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·经验交流·

指动脉双叶皮瓣修复拇指皮肤套状缺损

张扬, 辛畅泰
（沈阳医学院奉天医院手外二科, 辽宁　沈阳　110024）

【摘要】 **目的**：探讨应用指动脉双叶皮瓣修复拇指套状缺损的可行性。**方法**：自 2007 年 1 月至 2012 年 12 月，对 45 例拇指套状缺损患者采用指动脉双叶皮瓣修复治疗。男 39 例，女 6 例；年龄 19~46 岁，平均 32 岁。平甲根平面的掌侧皮肤和甲床缺损 18 例，拇指末节皮肤套脱 19 例，整个拇指皮肤套脱 8 例。根据拇指皮肤缺损情况，分别于中指尺侧和环指桡侧设计皮瓣的 2 个叶，以中环间的指总动脉及其向中指及环指的 2 个指固有动脉为血管蒂，皮瓣携带指固有神经，将皮瓣转位后瓦合覆盖拇指外露指骨。皮瓣供区用全层皮片植皮，观察皮瓣的外观、质地、颜色和耐磨性，植皮区外观、颜色和凹陷，皮瓣的感觉，手指活动等。**结果**：所有患者皮瓣及植皮区组织全部成活，完成随访 43 例，平均随访 25 个月。失访 2 例，皮瓣色泽及质地与健侧拇指指腹相近，两点辨别觉平均(4.2±0.3) mm。植皮区，皮肤颜色略深于周围皮肤。**结论**：应用指动脉双叶皮瓣修复拇指套状缺损是风险小、成功率高、修复效果较理想的手术方式。

【关键词】 指动脉；　皮瓣；　拇指；　创作和损伤
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Digital artery bilobed flap for the treatment of skin degloving injury of thumb　*ZHANG Yang and XIN Chang-tai. Department of Hand Surgery, Fengtian Hospital Affiliated to Shenyang Medical College, Shenyang* 110024, *Liaoning, China*

ABSTRACT　**Objective**: To explore clinical effects of digital artery bilobed flap for the treatment of skin degloving injury of thumb. **Methods**: From January 2007 to December 2012, 45 patients with skin degloving injury of thumb were treated with grafting of digital artery bilobed flap. There were 39 males and 6 females, ranging in age from 19 to 46 years, with an average of 32 years. The disease course ranged from 0.5 to 15 h. Eighteen patients suffered from defect of palmar skin above nail root and nail bed, 19 patients suffered from skin degloving injury of thumb phalangette, and 8 patients had whole skin degloving injury of thumb. The double lobe flaps were designed at the ulnar side of middle finger and the radial side of ring finger according to the defect of thumb skin. The arteria digitalis communis between the middle and ring fingers and its two branches of arteriae digitales propriae supplying the two fingers were used as a vesselpedicle. The flap with digitales proprii nervi was transposed

通讯作者：张扬　E-mail：paulzhang_1979@hotmail.com
Corresponding author: ZHANG Yang　E-mail: paulzhang_1979@hotmail.com

and used to cover the exposed phalanx of thumb. Full thickness graft was used for the donor site. Observation of the appearance, texture, color and wear resistance of flap, appearance, color and depression of grafting area, skin feeling, and finger activities was conducted. **Results**: All the flaps and grafts were alive. Forty-three patients were followed up with an average duration of 25 months, and two patients lost follow-up. The color and texture of the flaps were similar to that of the contralateral thumb pulp. The average two point discrimination was 4.2±0.3 mm. The color of graft skin was slightly deeper than that of the surroundings skin. **Conclusion**: Digital artery bilobed flap graft is an effective and ideal operation, which is of low risk and high success rates for skin degloving injury of thumb.

