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吻合皮下静脉的带蒂皮瓣修复四肢皮肤软组织缺损的效果分析*

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摘要 目的:探讨与分析吻合皮下静脉的带蒂皮瓣修复四肢皮肤软组织缺损的效果。**方法:**选择2018年12月到2021年12月在本院创伤造成的四肢皮肤软组织缺损60例患者作为研究对象,将其随机分为吻合皮下静脉带蒂皮瓣组与传统带蒂皮瓣组各30例。吻合皮下静脉带蒂皮瓣组给予吻合皮下静脉的带蒂皮瓣修复治疗,传统带蒂皮瓣组给予常规直接覆盖创面修复治疗。**结果:**所有患者都顺利完成手术,吻合皮下静脉带蒂皮瓣组围手术指标时间均较传统带蒂皮瓣组少($P<0.05$)。吻合皮下静脉带蒂皮瓣组术后3个月的总有效率为96.7%,高于传统带蒂皮瓣组的76.7%($P<0.05$)。吻合皮下静脉带蒂皮瓣组术后3个月的并发症发生率较传统带蒂皮瓣组低($P<0.05$)。吻合皮下静脉带蒂皮瓣组术后6个月的感觉功能恢复情况好于传统带蒂皮瓣组($P<0.05$)。**结论:**吻合皮下静脉的带蒂皮瓣能促进患者的创面愈合,提高治疗效果,减少并发症,加快恢复患者的四肢皮肤软组织缺损。

关键词:吻合皮下静脉;带蒂皮瓣;四肢皮肤软组织缺损;四肢创伤

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Analysis of the Effects of Pedicled Skin Flap Anastomosed with Subcutaneous Vein in Repairing Skin and Soft Tissue Defects of Extremities*

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ABSTRACT Objective: To explore and analysis the effects of pedicled skin flap anastomosed with subcutaneous vein in repairing skin and soft tissue defects of limbs. **Methods:** Sixty patients with skin and soft tissue defects of limbs caused by trauma in our hospital from December 2018 to December 2021 were selected as the research objects, and they were randomly divided into the pedicled skin flap anastomosis subcutaneous vein group and the traditional skin flap group (30 cases in each group). The pedicled skin flap group was treated with pedicled skin flap with anastomosis of subcutaneous vein, while the traditional pedicled skin flap group was treated with conventional direct covering wound repair. **Results:** All patients completed the operation successfully, and the perioperative indexes of pedicled flap group were lower than those of traditional flap group ($P<0.05$). The total effective rate of pedicled flap anastomosis with subcutaneous vein 3 months after operation was 96.7%, which was higher than that of traditional flap group 76.7% ($P<0.05$). The incidence of complications 3 months after operation in pedicled flap group was lower than that in traditional flap group ($P<0.05$). The sensory function of the pedicled flap group was better than that of the traditional flap group 6 months after operation ($P<0.05$). **Conclusion:** Pedicled flap with subcutaneous vein anastomosis can promote wound healing, improve therapeutic effect, reduce complications, and speed up the recovery of skin and soft tissue defects of limbs.

Key words: Subcutaneous vein anastomosis; Pedicled skin flap; Skin and soft tissue defects of extremities; Limb trauma

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前言

在四肢皮肤软组织缺损疾病中,手部及足踝部比较常见,当其是外力作用下皮肤和皮下组织进行强行剥脱,同时伴有不同程度的软组织挫伤^[1]。四肢皮肤软组织缺损可由机器损伤、交通事故等原因造成,会导致患者机体出现比较严重的软组织坏死及局部皮肤,且因机体全身条件及损伤局部,使得修复受到一定限制^[2,3]。尤其是患者机体的创面不能与外界进行有效阻

隔,使得创面出现迁延不愈^[4,5]。四肢皮肤软组织缺损的传统修复方法为彻底清创创面,换药,待清洁后,进行自体皮移植修复等,或直接行带蒂皮瓣修复但不吻合皮下静脉^[6]。传统修复方法操作技术比较成熟,但是存在修复时间长、易感染等不足,不吻合皮下静脉的带蒂皮瓣由于静脉回流的问题易出现皮瓣远端的坏死,已成为骨科、皮肤外科医生面临的棘手性问题之一^[7,8]。吻合皮下静脉的带蒂皮瓣可在一期对缺损组织进行修复,且为了避免肌腱出现磨损、坏死等,将用于移植修复的神经及肌腱

