

[DOI] 10.12016/j.issn.2096-1456.2021.05.006

· 临床研究 ·

股前外侧皮瓣修复口腔恶性肿瘤切除术后缺损的临床疗效分析

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【摘要】目的 探讨股前外侧皮瓣(antrolateral thigh flap, ALTF)修复口腔恶性肿瘤切除术后软组织缺损的临床疗效。**方法** 收集四川省医学科学院·四川省人民医院2017年6月至2019年2月收治的136例口腔恶性肿瘤扩大切除术后同期行ALTF修复缺损患者的临床资料, 回顾分析皮瓣成活率、术后并发症的发生情况及相关功能进行评估。**结果** 皮瓣移植成活率97.1%(132/136); 糖尿病、手术时间与股前外侧皮瓣危象有关($P < 0.05$); 53例(40.0%)患者出现全身并发症, 38例(27.9%)出现术区并发症, 其中肺部感染率最高(28.6%); 术后1年相关功能评估, 52例(38.2%)患者语言功能评分为10分; 58例(42.6%)患者张口度评分为10分; 82例(60.3%)患者吞咽功能评分为10分。**结论** ALTF是修复颌面部软组织缺损的理想游离皮瓣, 移植皮瓣成活率高, 供区损伤小, 术后相关功能恢复良好。

【关键词】 股前外侧皮瓣; 口腔恶性肿瘤; 口腔颌面部; 组织缺损; 修复重建; 并发症; 皮瓣危象; 术后功能恢复

【中图分类号】 R78; R739.8 **【文献标志码】** A **【文章编号】** 2096-1456(2021)05-0328-06 开放科学(资源服务)标识码(OSID)

【引用著录格式】 魏卓, 郭骏, 黄怡, 等. 股前外侧皮瓣修复口腔恶性肿瘤切除术后缺损的临床疗效分析[J]. 口腔疾病防治, 2021, 29(5): 328-333. doi:10.12016/j.issn.2096-1456.2021.05.006.

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【Abstract】Objective To investigate the clinical efficacy of antrolateral thigh flap(ALTF) repair on postoperative soft tissue defects in oral malignant tumors. **Methods** The clinical data of 136 oral malignant tumor patients at the Sichuan Academy of Medical Sciences & Sichuan Provincial People's Hospital from June 2017 to February 2019 were collected. All the patients had undergone enlarged tumor resection, and the defects were repaired simultaneously by ALTF. The flap survival rate and occurrence of postoperative complications were analyzed, and related functions were evaluated. **Results** The flap survival rate was 97.1% (132/136). Diabetes and the operation time were related to inactivation of the antrolateral thigh flap ($P < 0.05$). Fifty-three patients (40.0%) had systemic complications, and 38 patients (27.9%) had complications in the operation area, among which the pulmonary infection rate was the highest (28.6%). One year after the operation, 52 patients (38.2%) scored 10 points in language function evaluation. The mouth opening score of 58 patients (42.6%) was 10 points, and the swallowing function score of 82 patients (60.3%) was 10 points.

【收稿日期】 2020-11-24; **【修回日期】** 2021-01-03

【基金项目】 四川省科技计划项目(2017JY0082)

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Conclusion ALTF is an ideal free flap to repair soft tissue defects in oral and maxillofacial malignant tumors after resection, with a high survival rate, small donor injury and good postoperative recovery of relevant functions.

【Key words】 anterolateral thigh flap; oral malignant tumors; oral and maxillofacial; tissue defect; reconstruction; complications; flap crisis; postoperative functional recovery

J Prev Treat Stomatol Dis, 2021, 29(5): 328-333.

【Competing interests】 The authors declare no competing interests.

This study was supported by the grants from Science and Technology Project of Sichuan Province (No. 2017JY0082)

近年来,口腔颌面部恶性肿瘤发病率不断提高且逐渐低龄化,该疾病的主要治疗方式是手术治疗,术后通常伴随颌面部组织严重缺损和继发性畸形,导致吞咽、言语和咀嚼等功能丧失,甚至影响呼吸。随着修复重建外科的发展,同期游离皮瓣移植术修复肿瘤切除后遗留的组织缺损成为头颈部肿瘤术后重建软、硬组织大缺损的主要技术^[1-2]。股前外侧皮瓣(anterolateral thigh flap, ALTF)具有皮瓣成活率高、血管蒂长、管径粗、变性低、修复面积范围较大、柔韧性及可塑性大、可制备带有神经支配的感觉皮瓣等众多优势^[3-5],是国内口腔颌面部缺损最常用的游离软组织皮瓣。皮瓣存活是ALTF修复术后的关键,且为了保证皮瓣存活,前期常需要头颈部严格制动、绝对卧床,但可能会出现一系列并发症。因此,本文回顾性分析四川省医学科学院·四川省人民医院2017年6月至2019年2月收治的136例口腔颌面部缺损同期行ALTF移植修复患者病例资料,探究其临床疗效及常见术后并发症发生情况,现报道如下。