KEYWORDS　Digital artery;　Flap;　Thumb;　Wounds and injuries

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手部有着动作轻巧、结构精细、功能高度完善的特点，在日常工作与生活中有着十分重要的作用，而手外伤急诊治疗质量的高低直接影响到手的外观与功能。拇指是 5 指中最重要的一根手指，能完成对掌、对指、旋转、握拳等功能，还能完成其余 4 指不能完成的许多精细动作，是手部惟一能够与其他 4 指完成捏、抓、握、拧等动作的手指，约占手指功能的 40%，手功能的 36%[1]。拇指皮肤脱套伤，根据损伤的暴力不同，其组织撕脱的轻重程度也不同，轻者单纯皮肤撕脱，手掌、背腱膜完整；重者可连同肌腱、掌腱膜及指神经血管撕脱，并伴有关节、指骨的骨折甚或撕脱。目前临床上治疗手指套脱伤使用的手术方式有多种，但各种术式均有其不足之处，本研究观察 45 例拇指套状缺损患者采用指动脉双叶皮瓣修复的治疗效果，分析应用指动脉双叶皮瓣修复拇指套状缺损的可行性。

1　临床资料

自 2007 年 1 月至 2012 年 12 月应用指动脉双叶皮瓣修复拇指皮肤缺损 45 例，男 39 例，女 6 例；年龄 19~46 岁，平均 32 岁；右手 32 例，左手 13 例。套脱范围：平甲根平面的掌侧皮肤和甲床缺损 18 例，拇指末节皮肤套脱 19 例，整个拇指皮肤套脱 8 例。

2　治疗方法

手术方法：将拇指创面彻底清创，结扎指动脉断端，将指神经断端向远端拉伸后用刀片切断，以防假性神经瘤形成。根据拇指皮肤缺损情况，于同侧中指尺侧和环指桡侧设计皮瓣的 2 个叶，1 个叶用来包掌侧，1 个叶用来包背侧。一般取中环指中节向对侧的侧方皮肤，用龙胆紫在中指和环指皮肤上画出要切取的皮瓣大小，皮瓣比实际缺损略大 2 mm。先将皮瓣一侧切开，再取皮瓣到手掌指总动脉起点的“Z”字形切口，在其下切取带指总动脉、指固有动脉及指神经的宽约为 8 mm 的蒂。保护好动脉及神经，一直将蒂游离到可以转位后覆盖拇指皮肤缺损的程度。然后取指总动脉到拇指创口的皮下隧道，将皮瓣用丝线牵引通过隧道，瓦合后覆盖拇指创面。将皮瓣供区的“Z”字形切口予以直接缝合。从上臂内侧取全层皮片植于供皮区，上臂取皮区予以直接缝合。皮瓣的蒂部及皮瓣瓦合处留置引流条。

术后处理：术后应用抗生素 1 周预防感染，行抗凝、抗痉挛治疗。隔日换药，2 周后拆线。行手指功能锻炼，通过感觉训练，消除异位感觉。

3　治疗结果

2 例术后皮瓣产生张力性水泡，通过拆除皮瓣蒂部部分缝线，创口换药治疗后愈合。随访 43 例，失访 2 例，平均随访时间 25 个月，皮瓣及植皮全部成活，皮瓣色泽及质地与健侧拇指指腹相近，两点辨别觉平均(4.2±0.3) mm。植皮区皮肤颜色略深于周围皮肤，中指、环指活动正常，拇指活动度基本正常。通过感觉训练，35 例异位感觉消失，8 例有比较顽固的异位感觉。典型病例见图 1-2。