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放置于有血运的脂肪层内,易于进行术后的功能训练,减少患者多次手术的痛苦^[9,10]。并且吻合皮下静脉的带蒂皮瓣修复有助于创口的良好愈合,从而在保证创口美观性的同时,保证其正常功能^[11,12]。本文具体总结了吻合皮下静脉的带蒂皮瓣修复四肢皮肤软组织缺损的临床应用效果,从而明确吻合皮下静脉的带蒂皮瓣的应用价值与四肢皮肤软组织缺损的修复最佳手术修复方式。

1 资料与方法

1.1 研究对象

选择 2018 年 12 月到 2021 年 12 月在本院 60 例创伤造成的四肢皮肤软组织缺损患者作为研究对象。

纳入标准:经本院伦理委员会审核批准;为工业机械、交通事故伤;四肢皮肤软组织缺损;患者生命体征稳定,无死亡危象;患者签署知情同意书;未行其它影响创面愈合的治疗;创周软组织无显著坏死及炎症形成;符合四肢皮肤软组织缺损修复治疗标准。

排除标准:有影响创面愈合的全身合并症;肝肾功能不全或营养不良者;四肢均有皮肤、肌腱缺损;自动终止治疗,致四肢创面未愈合者;中枢神经系统功能紊乱者。

根据动态随机化法,将 60 例患者分为两组(吻合皮下静脉带蒂皮瓣组与传统带蒂皮瓣组),两组一般资料对比,差异无统计学意义($P>0.05$)。见表 1。

表 1 一般资料对比

Table 1 Comparison of general data

Groups	n	Gender (Male/female)	Location (left forearm/right forearm)	Age (years)	Skin avulsion area (cm ²)	Time from injury to repair (h)
Pedicled flap group	30	21/9	18/12	52.42±1.72	34.86±6.47	20.10±11.34
Traditional flap group	30	22/8	19/11	52.76±2.18	33.02±4.44	20.88±8.29

1.2 修复方法

吻合皮下静脉带蒂皮瓣组:给予吻合皮下静脉的带蒂皮瓣修复治疗,患者仰卧于手术台上,双上肢外展于手术侧台。采用全身静脉复合麻醉或,术中常规使用止血带,0.5%强力碘溶液消毒创面四周皮肤及皮瓣供区皮肤。创面彻底清创,尽量少去除骨及肌腱建组织,尽量保留部分撕脱的神经纤维。根据四肢的软组织缺损范围在创面附近设计吻合皮下静脉的带蒂皮瓣,皮瓣长宽比例约(1.5-3):1,比伤区大 0.5-1.5 cm,皮瓣内包含动脉穿支。先探查动脉穿支,以动脉穿支为旋转点设计带蒂皮瓣,将皮瓣的远端及外缘切开,使其至浅筋膜深层,并将皮瓣以远端至近端为方向掀起,并保留皮瓣远端的皮下静脉,将皮瓣转移至四肢皮肤软组织缺损处,将皮瓣远端保留的皮下静脉与受区皮下静脉吻合。

传统皮瓣组:给予常规,选择带蒂皮瓣进行修复,骨缺损、肌腱、神经缺损处理同观察组。

两组在术后进行常规引流,观察皮瓣血运情况,使用抗生素预防感染;滴注低分子肝素钠,防止血栓形成;罂粟碱抗血管痉挛治疗;术后 2 周皮瓣血运稳定,术后 3 周进行功能锻炼。

1.3 观察指标

1.3.1 围手术指标 记录两组的创面愈合时间、术后换药次数、覆盖创面时间以及住院时间等。

1.3.2 疗效判定 由医师在患者术后 3 个月判定治疗效果,皮

瓣成活面积超过 90%,血运良好,组织质地有弹性且较为柔软,同时组织器官正常为痊愈;皮瓣面积成活超过 85%,血运良好,质地有弹性且较为柔软,同时不对机体的组织器官正常功能发挥产生影响为有效;未达到以上标准或出现恶化为无效。(治愈+好转)/例数×100%=总有效率。

