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## 股前外侧穿支皮瓣与胸腹带蒂皮瓣对手外伤组织缺损修复的应用效果及对创面愈合程度的影响\*

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**摘要 目的:**探讨股前外侧穿支皮瓣与胸腹带蒂皮瓣对手外伤组织缺损修复的应用效果及对创面愈合程度的影响。**方法:**选取我院2018年12月到2020年12月共收治的119例手外伤组织缺损患者作为研究对象,随机分为2组,分别为对照组( $n=59$ ,应用胸腹带蒂皮瓣修复术)和观察组( $n=60$ ,应用股前外侧穿支皮瓣修复术)。对比两组患者治疗优良率,对比两组患者治疗前后手部创面面积、创面愈合程度以及组织愈合时间,对比两组患者治疗后的Jamar握力、TAM和DASH评分情况,对比两组患者的皮瓣成活率、皮瓣危象率和血管吻合时间。**结果:**通过对比两组患者治疗优良率发现,观察组患者优的人数为21例、良为35例,优良率为93.33%,对照组患者优的人数为16例、良为30例,优良率为77.97%,观察组高于对照组( $P<0.05$ );治疗后,与对照组相比,观察组患者的手部创面面积、组织愈合时间和DASH评分显著减少,创面愈合程度以及TAM与Jamar握力显著增加( $P<0.05$ );通过对比两组患者的皮瓣成活率、术后皮瓣危象率以及血管吻合时间发现,两组患者的术后皮瓣危象率、血管吻合时间对比无明显差异( $P>0.05$ ),两组患者的术后皮瓣成活率对比差异显著,观察组明显高于对照组( $P<0.05$ )。**结论:**对手外伤组织缺损患者应用股前外侧穿支皮瓣与胸腹带蒂皮瓣修复术均具有明显的修复效果,但是应用股前外侧穿支皮瓣能够提升治疗效果,提升患者创面愈合程度减少愈合时间,提升患者手部运动情况,提升术后皮瓣成活率,值得临床应用推广。

**关键词:**股前外侧穿支皮瓣;胸腹带蒂皮瓣;手外伤组织缺损;创面愈合程度;皮瓣成活率;皮瓣危象

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## Application Effect of Anterolateral Thigh Perforator Flap and Thoracic-abdominal Pedicled Flap in Repairing Hand Traumatic Tissue Defect and Its Influence on Wound Healing\*

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**ABSTRACT Objective:** To explore the effect of anterolateral thigh perforator flap and thoracoabdominal pedicled flap on the repair of hand traumatic tissue defect and the effect on wound healing. **Methods:** A total of 119 patients with hand trauma tissue defects admitted in our hospital from December 2018 to December 2020 were selected as the research objects, and they were randomly divided into 2 groups. They were the control group ( $n=59$ , using thoracic-abdominal pedicle flap repair) and the observation group ( $n=60$ , using anterolateral thigh perforator flap repair). The excellent and good rates of the two groups were compared. The hand wound area, wound healing degree and tissue healing time before and after treatment were compared between the two groups. The scores of Jamar grip strength, TAM and dash were compared between the two groups. The flap survival rate, flap crisis rate and vascular anastomosis time of the two groups were compared. **Results:** By comparing the excellent and good rate of the two groups, it was found that the number of excellent patients in the observation group was 21 cases, the number of good patients was 35 cases, the excellent and good rate was 93.33%, the number of excellent patients in the control group was 16 cases, the number of good patients was 30 cases, the excellent and good rate was 77.97%, the observation group was higher than the control group ( $P<0.05$ ); After treatment, compared with the control group, the hand wound area, tissue healing time and DASH score of the observation group were significantly reduced, and the degree of wound healing and TAM and Jamar grip strength were significantly increased( $P<0.05$ ). By comparing the flap survival rate, postoperative

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flap crisis rate and vascular anastomosis time of the two groups, it was found that there was no significant difference in the flap crisis rate and vascular anastomosis time of the two groups ( $P>0.05$ ), but the flap survival rate of the two groups was significantly different, and the observation group was significantly higher than the control group ( $P<0.05$ ). **Conclusion:** The application of anterolateral thigh perforator flap and thoracoabdominal pedicled skin flap in the repair of hand trauma tissue defect has obvious repair effect, but the application of anterolateral thigh perforator flap can improve the treatment effect, improve the wound healing degree, reduce the healing time, improve the hand movement of patients, and improve the survival rate of postoperative flap, which is worthy of clinical application and promotion.

