

# 手指末节脱套损伤特点与再植

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**【摘要】 目的:**探讨手指末节脱套伤的损伤特点及再植方法。**方法:**2004 年至 2009 年, 对 18 例 19 指末节脱套伤患者进行吻合血管再植术, 男 14 例, 女 4 例; 年龄 18~51 岁, 平均 31 岁。根据术中指动脉与撕脱皮肤撕脱平面不同分为 3 型, 其中 I 型 6 指, II 型 10 指, III 型 3 指。3 例 4 指血管损伤严重终止再植, 15 例 15 指采用显微吻合血管方法再植。**结果:**15 例完成手术者中, 13 例 13 指成活, 2 例 2 指术后坏死。13 例成活指随访 6~24 个月, 平均 14 个月, 伤指外形及指甲生长外观满意。按中华医学会手外科学会断指再植功能评定试用标准评定, 优 9 例, 良 3 例, 差 1 例。**结论:**末节脱套伤再植效果好, 应尽量争取再植。

**【关键词】** 指损伤; 软组织损伤; 再植术; 修复外科手术

DOI: 10.3969/j.issn.1003-0034.2013.08.006

**Characteristics and replantation of degloving injury of distal finger** JIANG Liang-fu, ZHOU Fei-ya, CHI Zheng-lin, YU Qing, CHU Ting-gang, and GAO Wei-yang. Department of Hand Surgery, the Second Affiliated Hospital of Wenzhou Medical College, Wenzhou 325027, Zhejiang, China

**ABSTRACT Objective:** To explore clinical characteristics and replantation methods of degloving injury of distal finger. **Methods:** From 2004 to 2009, 18 cases of 19 distal finger degloving were admitted, and included 14 males and 4 females with an average age of 31 years old ranging from 18 to 51 years old. The distal finger degloving injury was divided into 3 types according to the different levels of degloving digital artery and skin involving 6 fingers of type I, 10 fingers of type II, 3 fingers of type III. Among them, 3 cases of 4 fingers were failed to be replanted due to severed injured digital artery, and 15 cases of 15 distal finger degloving injury were replanted with microsurgical technique. **Results:** Among 15 patients (15 fingers) completed the reimplant operation, 13 fingers were survived, 2 fingers were necrosis after operation. Thirteen survived fingers were followed up from 6 to 24 months (averaged 14 months). The appearance of injured fingers and nails obtained satisfactory results. According to Chinese Hand Surgery Society Criteria for function assessment replantation, the results were excellent in 9 cases, good in 3 cases and poor in 1. **Conclusion:** Replantation of distal degloving injury is effective and it should strive for replantation.

**KEYWORDS** Finger injuries; Soft tissue injuries; Replantation; Reconstructive surgical procedures

Zhongguo Gu Shang/China J Orthop Trauma, 2013, 26(8): 637-639 www.zggszz.com

手指末节皮肤脱套伤的治疗比较棘手, 脱套指皮肤修薄后回植成功率很低。如用带蒂皮瓣修复术后指体感觉差、外形臃肿、无指甲且需行二次手术断蒂。截指残端修整则致手指长度缺损。采用足趾甲瓣修复效果比较满意, 但供区损失较大。2004 年至 2009 年, 对手指末节脱套伤进行吻合血管的再植取得了较满意的效果。

## 1 临床资料

收治 18 例 19 指末节皮肤脱套患者, 男 14 例, 女 4 例; 年龄 18~51 岁, 平均 31 岁。其中拇指 6 指, 示指 3 指, 中指 7 指, 环指 2 指。脱套皮肤均伴有不同程度的甲床损伤, 包括甲床挫伤、裂伤, 甲根部撕脱。根据指动脉、神经与脱套掌侧皮肤平面的不同, 将其分为 3 型<sup>[1]</sup>: I 型, 动脉、神经离断平面近于皮

肤平面; II 型, 血管神经束离断平面远于皮肤离断平面; III 型, 混合型, 一侧指动脉与指神经从近端抽出, 另一侧指动脉与指神经从远端抽出。本组 I 型 6 指, II 型 10 指, III 型 3 指。