1 资料和方法

1.1 一般资料

回顾性分析2017年6月至2019年2月四川省医学科学院·四川省人民医院收治的136例行ALTF修复口腔恶性肿瘤切除术后缺损患者的临床资料(表1),其中男性80例,女性56例,年龄29~88岁,平均 (62.16 ± 11.61) 岁,住院时间14~25 d,平均 (18.81 ± 2.12) d。皮瓣切取面积:4 cm × 3 cm ~ 17 cm × 8 cm。

1.2 纳入与排除标准

纳入标准:①经术前活检或术中冰冻病理确诊为口腔颌面部恶性肿瘤并同期行股前外侧皮瓣修复移植术;②术前均行CT或MRI等评估肿瘤大小、范围;③手术均由同一个手术团队进行,并具有一致的术后用药及护理计划;④临床及随访资料完整。

排除标准:①患者肿瘤出现远处转移;②肿瘤侵犯大血管和神经;③术前曾接受过头颈部放射治疗;④临床或随访资料不完整。

表1 股前外侧皮瓣修复术临床资料

Table 1 Clinical data of anterolateral thigh flap repair

Flap condition		Number of cases	Survival	Flap survival rate(%)
Sex	Male	80	76	95
	Female	56	56	100
Types of oral cancer	Tongue cancer	56	54	96.4
	Buccal carcinoma	28	28	100
	Carcinoma of the gingiva	26	24	92.3
	Oropharyngeal cancer	18	18	100
	Carcinoma of the floor of mouth	8	8	100
	Stage II	18	18	100
Clinical stage	Stage III	58	58	100
	Stage IV	60	56	93.3
Pathological type	Squamous cell carcinoma	124	122	98.4
	Adenocarcinoma	2	2	100
	Malignant peripheral nerve sheath tumor	1	1	100
	Squamous cell carcinoma with sarcomatous changes	2	2	100
	Osteosarcoma	7	5	71.4

1.3 手术方法

所有患者均经鼻插管全身麻醉。手术分两组人员同时进行,一组行原发肿瘤根治术及同侧或双侧颈淋巴清扫术,于病变组织外约2.0 cm正常组织内完整切除病变组织并送检,并且在行淋巴结清扫术时注意分离并保留颈外动脉分支及颈内静脉作为受区血管备用;另一组行股前外侧游离皮瓣制备,术前超声多普勒检查明确穿支血管位于髂前上棘至髌骨外侧缘的连线中点附近。根据缺损大小,以该点为中心设计及切取皮瓣。肿瘤组手术完成后断蒂,将皮瓣移植至组织缺损区,采用血管缝线显微手工或吻合器端端吻合动脉和静脉,待皮瓣血运恢复后修剪皮瓣与手术边缘及术区,大腿供区缝合。

1.4 观察指标及评价标准

①观察并记录皮瓣成活率、术后术区及全身并发症发生情况。②术后1年随访,根据口腔颌面部肿瘤软组织缺损修复重建后的临床疗效评估表对患者术后语言功能、张口度、吞咽功能进行评分,评分越高,患者功能恢复越好^[6]。③供区切口愈合及恢复情况评估。

1.5 术后随访

术后3、6、12个月复查双侧颌下彩超和头颈部CT或MRI,以后每半年随访1次,检查肿瘤有无复发。

1.6 统计学方法

采用SPSS 22.0软件对数据进行统计分析,计数资料以例数和率(%)表示,采用卡方检验分析;计量资料满足正态性和方差齐性,用均数 $\pm$ 标准差($\bar{x} \pm s$)表示,多组比较采用单因素方差分析。 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 皮瓣成活率

136例患者中10例(7.4%)出现皮瓣危象:6例静脉血栓,2例动脉血栓,2例动脉和静脉血栓。其中6例皮瓣经过有效手术探查成功抢救,4例皮瓣发生坏死,最终失败4例。皮瓣移植成活率为97.1%(132/136)。糖尿病、手术时间与游离股前外侧皮瓣失活有关($P < 0.05$,表2),有糖尿病与手术时间 > 280 min的患者皮瓣危象率高。