4　讨论

手指套脱伤是较常见且严重的手外伤，处理较为棘手[2-3]。手术方式主要有腹部随意皮瓣修复术，腹部皮管修复术，髂腹股沟皮瓣修复术，手局部转移瓦合皮瓣修复术，甲瓣移植修复术，游离皮片移植术等[4-9]。用腹部随意皮瓣、髂腹股沟皮瓣修复手指套脱伤，虽术式简单，但病程较长、损耗腹部皮肤多、术后皮瓣臃肿、伤指外形及功能欠佳，多需二次手术，腹部皮瓣修复后局部无感觉且不符合美观要求[10]。手局部转移瓦合皮瓣修复术虽能一次完全闭合创面，但对周围正常组织损伤较大且影响手的整体外观[11]。甲瓣移植修复术多用于拇指套脱伤的修复，但需应用足趾移植，对显微技术及设备要求较高，手术风险高，不利于基层医院广泛开展。游离皮片移植术只适用于伤指撕脱皮肤挫伤较轻、骨质肌腱等尚有软组织覆盖的情况下，术后其表面覆盖的皮片多有点状坏死，尤其是指端，此时常须截除较多指骨修整残端以闭合创面，造成手指的进一步缩短，术后手指的外形、关节活动的范围、感觉的恢复、手指皮片的耐磨性均较差。腹部皮管的手术方式亦存在很多缺点：①治疗周期长，患者花费较大。腹部皮管手术需要二次手术，治疗周期前后长达 5 周，且 2 次手术均