**Key words:** Anterolateral thigh perforator flap; Thoracoabdominal pedicle flap; Tissue defect of hand trauma; The degree of wound healing; The survival rate of skin flap; Flap crisis

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## 前言

我国当前工业与农业还处在高速发展之中,但是很多工作还需要人工操作来完成,这是临床上手外伤的发病率居高不下的原因之一<sup>[1]</sup>。手外伤组织缺损患者如果不能及时进行规范化治疗,会导致手部功能恢复差,对患者日后的生活和工作带来很大影响<sup>[2,3]</sup>。随着临床医学的发展,显微外科也得到了高水平发展,越来越多的临床学者推荐应用胸腹带蒂皮瓣或股前外侧穿支皮瓣对手外伤组织缺损患者进行修复,具有很高的皮瓣成活率。传质皮瓣主要指的是应用管径比较细小的皮肤穿支血管供血的皮瓣,是轴型血管皮瓣范畴<sup>[4]</sup>。有研究者认为<sup>[5,6]</sup>,穿支皮瓣修复对供区的创伤小、设计灵活、抑制方面等优点,也是当前皮瓣外科、显微外科的新发展。有国外学者认为<sup>[7]</sup>,胸腹带蒂皮瓣修复术虽然皮瓣的成活率比较高,修复的面积比较大,但是患者术后患肢会长期处在制动之中,对微循环产生一定影响,最终导致皮瓣组织坏死、肿胀影响治疗效果。还有研究发现<sup>[8,9]</sup>,应用胸腹带蒂皮瓣修复术患者的床上愈合比较快。随着人们对生活质量要求的不断提高,越来越多的患者开始从皮瓣成活转变为皮瓣感觉恢复方面,要求手术不仅要尽量恢复手的

运动功能,而且还有很多医疗学者尽最大可能通过皮瓣修复术恢复患者手部的感知功能<sup>[10]</sup>。但是,当前对于股前外侧穿支皮瓣和胸腹带蒂皮瓣手术的应用众说纷纭。因此,为了探讨两种皮瓣修复术的具体优势,本研究选取我院 2018 年 12 月到 2020 年 12 月共收治的 119 例手外伤组织缺损患者作为研究对象,探讨股前外侧穿支皮瓣与胸腹带蒂皮瓣对手外伤组织缺损修复的应用效果及对创面愈合程度的影响。

## 1 资料与方法

### 1.1 一般资料

选取我院 2018 年 12 月到 2020 年 12 月共收治的 119 例手外伤组织缺损患者作为研究对象,将患者随机分为 2 组:对照组 59 例,观察组 60 例。纳入标准:所有患者均符合手外伤组织缺损的临床诊断,且符合皮瓣修复手术指征;患者肢体功能正常。排除标准:合并其他系统严重疾病的患者;合并骨折的患者;合并意识障碍或精神疾病的患者合并其他部位组织缺损者;合并恶性肿瘤者;合并关节或肢体病理性病变者。两组患者一般资料对比无明显差异( $P>0.05$ ),如表 1 所示。所有患者均知情本研究并签署同意书;本研究经过我院伦理委员会批准。

表 1 一般资料

Table 1 General information

| Groups            | n  | Gender (M/F) | Average age(years) | Causes of injury |              |                      |
|-------------------|----|--------------|--------------------|------------------|--------------|----------------------|
|                   |    |              |                    | Incision injury  | Crush injury | Strangulation injury |
| Observation group | 60 | 42/18        | 34.2±2.5           | 12               | 30           | 18                   |
| Control group     | 59 | 39/20        | 33.5±2.6           | 14               | 26           | 19                   |