1.3.3 并发症 于术后 3 个月记录两组出现的瘢痕挛缩、创面坏死、创面感染、积液等并发症。

1.3.4 感觉功能恢复评价 医师在术后 6 个月评价患者的感觉功能恢复情况,神经支配区内感觉丧失为 S0 级;神经支配区内深痛觉恢复为 S1 级;神经支配区内痛觉、触觉恢复,而仍有一定的感觉过敏为 S2 级;神经支配区内痛觉、触觉完全恢复为 S3 级;触觉、痛觉、两点辨别觉完全恢复为 S4 级。

1.4 统计方法

SPSS21.00 软件,计量数据以均数±标准差($\bar{x}\pm s$)表示,t 检验对比分析;计数数据以百分比(%)表示,卡方 χ^2 检验分析, $P<0.05$ 为差异有统计学意义。

2 结果

2.1 围手术指标对比

本研究 60 例患者均完成手术,与传统带蒂皮瓣组相比,吻合皮下静脉带蒂皮瓣组围手术指标时间均较少($P<0.05$)。

表 2 围手术指标对比($\bar{x}\pm s$)

Table 2 Comparison of perioperative indicators (mean±standard deviation)

Groups	n	Wound healing time (d)	Postoperative dressing change times (times)	Time of covering wound (d)	Length of hospital stay (d)
Pedicled flap group	30	21.44±3.22 [#]	2.10±0.44 [#]	8.29±2.11 [#]	22.18±3.49 [#]
Traditional flap group	30	26.02±1.44	4.09±1.33	13.48±2.52	28.09±4.11

Note: Compared with traditional flap group, [#] $P<0.05$, the same below.

2.2 总有效率对比

高于传统带蒂皮瓣组的 76.7% ($P < 0.05$)。见表 3。

吻合皮下静脉带蒂皮瓣组术后 3 个月的总有效率为 96.7%，

表 3 术后 3 个月的总有效率对比(n)
Table 3 Comparison of total effective rate 3 months after operation (n)

Groups	n	Cure	Upturn	Invalid	Total effective rate
Pedicled flap group	30	26	3	1	29(96.7 %)‡
Traditional flap group	30	12	11	7	23(76.7 %)

2.3 并发症情况对比

传统带蒂皮瓣组低 ($P < 0.05$)。见表 4。

吻合皮下静脉带蒂皮瓣组术后 3 个月的并发症发生率较

表 4 并发症发生情况对比(n)
Table 4 Comparison of postoperative complications (n)

Groups	n	Wound infection	Wound necrosis	Scar contracture	Effusion	Summation
Pedicled flap group	30	1	0	0	1	2(6.7 %)‡
Traditional flap group	30	2	1	1	3	7(23.3 %)

2.4 长期感觉功能恢复对比

况好于传统带蒂皮瓣组 ($P < 0.05$)。见表 5。

吻合皮下静脉带蒂皮瓣组术后 6 个月的感觉功能恢复情

表 5 两组随访感觉功能恢复对比(n)
Table 5 Comparison of sensory function recovery between the two groups during follow-up (n)

Groups	n	S0	S1	S2	S3	S4
Pedicled flap group	30	0(0.0 %)	0(0.0 %)	1(3.3 %)	1(3.3 %)‡	28(93.3 %)‡
Traditional flap group	30	1(3.3 %)	1(3.3 %)	2(6.7 %)	10(33.3 %)	16(53.3 %)

3 讨论

皮肤是人体最大、最重要的器官之一,手部及足踝部缺损的修复是四肢皮肤软组织缺损领域的研究重点,手部及足踝部缺损多由外伤造成的皮肤及软组织坏死^[13]。该区域的皮肤软组织缺损相对功能要求及皮肤耐磨性较高,故其手术治疗方法相对复杂,对于治疗的要求比较高。传统自体皮移植虽可修复创面^[14];有时植皮难以全部成活,耐磨性也相对较差。传统带蒂皮瓣远端发生坏死的几率相对较大,常常造成创面不能完全覆盖一次性完全修复^[15]。

