

带胫骨隐神经复合组织皮瓣在小腿创伤性骨与皮肤缺损中的临床应用

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【摘要】 目的: 探讨带胫骨隐神经复合组织皮瓣在修复小腿创伤性骨与皮肤缺损中的应用及临床疗效。方法: 自 2009 年 2 月至 2015 年 5 月, 收治因外伤致小腿骨皮缺损患者 23 例, 男 18 例, 女 5 例; 年龄 8~59 岁, 平均 35.6 岁。胫骨骨皮质缺损长度 4~12 cm, 宽 2~2.5 cm; 皮肤缺损范围 8 cm×3 cm~18 cm×11 cm, 创面均有脓性渗出物。采用带胫骨隐神经复合组织皮瓣交腿移位和同侧移位方法, 重建患肢胫骨支架连续性并修复创面。切取皮瓣范围 9 cm×4 cm~20 cm×12 cm, 骨瓣长度为 6~15 cm, 宽 1.5~2.5 cm。观察骨折愈合时间及肢体功能恢复情况。结果: 术后 3~5 个月骨瓣与受区胫骨愈合, 平均 4.7 个月。23 例获随访, 时间 6 个月~5 年, 平均 30.3 个月。13 例均能负重行走, 步态无明显异常, 能从事原工作。术后按照 Enneking 等评价系统, 优 13 例, 良 8 例, 差 2 例。结论: 根据患肢具体情况采用带胫骨的隐神经复合皮瓣移植 I 期修复胫骨及皮肤缺损, 成功率高, 对供区肢体损伤小, 是修复小腿骨皮缺损的理想治疗方法。

【关键词】 外科皮瓣; 小腿; 胫骨; 修复外科手术

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Clinical application of tibial composite saphenous nervetissue flap for the treatment of traumatic bone-skin defect of leg ZHAO Zhi-wei, LIU Wen-jing, ZHA Zhu-qing, LI Yan-feng, and FAN Hui-jun. Department of Microsurgery and Hand Surgery, Luoyang Orthopedic Hospital of Henan Province, Zhengzhou 450008, Henan, China

ABSTRACT **Objective** To investigate the effect of tibial composite saphenous nerve tissue flap in repairing traumatic bone-skin defect of leg. **Methods:** From February 2009 to May 2015, 23 patients with focal skin defect caused by trauma were treated, including 18 males and 5 females, aged from 8 to 59 years old with an average age of 35.6 years old. Length of tibia bone cortex defect ranged from 4 to 12 cm, width ranged from 2 to 2.5 cm, skin defect ranged from 8 cm×3 cm to 18 cm×11 cm, all the wound surfaces had purulent exudation. Cross shift and ipsilateral shift methods of tibial composite saphenous nerve tissue flap were used to reconstruct continuity of the injured limb tibial brace and repair wound surface. Cutting flap ranged from 9 cm×4 cm to 20 cm×12 cm, bone flap length was 6 to 15 cm, width was 1.5 to 2.5 cm. Fracture healing time and recovery of limb function were observed. **Results:** At 3 to 5 months after operation, bone flap and area of affected area were healed with an average of 4.7 months. Twenty-three cases were followed up for 6 months to 5 years with an average of 30.3 months. Thirteen patients were able to walk without abnormal gait and could be engaged into original work. According to Enneking evaluation systems, 13 patients obtained excellent results, 8 moderate and 2 poor. **Conclusion:** With tibial composite saphenous nerve tissue flap transplantation at stage one to repair tibia and skin defects according to specific condition of affected limbs has a high rate of success and creates less damage to region of limb injury, which is an ideal method to repair skin defect of focile.

KEYWORDS Surgical flaps; Leg; Tibia; Reconstructive surgical procedures

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随着工业及交通业的日益发展, 各种高能量暴力导致小腿严重损伤的概率大幅增加。由于小腿前内侧软组织少, 缺乏对胫骨的保护, 易导致小腿感染性骨皮缺损, 处理困难。自 2009 年 2 月至 2015 年 5 月, 笔者采用胫骨隐神经复合组织皮瓣修复小腿感染性骨与皮缺损的患者 23 例, 疗效满意, 现报告

如下。

1 临床资料

本组 23 例, 男 18 例, 女 5 例; 年龄 8~59 岁, 平均 35.6 岁。受伤原因: 车祸伤 14 例, 砸伤 9 例。胫骨受伤部位: 左侧 15 例, 中上段 5 例, 中下段 8 例, 下段 2 例; 右侧 8 例, 中上段 4 例, 中下段 3 例, 下段 1 例。胫骨骨皮质缺损长度 4~12 cm, 宽 2~2.5 cm; 小腿皮肤缺损范围 8 cm×3 cm~18 cm×11 cm。治疗时间为伤后 6 周~5 个月, 平均 2.5 个月。