## 2 手术方法

采用臂丛麻醉, 显微镜下探查脱套组织血管, 若动脉严重损伤无法修复则放弃再植。标记血管神经, 先缝合手指两侧皮肤防止旋转。采用顺行法再植, 先吻合 1 条动脉, 若血管缺损, 取腕掌侧静脉移植修复。再修复神经, 吻合掌侧或背侧静脉 1~2 条。甲床裂伤予以修复, 甲板原位覆盖。术后处理: 术后常规予以石膏制动、保暖及“三抗”治疗, 回流不足病例指尖小切口放血 5 d。典型病例见图 1。

## 3 结果

3 例 4 指术中探查血管损伤严重无法修复终止再植, 均为 II 型, 其中 1 例拇指末节脱套伤改行足拇



图 1 患者,女,45 岁,左中指末节挤压伤脱套伤 1a. 术前左中指末节挤压伤脱套伤 1b,1c. 术后 9 个月掌侧、背侧外观观

Fig.1 A 45-year-old female patient with fingertip degloving injury of middle finger 1a. Preoperative view of fingertip degloving injury of middle finger 1b, 1c. Palm and dorsal view at 9 months postoperatively

甲瓣修复,另外 2 例 3 指残端修整。15 指再植病例术后血管危象 2 例,1 例术后动脉危象经探查无效坏死,1 例静脉危象放血无效坏死,2 例再植后坏死病例均系 II 型,其余 13 指成活。13 例成活指随访 6~24 个月,平均 14 个月,伤指外形及指甲生长外观满意。依据中华医学会手外科学会断指再植功能评定试用标准<sup>[2]</sup>,包括运动功能 ATM、日常生活活动 ADL、感觉恢复与外观各 20 分,血液循环状态与恢复工作各 10 分;等级分值为:优 100~80 分,良 79~60 分,差 59~40 分,劣 <40 分。本组运动功能(18.46±1.85)分,日常生活活动(19.30±0.94)分,感觉恢复(14.15±5.06)分,外观(16.92±4.37)分,血液循环状态(7.54±2.60)分,恢复工作(9.54±1.13)分;优 9 例,良 3 例,差 1 例。

#### 4 讨论

随着人们生活水平和审美观的提高,对手指外形和功能要求越来越高,手指离断后要求再植的愿望十分强烈,恢复完整的手指对消除患者的心理影响有很大意义,对于从事精细工作者更为重要。末节脱套伤再植,不涉关节及肌腱修复,而且神经至终末感受器近,外形和功能恢复十分理想<sup>[3]</sup>。在本组病例中优良率达到 92.3%。因此对于末节脱套伤,有再植条件者,力争进行吻合血管的再植。随着显微外科技术和设备的提高,复杂的末节断指再植取得进展<sup>[4]</sup>。手指末节脱套伤离断指体的血管床基本上是完整的,本组中大部分病例(19 指中 15 指可再植,占 78.9%)仍有建立血液循环的条件。只要掌握其损伤特点,可提高再植的成功率和有效率。

损伤特点与再植方式:皮肤撕脱情况背侧撕脱平面远于掌侧,背侧常为甲根以远的撕脱,所以术中背侧静脉难以吻合,需要吻合掌侧静脉,这对再植成功至关重要<sup>[5-6]</sup>。I 型血管神经束自皮肤离断平面近侧抽出,由于神经的韧性大于血管,神经鼠尾样撕脱,明显长于指动脉抽出,此种损伤多为旋转撕脱伤,由于离断血管平面较近,再植相对容易。术中注

意远端撕脱的动脉,清创至正常内膜,血管缺损范围大则取腕掌侧静脉移植。神经鼠尾样撕脱,清除尖端,游离近端神经仍有直接吻合的可能,至少修复一侧指神经,必要时可采用神经移植或血管套接。II 型血管神经束离断平面远于皮肤离断平面,常为压砸撕脱,指神经一般不缺损。指动脉分两种情况:II a 型指动脉弓以近离断,直接吻合指动脉或血管移植修复。II b 型指动脉弓以远离断,动脉分支细小,再植难度高。远端指动脉弓分支以中央支最粗大,正常解剖紧贴远节指骨掌侧骨膜<sup>[7]</sup>,损伤后定位于脱套组织掌侧中央的最深层。动脉缺损可将近端指动脉弓切断延长吻合。亦可采用血管移植先吻合于脱套组织动脉,可使手术操作更加容易。III 型损伤介于两者之间,血管神经处理方法同 I 型,有时可通过指动脉交叉吻合解决血管缺损的问题。