### 1.2 方法

对所有患者进行常规术前清创,将坏死组织、污染组织清除,进行创面血管游离,止血之后,分析患者的创面大小和形态,完成供区皮瓣设计。给予对照组患者胸腹带蒂皮瓣修复术,依照患者手部软组织缺损部位和程度,确定腹部皮瓣切取位置,与创伤面积相比较来说,皮瓣的面积需要扩大约 10%,并在修复过程中确保皮瓣组织的面向上,应用坡形方法来修剪皮瓣的远端和边缘,将 2-3 毫米的皮下血管网和脂肪保留,直到修复完成之后进行负压引流。观察组患者进行股前外侧穿支皮瓣修复术,术前对患者的创面面积、部位和病情应用彩超进行观察。并选择髂骨外上缘和髂前上棘中间内侧进行切口,将皮肤筋膜外翻,在股前外侧寻找一处符合标准的血管之后,在深筋

膜浅层切开并将皮瓣分离,随后将皮瓣覆盖在面部缺损的位置上,应用显微镜指导,对受损区域的皮瓣组织进行缝合与修复。术后对所有患者进行镇痛、抗感染、抗凝、抗痉挛、制动等治疗,并观察皮瓣的血液循环情况<sup>[11,12]</sup>。

### 1.3 观察指标与优良率判定标准

观察指标:应用 1 mm\*1 mm 带网格无菌防磨分别勾勒出两组患者的手部创面边缘,对比治疗前后手部创面的面积变化,并计算创面愈合程度,(治疗前创面面积 - 治疗后创面面积)/治疗前 \* 创面面积 100%=创面愈合程度,观察并记录两组患者的组织愈合时间<sup>[13]</sup>;患者术后 30 天复查的时候对患者应用 Jamar 握力计,测量患者算手的握力,并应用 DASH 上肢功能评分量表对患者的恢复程度进行评价,极度为 5 分,重度

4分,中度为3分,轻微为2分,无为1分<sup>[14]</sup>。术后30天应用总关节活动度(TAM)系统评价方法来评价患者的治疗效果,其中包括掌指关节和指间的屈曲度;观察并记录两组患者的皮瓣成活率、术后皮瓣危象率、血管吻合时间<sup>[15]</sup>。

优良率判定标准:对两组患者治疗30天后进行治疗优良率判定,患者手部外观和功能恢复正常,而且附近皮肤和皮瓣适应性良好的优;患者手部外观和功能明显改善,但是皮瓣存在轻度臃肿现象为良;患者手部外观和功能有所缓解,附近皮肤和皮瓣适应性一般为可;患者手部外观和功能恢复程度比较差,周围皮肤和皮瓣有明显的差异为差。优良率=(优例数+良例数)/总例数×100%<sup>[16]</sup>。

## 1.4 统计学方法

研究数据采取统计学软件SPSS23.0进行数据分析,计数资料以(n/%)表示,进行 $\chi^2$ 检验;计量资料以( $\bar{x} \pm s$ )表示,组间比较采用t检验;以 $P < 0.05$ 为差异有统计学意义。

## 2 结果

### 2.1 两组患者治疗优良率对比分析

观察组患者优的人数为21例、良为35例,优良率为93.33%,对照组患者优的人数为16例,良为30例,优良率为77.97%,观察组高于对照组( $P < 0.05$ )。

表2 两组患者治疗优良率对比分析(n,%)

Table 2 Comparative analysis of excellent and good rate of treatment between (n,%)

| Groups            | n  | Excellence | Fine      | General  | Disappointing | Excellent rate of excellence |
|-------------------|----|------------|-----------|----------|---------------|------------------------------|
| Observation group | 60 | 21(35.00)  | 35(58.33) | 3(5.00)  | 1(1.67)       | 56(93.33)*                   |
| Control group     | 59 | 16(27.12)  | 30(50.85) | 8(13.56) | 5(8.47)       | 46(77.97)                    |

Note: Compared with the control group, \* $P < 0.05$ .