2.2 并发症发生情况

术后共91例(67.0%)患者发生并发症,术区并发症有38例(27.9%),其中术区出血或血肿、伤口

表2 游离股前外侧皮瓣存活的因素分析

Table 2 Factor analysis of survival of anterolateral thigh flap

Factor	Number of cases	Disposable survival (n=126)	flap crisis (n=10)	χ^2	P
Smoking					
Yes	44	42	2	0.267	0.606
No	92	84	8		
Diabetes					
Yes	42	35	7	5.886	0.015
No	94	91	3		
Hypertension					
Yes	88	84	4	1.835	0.175
No	48	42	6		
Operation time					
≤ 280 min	76	74	2	4.175	0.041
> 280 min	60	52	8		
Age (years)					
≤ 45	10	9	1	0.101	0.547
> 45	126	117	9		
Number of veins anastomosed					
1	122	112	10	0.328	0.567
≥ 2	14	14	0		

感染发生率较高,分别为15.4%和13.2%;12例发生术后伤口感染的患者中5例患者同时合并糖尿病。全身并发症有53例(40.0%),其中肺部感染发生率最高(28.6%)。

2.3 术后相关功能指标

术后1年进行相关功能评估,52例(38.2%)患者语言功能评分为10分;58例(42.6%)患者张口度评分为10分;82例(60.3%)患者吞咽功能评分为10分。舌和口咽部缺损的语言功能评分低于下颌骨和颊部($P < 0.05$);颊部缺损的张口度评分低于上、下颌骨和口咽部、舌部($P < 0.05$);口咽部、舌部缺损的吞咽功能评分低于下颌骨和颊部($P < 0.05$,表3)。

2.4 术后随访

本组病例均随访1年以上,整个随访期内,2例患者术后因术区原发灶复发,4例因同侧或对侧颈部淋巴结转移再次收治入院行手术治疗,其余均未见肿瘤复发转移。所有病例患者大腿供区伤口均一期愈合,下肢感觉、负重和行走不受影响,无明显功能障碍。

2.5 典型病例

患者,女,56岁,因“发现左上颌后牙区牙龈溃烂半年,影响进食两月”入院,查体:左上颌后牙区牙龈溃烂伴局部出血,唇腭侧骨质扪诊无乒乓感,

表3 不同缺损部位术后相关功能指标对比

Table 3 Comparison of the postoperative functional indexes of different defect sites $\bar{x} \pm s$, score

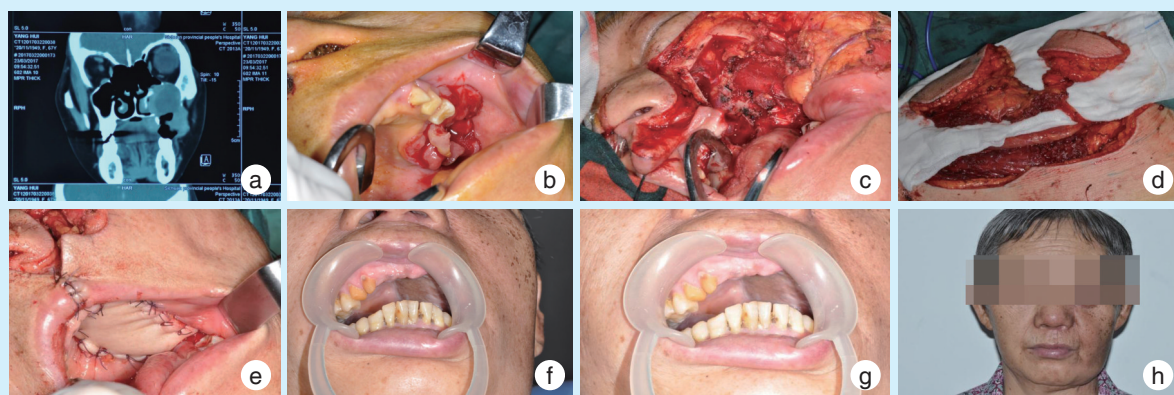
Defect site	Number of cases	Language function	Mouth opening degree	Swallowing function
Mandible	18	9.3 ± 1.3	8.7 ± 2.8	9.7 ± 0.6
Buccal	28	9.4 ± 1.2	7.6 ± 1.4 ²⁾	9.8 ± 0.5
Tongue	56	7.5 ± 1.2 ¹⁾	8.8 ± 1.1	8.5 ± 0.9 ³⁾
Floor of mouth	8	8.5 ± 1.7	9.0 ± 1.0	9.3 ± 1.0
Oropharyngeal	18	7.7 ± 1.2 ¹⁾	9.1 ± 1.4	8.4 ± 0.8 ³⁾
Maxilla	8	8.5 ± 1.7	9.5 ± 0.9	9.6 ± 0.8
<i>F</i>		4.773	2.730	4.820
<i>P</i>		0.001	0.027	0.001