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图 1 患者,男,45 岁,右小腿术后皮缺损骨外露伴感染 **1a.** 术前患肢小腿近端骨与皮肤缺损 **1b.** 骨皮瓣切取后移植于患肢创面交腿移植 **1c.** 术后 4 个月正位 X 线片示骨瓣与受区已骨性愈合 **1d.** 术后 10 个月去除内固定后正位 X 线片示患肢骨缺损区修复良好 **1e.** 供区正位 X 线片示供区胫骨缺损区已基本修复 **1f, 1g.** 术后 1 年患肢功能恢复良好

Fig.1 A 45-year-old male patient with skin deficient, bone exposed and infectious on right shank after surgery **1a.** Preoperative proximal bone and skin defect of lower affected leg **1b.** Postoperative bone flap was removed and transplanted into the limb **1c.** Postoperative AP X-ray showed bone flap and affected area have been healed **1d.** Postoperative AP X-ray at 10 months after remove internal fixation showed bone defect of affected limb repaired well **1e.** AP X-ray of donor area showed tibial defect were repaired **1f, 1g.** Affected limb function were recovered at 1 year after operation

皮瓣设计的解剖学基础。皮神经营养皮瓣的应用日趋普遍^[4]。胫骨内侧面骨膜与深筋膜结合紧密,并形成血管网^[5]。本组患者骨皮瓣切取后,胫骨骨瓣均渗血良好,证明了皮瓣对切取的胫骨血供是有保障的。

4.2 带胫骨的隐神经复合组织皮瓣优缺点

优点:(1)隐神经和大隐静脉的解剖恒定、部位表浅^[6],有利于供血区血管穿支的探测和皮瓣的设计,组织瓣自身有良好的血供,可促进骨折的愈合。(2)切取的胫骨瓣呈三角形,是以皮质骨为主的柱状骨,具有良好的支撑、抗弯曲生物力学特性,重建胫骨支架后能较好地起到内夹板的作用。(3)与腓骨皮瓣相比,早期存在踝关节肿胀、活动、行走耐力、足趾活动受限和肌力下降,儿童后期或将踝关节外翻畸形和外踝上移,切取过长还有可能影响踝关节稳定性^[7-8]。胫骨皮瓣切取后,根据 Wolf 原理胫骨缺损区均能基本修复,恢复胫骨原有的功能。(4)能修复患侧多种类型的小腿骨皮缺损。(5)无须要牺牲胫后动脉,皮瓣切取表浅,在深筋膜下即可完成,不需要

显露胫后动脉,手术操作简便^[9],如果带有胫后动脉的穿支动脉,皮瓣切取面积完全可达到前者。胫骨皮瓣血运丰富,改善了骨折部位的血液循环,有很强的抗感染能力,可以防止炎症复发;移植的胫骨瓣质硬,抗折力好,骨折端接触面大,利于愈合,又可作为坚强的内固定物^[10]。

缺点:不能采用游离移植,对供区皮肤条件要求相对较高,如果蒂部皮肤瘢痕明显,尽可能带胫后动脉,以保障皮瓣血供;交腿皮瓣需要用外固定架固定 8 周,不便术后早期活动,增加了患者的痛苦。

4.3 术中注意事项

术前要用多普勒测定皮瓣轴线上的穿支点,切取过程中,如遇到皮血管支,在满足手术要求的情况下,尽可能保留,以增加皮瓣的血供。交腿皮瓣要求双下肢特别是患肢膝关节要有一定的活动度,术前试行交腿体位合适方可手术。血管蒂的松紧度需借助双腿屈伸度来调节;注意组织瓣皮肤尽量与患肢创面正常皮肤缝合,促使侧支循环高质量形成;由于

胫骨内侧皮肤与骨膜紧密相贴,胫骨瓣固定后,皮肤无法调整位置,因此要根据创面骨皮缺损情况合理设计胫骨皮瓣中骨与皮肤的搭配位置及胫骨板的固定位置,;皮瓣蒂部宽度、松紧及是否扭转要注意,处理不当,可导致皮瓣坏死^[11]。

因此,运用带胫骨的隐神经复合组织皮瓣移植移位技术在 I 期修复皮肤缺损创面同时修复胫骨骨皮质缺损,适用于小腿多种类型的骨皮缺损。

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