### 2.2 两组患者创面愈合情况对比分析

两组患者治疗前手部创面面积对比无明显差异( $P >$

0.05),治疗后观察组患者的手部创面面积和组织愈合时间明显低于对照组,创面愈合程度明显高于对照组( $P < 0.05$ )。

表3 两组患者创面愈合情况对比分析( $\bar{x} \pm s$ )

Table 3 Comparative analysis of wound healing between two groups( $\bar{x} \pm s$ )

| Groups            | n  | Area of hand wound( $\text{cm}^2$ ) |                | Wound healing(%) | Tissue healing time(d) |
|-------------------|----|-------------------------------------|----------------|------------------|------------------------|
|                   |    | Prior-treatment                     | Post-treatment |                  |                        |
| Observation group | 60 | 22.42±6.79                          | 4.28±1.25*     | 85.25±5.13*      | 10.23±2.42*            |
| Control group     | 59 | 22.82±3.72                          | 5.93±1.43      | 74.61±4.33       | 15.25±3.52             |

Note: Compared with the control group, \* $P < 0.05$ .

### 2.3 两组患者 Jamar 握力、TAM 和 DASH 评分对比分析

观察组患者的 DASH 评分明显低于对照组,TAM 与

Jamar 握力明显高于对照组( $P < 0.05$ )。

表4 两组患者 Jamar 握力、TAM 和 DASH 评分对比分析( $\bar{x} \pm s$ )

Table 4 Comparative analysis Jamar grip strength, TAM and DASH scores between two groups( $\bar{x} \pm s$ )

| Groups            | n  | Jamar grip(kg) | TAM( $^{\circ}$ ) | DASH(points) |
|-------------------|----|----------------|-------------------|--------------|
| Observation group | 59 | 27.24±10.16*   | 164.54±25.73*     | 1.82±0.41*   |
| Control group     | 60 | 36.23±11.25    | 211.21±31.25      | 1.52±0.21    |

Note: Compared with the control group, \* $P < 0.05$ .

### 2.4 两组患者皮瓣成活率、术后皮瓣危象率以及血管吻合时间对比分析

通过对比两组患者的皮瓣成活率、术后皮瓣危象率以及血

管吻合时间发现,两组患者的术后皮瓣危象率、血管吻合时间对比无明显差异( $P > 0.05$ ),两组患者的术后皮瓣成活率观察组显著高于对照组( $P < 0.05$ )。

表5 两组患者的皮瓣成活率、术后皮瓣危象率以及血管吻合时间对比分析

Table 5 Survival rate of flap, postoperative flap crisis rate and time of vascular anastomosis two groups

| Groups            | n  | Survival rate of flap(n, %) | Postoperative flap crisis rate (n, %) | Vascular anastomosis time (min) |
|-------------------|----|-----------------------------|---------------------------------------|---------------------------------|
| Observation group | 59 | 51(86.44%)*                 | 3(5.08%)                              | 15.78±7.22                      |
| Control group     | 60 | 59(98.33%)                  | 1(1.67%)                              | 15.38±7.11                      |

Note: Compared with the control group, \* $P < 0.05$ .

### 3 讨论

随着手外伤发病率的增加,很多手外伤患者会伴随不同程度软组织损伤现象。如果不及时接受治疗会出现伤口感染现象,从而导致病情加重,甚至患者可能会永久性丧失手部功能,对患者的生活质量产生极其严重的影响<sup>[17]</sup>。临床上通过应用直接植皮的方式进行治疗,但是治疗之后容易导致皮片挛缩情况,影响患者的手部功能,对患者的预后产生不利影响,对于一些需要进行植皮的创面要彻底进行消毒,依照患者的伤情程度制定合理的修复方案,因此临床上选择合理的手术治疗方案针对手外伤组织缺损进行治疗具有重要价值<sup>[18,19]</sup>。

