grade, and nerve, lymphatic and vascular invasion. To achieve a high survival rate for patients with early tongue cancer, patients with preoperative ultrasound or MRI showing a tumor invasion depth of more than 5 mm, a tumor with a higher pathological grade, and clinical symptoms such as numbness or pain who are in stage T1 and T2 and who have already have nerve and vascular lymphatic infiltration according to the frozen sectioning results should be considered for primary simultaneous cervical lymphatic dissection.

【收稿日期】 2019-01-04; **【修回日期】** 2020-02-14

【基金项目】 山西省重点研发计划项目(201803D31094)

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