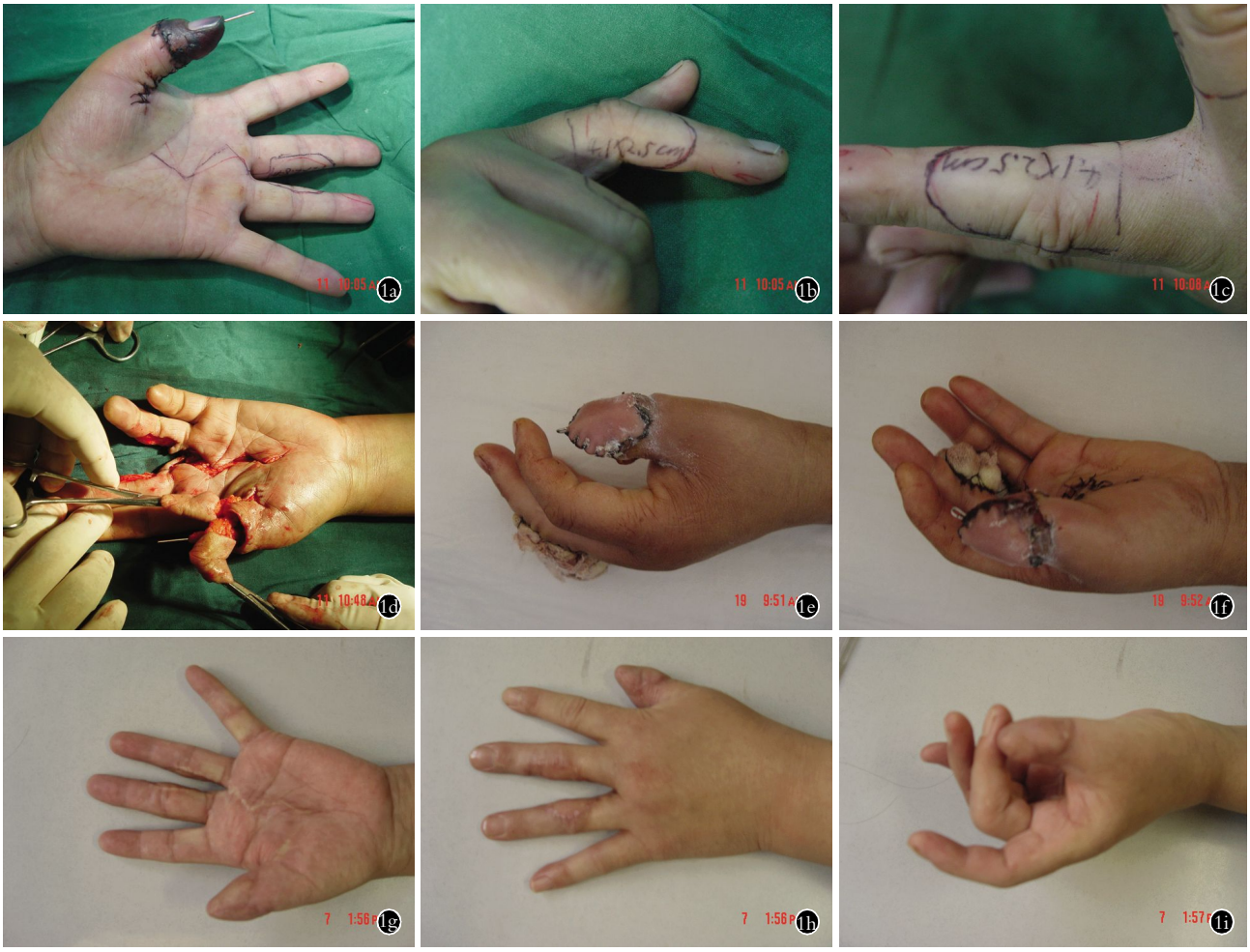

图 1　患者，男，28 岁，左拇指撕脱伤伴末节指骨骨折，急诊术后撕脱组织坏死　**1a.** 设计指动脉双叶皮瓣修复创面　**1b，1c.** 设计皮瓣　**1d.** 皮瓣切取过程　**1e，1f.** 术后 1 周皮瓣成活良好　**1g，1h.** 术后 6 个月皮瓣恢复良好　**1i.** 术后 6 个月拇指功能良好

Fig.1　Male, 28 years old, skin avulsion injury of left thumb and distal phalanx fracture with skin necrosis after emergency operation　**1a.** Treatment with digital artery bilobed flap graft　**1b, 1c.** Design of the flap　**1d.** Operative process of the flap　**1e, 1f.** The flap survived at one week after operation　**1g, 1h.** The flap survived at 6 months after operation　**1i.** The function of thumb was acceptable at 6 months after operation