胸腹带蒂皮瓣修复术和股前外侧穿支皮瓣修复术是两种常用的皮瓣修复方法,虽然胸腹带蒂皮瓣修复术的皮瓣成活率比较高,但是患者术后出现坏死的情况也比较多<sup>[20]</sup>。而股前外侧穿支皮瓣的供区范围广、选择性强,主要能够将皮瓣微创化、薄型化、精细化,用于主干血管分枝,对供区损伤较小,从而提升修复效果。有研究认为<sup>[21,22]</sup>,股前外侧穿支皮瓣是当前最理想的游离皮瓣供区,能够确保皮瓣血供,供区隐蔽,对患者美观性影响比较小,所以备受临床青睐推广。还有研究发现<sup>[23,24]</sup>,腹部带蒂皮瓣修复手术比较容易操作,皮瓣选取较简便,对供区损伤小,皮瓣的供血性较好,术后血运良好,并发症相对较少,且适应证广泛。因此,本研究针对于股前外侧穿支皮瓣与胸腹带蒂皮瓣对手外伤组织缺损修复的应用效果及对创面愈合程度的影响展开研究,希望为手外伤组织修复治疗选择提供参考。

本研究结果表明,应用股前外侧穿支皮瓣术后患者修复优良率明显高于胸腹带蒂皮瓣,我们认为,虽然胸腹带蒂皮瓣具有一定优点,但是腹部皮肤延展性和细腻程度不如四肢的皮肤,而且没有指掌的横纹,并且还有一定色素沉着问题,修复皮瓣无感觉,外观臃肿,而且再次整形手术概率比较高。有研究显示<sup>[25]</sup>,股前外侧穿支皮瓣有着管径较粗、蒂长、解剖变异小的特点,而且皮瓣支配血管分型定位明确,皮瓣的切取面积也比较大,能够修复较大的创面,提升修复效果,与本研究结果相符;另外,本研究中,治疗后观察组患者的手部创面面积和组织愈合时间明显低于对照组,创面愈合程度明显高于对照组( $P<0.05$ ),当前许多研究中,多数对两种皮瓣修复术的比较多在皮瓣成活率和临床疗效方面,有研究发现<sup>[26,27]</sup>,应用股前外侧穿支皮瓣的皮瓣成活率优于胸腹带蒂皮瓣。但是当前研究中,并没有针对于患者创面愈合程度方面来比较两种皮瓣修复术,这也是本文的一项创新点,探讨这两种皮瓣修复术,到底哪一种更有利于患者创面愈合具有重要临床意义。本研究发现,股前外侧穿支皮瓣治疗手术的创伤性比较小,能够有效抑制炎症反应现象,从而减少术后并发症,以达到患者及其家属期望的创面愈合效果;观察组患者的DASH评分明显低于对照组,TAM与Jamar握力明显高于对照组( $P<0.05$ ),由此证明,应用股前外侧穿支皮瓣患者的手部功能恢复程度更好。有研究显示<sup>[28,29]</sup>,通过股前外侧穿支皮瓣修复术能够减少创面周围水肿,及时将创面分泌物排出,而且皮瓣比较轻薄,有利于术后患者手部外形和手部功能恢复,与本研究结果相符;通过对比两组患者的皮瓣成活率、术后皮瓣危象率以及血管吻合时间发现,两组患者

的术后皮瓣危象率、血管吻合时间对比无明显差异( $P>0.05$ ),两组患者的术后皮瓣成活率对比差异显著,观察组明显高于对照组( $P<0.05$ ),由此证明,两种皮瓣修复术均具有良好的临床效果,但是应用股前外侧穿支皮瓣修复术患者的皮瓣成活率更高。有研究发现<sup>[30]</sup>,应用股前外侧穿支皮瓣能够明显提升手外伤组织缺损患者的缺损处血运情况,与本研究结果相似,这是因为,患者患处血运情况良好,血流速度和血流灌注量相对值提升,能够有利于皮瓣成活。

综上所述,应用股前外侧穿支皮瓣与胸腹带蒂皮瓣修复术治疗手外伤组织缺损患者均具有明显的修复效果,但是应用股前外侧穿支皮瓣能够提升治疗效果,提升患者创面愈合程度减少愈合时间,提升患者手部运动情况,提升术后皮瓣成活率,值得临床应用推广。

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