1): the scores of the language function of the oropharynx and tongue were statistically significant compared with those of the maxilla and mandible, buccal, and floor of the mouth ($P < 0.05$); 2): the scores of the mouth opening degree of the buccal defect were statistically significant compared with those of the maxilla and mandible, oropharynx and tongue, and floor of the mouth ($P < 0.05$); 3): the swallowing function scores of the oropharynx and tongue were statistically significant compared with those of the maxilla and mandible, buccal, and floor of the mouth ($P < 0.05$)

有压痛,无上唇麻木,双侧颈部未扪及确切肿大淋巴结。术中彻底切除病变组织后,术区缺损面积约为 $10.0 \text{ cm} \times 5.0 \text{ cm}$,于左侧大腿设计 $12.0 \text{ cm} \times 6.0 \text{ cm}$ 的一蒂双岛型股前外侧皮瓣,蒂长约 8.0 cm ,将皮瓣转移覆盖创面,吻合血管,供区直接拉拢缝合。术后病检示:高-中分化鳞状细胞癌,淋巴结未见癌转移。术后3个月随访,皮瓣一期存活,皮瓣外观良好,色粉红;术后6个月随访,左上后牙区皮瓣及外形修复良好,无局部复发(图1)。

3 讨论

ALTF 包括股前外侧脂肪筋膜皮瓣、股前外侧肌皮瓣、嵌合组织瓣等^[7-8]。ALTF 的血供通常由旋股外侧动脉的降支提供,血管直径大于 2 mm ,蒂的长度在 $8 \sim 16 \text{ cm}$ 之间,走形于股直肌和股侧肌肌间,沿途发出 $2 \sim 5$ 个分支。但临床上也存在血管解剖变异,其血供可能来源于倾斜分支、横向分支、升支、股深动脉等^[9]。对于穿支缺失



a: preoperative CT showed that the left maxillary tumor of the patient involved the left maxillary sinus and part of the maxillary alveolar process; b: preoperative intraoral photograph; c: complete maxillary tumor resection defect; d: one pedicle and two islands of the anterior external thigh flap is completed; e: vascular anastomosis; f: flap repair three months after surgery; g: flap repair six months after surgery; h: appearance repair six months after surgery

Figure 1 Reconstruction of a maxillary defect using an anterolateral thigh flap

图1 股前外侧皮瓣修复上颌骨缺损

或受损的皮瓣,可选择阔筋膜张肌皮瓣、股前内侧皮瓣、皮瓣内行血管吻合术设计皮瓣或探查对侧大腿^[10]。该组136例患者在制备皮瓣时,大部分由下降分支提供血供,小部分由下降分支和倾斜分支提供。对于后者,手术中切断斜支再以常规方式完成皮瓣切取。此外,越来越多研究表明使用游离ALTF和带血管的股外侧皮神经(vascularized

lateral femoral cutaneous nerve, LFCN)联合修复神经和软组织缺损可获得良好的功能重建。如面神经鞘瘤术后面神经和外耳道重建^[11]。近年来ALTF在口腔颌面外科的应用也越来越多,广泛用于舌、口底、口咽、颊等部位缺损的修复重建。

据报道ALTF修复术皮瓣存活率平均在90%以上,最高可达98%,本次报道中皮瓣移植成活率为

97.1%, 这表明 ALTF 修复颌面部缺损效果是肯定的。本研究还发现游离股前外侧皮瓣的存活与糖尿病、手术时间有关。手术损伤的程度是导致术后并发症的重要因素, 手术时间可被认为是评估手术损伤程度的替代标志。手术时间过长容易引起皮瓣的缺血再灌注损伤, 进而增加微循环血栓形成的风险^[12-13]。糖尿病患者的血管中可出现基底膜增厚等异常, 会引起微血管病变和免疫缺陷, 可能会影响游离皮瓣重建修复结果^[14]。本组病例中出现 10 例皮瓣危象, 其中 6 例皮瓣经探查成功抢救, 4 例皮瓣坏死患者中 2 例患有糖尿病。皮瓣坏死多为术后 24 h 之内发生, 科室医务人员对皮瓣危象认识不足, 延误了最佳抢救时机; 吻合了存在血管变异的非优势静脉^[15]。