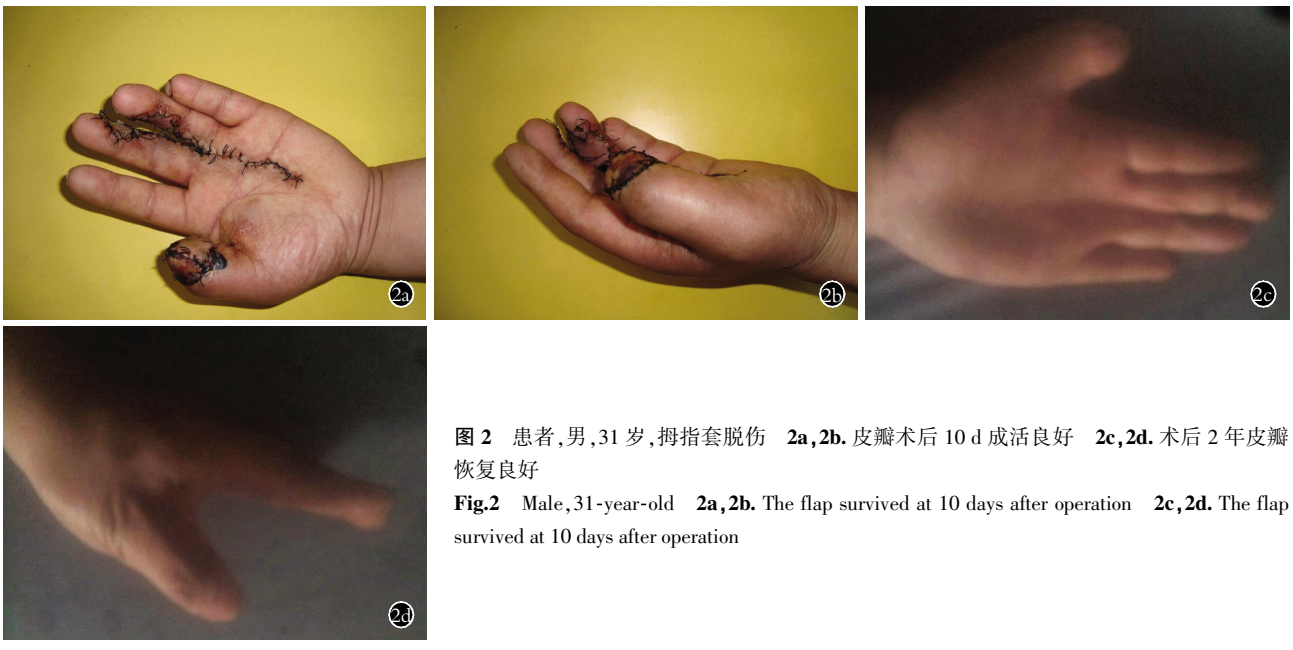

图 2　患者，男，31 岁，拇指套脱伤　**2a，2b.** 皮瓣术后 10 d 成活良好　**2c，2d.** 术后 2 年皮瓣恢复良好

Fig.2　Male, 31-year-old　**2a, 2b.** The flap survived at 10 days after operation　**2c, 2d.** The flap survived at 10 days after operation

需应用抗生素预防感染,花费较大。②治疗期间手指和腹部相连,给患者的生活带来不便。③治疗结束后手指外形不佳。由于腹部脂肪较多,手术结束后易造成皮瓣外形的臃肿,多数需通过皮瓣的整形手术来改善外形,进一步延长治疗周期,加重经济负担。④皮瓣的感觉差。由于腹部皮瓣中无感觉神经纤维,造成皮瓣感觉差,且容易冻伤及烫伤,无神经营养,容易形成溃疡。

手的指端需具有良好的感觉,因而在修复手指创面的同时,如何保留好的功能和感觉一直是当今研究的热门课题[12]。自 1955 年 Litter 首次报道应用指动脉岛状皮瓣修复手指皮肤软组织缺损以来,因其动脉恒定、血供可靠、手术方式简单安全,已成为指端缺损修复的常用的方法之一[13]。

与其他术式相比,指动脉双叶皮瓣修复术有以下优点:①治疗周期短,2 周即可完成治疗,基本无须二次手术,且不用将患肢与腹部相连,减少了痛苦,减轻了经济压力。②外形上虽不如拇甲瓣令人满意,但由于用的中环指皮肤,外形较接近健侧拇指,且不臃肿,患者接受度较高。③由于供皮区于中环指中节向对面,不影响中环指指腹的完整,且位置相对隐蔽,对整个手的功能和美观影响不大。④由于直接携带指神经,皮瓣感觉较好,不仅明显强于不带神经的腹部皮管手术,也强于缝合神经的拇甲瓣手术。本研究 35 例感觉功能恢复良好,消除异位感觉。患者感觉功能恢复不同可能与年龄、皮瓣大小等因素相关[14]。⑤血管恒定,血供可靠,手术风险较小,成功率较高,适合基层医院开展。缺点:牺牲中环指的指动脉及指神经,对二指的感觉有一定的影响;外形不如拇甲瓣手术近似健侧拇指。

术中注意事项:①创面要彻底清创,以防感染;彻底止血,避免皮瓣下血肿形成,影响皮瓣成活。②皮瓣设计时要略大于创面,以便瓦合覆盖创面不致太紧而影响血运。③皮瓣设计时要将皮瓣 2 叶分别设计成掌侧和背侧,而不要设计成左右 2 叶,以防瘢痕在指腹处而影响拇指的感觉。④皮瓣蒂部的皮肤切口要“Z”字形,以防线性瘢痕挛缩。⑤皮下隧道要宽松,以防压迫皮瓣蒂部。⑥在皮瓣蒂部及瓦合处要留置引流条,以防血肿形成影响皮瓣成活。

总之,指动脉双叶皮瓣是一种修复拇指皮肤套状缺损风险小、成功率高且修复效果较理想的手术方式,适合在基层医院开展。

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