断指分型与存活率的关系: I 型和 III 型脱套伤至少有一侧指动脉撕脱平面近于皮肤,再植相对容易,术后成活率高,本组达 100%。II 型尤其是 II b 型由于仅能吻合指动脉弓的分支,寻找及吻合这些血管的难度较大,本组中有 3 例 4 指无法修复而终止再植。而且术后血管危象发生率较高,成功率较低,本组中 3 例 II b 型 2 例坏死,1 例静脉危象采用放血疗法失败,另外 1 例因为动脉栓塞坏死。故对 II b 型脱套伤应充分预计手术难度及术后的坏死率,或采用其他方法修复。

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(收稿日期:2012-06-20 本文编辑:王玉蔓)

## 吻合掌侧静脉及保留指甲的指尖再植

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**【摘要】** 目的:探讨手指指尖离断的治疗方法及其临床效果。方法:2007年10月至2011年6月治疗13例18指指尖离断患者,其中男9例,女4例;年龄17~45岁,平均26岁。伤后至就诊时间30 min~5 h,断指缺血时间1.5~7 h,均为常温保存。采用吻合掌侧静脉及保留指甲的方法进行再植。结果:13例18指断指均成活并获随访,术后无血管危象发生。随访时间为3~24个月,平均14个月。患指外形及长度与健指相似,指甲平整,关节活动良好,触、痛觉恢复,两点辨别率3~6 mm,平均5 mm。根据中华医学会手外科学会断指再植功能评定标准评定,优14指,良3指,差1指。结论:采用吻合掌侧静脉及保留指甲的方法进行指尖再植,不仅可以提高断指成活率还可以恢复良好的外观及功能,是一种理想的方法

**【关键词】** 指损伤; 软组织损伤; 再植术; 修复外科手术

DOI:10.3969/j.issn.1003-0034.2013.08.007

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**ABSTRACT** **Objective:** To study the replantation methods and clinical results of amputated fingertip. **Methods:** From October 2007 to June 2011, 18 fingers of 13 cases were replanted with anastomosis of palm vein and retaining the nail, including 9 males and 4 females, with an average age of 26 years old ranging from 17 to 45 years old. The time from injury to therapy was from 30 min to 5 h, time of broken finger ischemia was from 1.5 to 7 h. All broken fingers were preservation under normal temperature. **Results:** All fingers were survived, no vascular crisis happened. All cases were followed up from 3 to 24 months with an average of 14 months. The length and shape of replanted fingers were similar to that of the healthy side. The new nails were smooth, the function was perfect, the sense of pain and touched sensation had been recovered. Their two-point discriminations ranged from 3 to 6 mm with an average of 5 mm. According to the assessment standard of Chinese Medical Association of Hand Surgery, the results were excellent in 14 cases, good in 3 cases, poor in 1 case. **Conclusion:** Fingertip replantation with anastomosis of palm vein and retaining the nail is regained satisfactory appearance and function of the digits with a high survival rate.

**KEYWORDS** Finger injuries; Soft tissue injuries; Replantation; Reconstructive surgical procedures

Zhongguo Gu Shang/China J Orthop Trauma, 2013, 26(8):639-641 www.zggszz.com

指尖是手指的特殊部位,离断后需要再植已形成共识。如何提高指尖再植的成活率及恢复良好外形及功能才是手外科医生对指尖离断追求的目标。2007年10月至2011年6月笔者采用吻合掌侧静

脉及保留指甲的方法对13例18指指尖离断进行再植,取得了满意的效果。

### 1 临床资料

本组13例18指,男9例,女4例;年龄17~45岁,平均26岁。其中冲压伤7例,电锯伤2例,切割伤4例;指别:拇指6例,示指6例,中指3例,环