本研究显示:60 例患者均完成手术,与传统带蒂皮瓣组相比,吻合皮下静脉带蒂皮瓣组围手术指标时间均较少;吻合皮下静脉带蒂皮瓣组术后 3 个月的总有效率为 96.7%,高于传统带蒂皮瓣组的 76.7%,表明吻合皮下静脉的带蒂皮瓣修复四肢皮肤软组织缺损能促进患者康复,提高治疗疗效。该结果与 He J 等人^[16]的报道具有一致性。分析可知,四肢皮肤软组织缺损的修复要求为:足够重视患者的实际情况,在早期选择适当的治疗方案,最大限度地对缺损及修复创面进行填补,且尽最大可能恢复患者肢体功能^[17]。吻合皮下静脉的带蒂皮瓣是以动脉穿支为轴心血管,不会因供血不足而致皮瓣坏死^[18,19]。通过带蒂皮瓣这种方式可同时损伤进行修复,具有损伤小、瘢痕少等优点,可减少手术及麻醉次数,于早期行肢体功能锻炼^[20]。同时在

修复中皮瓣设计要足够大,所切取的皮瓣蒂要足够宽,可降低术后皮瓣张力,减少皮瓣坏死机会。清创时一定要彻底,减少皮瓣术后组织感染机会^[21];吻合皮下静脉带蒂皮瓣组术后 3 个月的并发症发生率较传统带蒂皮瓣组低,表明吻合皮下静脉的带蒂皮瓣修复四肢皮肤软组织缺损能减少术后并发症的发生。该结果与 Tang J 等人^[22]的报道具有一致性。分析可知,常规带蒂皮瓣修复方法为创面清创后进行临近自体皮植皮或者邻近带蒂皮瓣修复,但术后感染、坏死发生率高^[23]。吻合皮下静脉的带蒂皮瓣在修复的同时,会覆盖损伤机体所发生的多种组织缺损,该手术方式可大幅度减少患者因多次手术所产生的痛苦^[24]。与其他部位相比,吻合皮下静脉带蒂皮瓣具有较多且较薄等特点,从而促进医师根据患者皮肤缺损的形状,对皮瓣覆盖创面进行分析与设计^[25]。并且吻合皮下静脉的带蒂皮瓣修复可使环境处于低氧状态,在溶解创面痂皮以及坏死组织的同时还可提高创面皮肤上皮化的速度,促进患者创面愈合。

四肢皮肤软组织缺损修复的目的是彻底清创,修复组织缺损,防止感染,最大可能地恢复前期功能^[26]。若在初期未对患者受损的肌腱、神经等及时进行早期修复,可能会使得肌腱、神经等发生挛缩,最终影响感觉恢复^[27]。本研究显示:吻合皮下静脉带蒂皮瓣组术后 6 个月的感觉功能恢复情况好于传统带蒂皮瓣组,表明吻合皮下静脉的带蒂皮瓣修复四肢皮肤软组织缺损能促进患者感觉功能恢复。该结果与 Scaglioni MF 等人^[28]的报

道具有一致性。分析可知,吻合皮下静脉的带蒂皮瓣有利于降低因手术对患者所造成的机体损伤,缩短治疗周期,提高治疗效果^[20]。特别是吻合皮下静脉的带蒂皮瓣对于白细胞、成纤维细胞进入创面具有促进作用,加速创面愈合,促进感觉功能恢复^[20]。不过吻合皮下静脉的带蒂皮瓣修复也有一定的局限性,吻合皮下静脉的带蒂皮瓣转移到受区以后找不到可吻合的静脉,需要移植桥接等,也不太适合身体状况差的患者^[21]。且由于经费原因,本论文选取样本量较小,观察时间较短,将在后续进行深入探究。

总之,吻合皮下静脉的带蒂皮瓣修复四肢皮肤软组织缺损能促进患者创面愈合,提高疗效,减少并发症,加快四肢感觉功能的恢复。

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