由于颌面部血运丰富, 此类手术范围大、时间较长, 且患者多为高龄合并慢性病; 术后抗凝剂的使用; 口腔自洁能力下降等原因易引起术区出血或血肿、感染等并发症。对于较常见的后颊癌、晚期舌癌患者, 手术切除腮腺、翼内肌、口底部分肌群后形成口底、面颈部广泛的组织缺损, 修复不足会在术区边缘产生死腔并增加伤口感染的风险。此时股外侧肌肉嵌合的 ALTF 穿支皮瓣就是比较好的选择, 其不仅能维持面部侧面的轮廓, 还能减少伤口感染的发生率^[16-17]。伤口感染的原因包括: ①年龄较大(> 60 岁)合并糖尿病的患者, 手术和麻醉会加剧胰岛素缺乏和胰岛素抵抗, 高血糖症的后果是伤口愈合和白细胞功能受损以及对感染的敏感性增加^[18], 其中 5 例出现术区感染的患者有长期糖尿病史且血糖控制不佳; ②与患者的体质有关, 营养不良(如贫血和低蛋白血症)引起的白蛋白浓度的急性变化可能表明无效的修复反应, 对伤口愈合产生负面影响, 增加感染的风险^[19]; ③术式复杂、手术时间延长、术区引流管放置不当或放置时间过长也是诱发感染的重要因素。术区出血或血肿的发生可能与术后引流不通畅, 患者长期高血压病史及术后不耐受疼痛容易躁动有关。口咽瘘是另一少见并发症, 其发生的原因众多, 本研究中出现 2 例口咽瘘考虑可能与晚期病变, 患者营养状态较差并合并慢性疾病有关。本研究病例各术区并发症通过探查止血、局部加压、直接缝合及抗感染后预后良好。

本研究病例还出现了肺部感染、下肢深静脉血栓等全身并发症, 其中肺部感染最多, 可能与气管切开或插管、卧床时间、年龄(60 岁以上)、吞咽

障碍等有关^[20]。长期卧床又是下肢深静脉血栓形成的重要诱发因素。因此应在病情允许的情况下鼓励患者早日下床活动。

136 例病例中大多数患者术后张口度及吞咽功能恢复较好, 而语言功能评分稍低, 原因可能与以下因素有关: ①本组病例中舌癌占 41.2% 且大多为晚期, 术后缺损更为明显, 修复皮瓣较厚使残余舌头柔韧性及活动度降低, 影响语言功能的恢复; ②术中未做股外侧肌皮神经移植导致术后同期修复舌缺损后皮瓣无收缩、卷舌等功能; ③术后接受放疗的患者皮瓣的过度收缩可能也会影响其语言和吞咽功能^[21]。颊癌术后张口度降低, 舌及口咽癌术后吞咽功能下降, 可能与以下因素有关: ①固有的解剖部位及毗邻组织结构复杂; ②切除范围过大引起吞咽过程生理紊乱; ③术区愈合纤维化和瘢痕的形成; ④皮瓣生理性萎缩; ⑤皮瓣下垂及术后早期功能锻炼依从性差^[22]。术后随访期内 2 例舌部肿瘤复发, 其病变病理类型为低分化鳞状细胞癌(IV 期伴同侧多个淋巴结转移), 其复发可能与患者肿瘤分型、临床分期、阳性淋巴结比过大有关。

综上所述, 股前外侧游离皮瓣移植术是修复口腔颌面部软组织缺损有效且可靠的方法。皮瓣成活率高, 但影响口腔恶性肿瘤术后游离皮瓣存活的因素较多, 积极合理控制血糖以及尽可能有效缩短手术时间有助于提高皮瓣存活率。该皮瓣对术后相关功能恢复的影响较少, 临床效果较为满意。然而术后并发症发生率较高, 提示医护人员除密切监测皮瓣外, 要加强对病人围手术期管理以及并发症相关危险因素的认识, 通过实施积极有效的术前、术后干预, 减少术后并发症的发生率, 增强临床效果, 改善预后。

【Author contributions】 Wei Z processed and analyzed the data, wrote the article. Guo J, Huang Y revised the article. Luo JF directed the data collection and analysis. Fei W designed the study. All authors read and approved the final manuscript as submitted.

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