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锁定加压板对四肢骨折的治疗及手术成功率和术后恢复时间的影响 *

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摘要 目的:探讨锁定加压板对四肢骨折的治疗及手术成功率和术后恢复时间的影响。**方法:**采用回顾性方法分析,选取本院自2016年12月-2019年12月收治的84四肢骨折患者的临床资料,根据治疗方法分为对照组(42例,给予传统切开复位内固定术治疗)与研究组(42例,给予锁定加压板治疗),比较两组患者的各项手术指标、临床疗效及并发症发生率。**结果:**研究组患者的手术时间、术中出血量、骨折愈合时间、住院时间、术后恢复时间短于对照组($P<0.05$)。研究组患者的临床疗效高于对照组($P<0.05$)。研究组患者的并发症发生率低于对照组($P<0.05$)。**结论:**四肢骨折患者采用锁定加压板治疗,可提高手术成功率,缩短术后恢复时间及住院时间,降低并发症发生率,值得推广应用。

关键词:四肢骨折;锁定加压板;切开复位内固定;手术成功率;术后恢复时间

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Effect of Locking Compression Plate on the Treatment of Limb Fracture and the Success Rate of Operation and Postoperative Recovery Time*

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ABSTRACT Objective: To investigate the effect of locking compression plate on the treatment of limb fracture, the success rate of operation and the postoperative recovery time. **Methods:** The clinical data of 84 patients with limb fractures in our hospital from December 2016 to December 2019 were retrospectively analyzed. According to the treatment methods, they were divided into control group (42 cases, given traditional open reduction and internal fixation) and study group (42 cases, given locking compression plate treatment). The operation indexes, clinical efficacy and complication rate of the two groups were compared. **Results:** The operation time, intraoperative blood loss, fracture healing time, hospitalization time and postoperative recovery time of the study group were shorter than those of the control group, with significant differences ($P<0.05$). The clinical efficacy of the study group was higher than that of the control group ($P<0.05$). The incidence of complications in the study group was lower than that in the control group ($P<0.05$). **Conclusion:** Locking compression plate can improve the success rate of operation, shorten the postoperative recovery time and hospitalization time, and reduce the incidence of complications in patients with limb fractures, which is worthy of popularization and application.

Key words: Limb fracture; Locking compression plate; Open reduction and internal fixation; Operation success rate; Postoperative recovery time

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前言

近几年来,随着各类交通工具的普遍使用和改进,导致交通事故的发生率不断增高,随之也增加四肢骨折发生率^[1]。根据流行病学分析,四肢骨折的受伤多以跌倒为主,其发生率高达50%左右。其次为交通事故所致的乘员损伤^[2,3]。四肢骨折部位

多为锁骨骨折、桡骨骨折、肱骨骨折、锁骨骨折^[4,5]。由于四肢活动度较大,一旦骨折后,患者关节可能会疼痛及肿胀,限制联合活动,若不及时进行有效固定及包扎处理,往往会加重损伤,导致关节僵硬,甚至发生畸形^[6,7]。因此,一旦确定四肢骨折后,必须对骨折局部进行现场局部处理,减少骨折折断端的异常活动,以防伤肢肌肉及神经血管发生损伤^[8,9]。除了局部治疗外,还

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应相应做好手术治疗。长期以来,临床采用传统切开复位内固定术治疗,但该手术往往会造成伤害骨折处的软组织,且术中创伤面积大,直接破坏了骨折部位的血运,相应增加了出血量^[10,11]。且术后有着较高的并发症,延长患者骨折愈合时间,影响预后康复。随着内固定术在临床的不断更新和引用,锁定加压钢板内固定得到了临床医师的认可,可有效弥补切开复位内固定术的不足,降低骨膜压力、压缩,以免发生骨膜坏死等并发症^[12,13]。本文现将四肢骨折患者给予锁定加压板治疗,观察其临床效果,现报告如下。

1 资料与方法

表 1 两组患者基本资料比较

Table 1 Comparison of basic data between the two groups

Groups	Male/Female	Age (years)	Cause of injury		
			Traffic accident injury	Fall injury	Heavy injury
Control group(n=42)	20/22	45.78± 4.34	20	10	12
Research Group(n=42)	22/20	45.45± 4.64	19	12	11

1.2 研究方法

对照组:给予传统切开复位内固定术治疗。行全麻及局麻后,确定骨折类型,展开牵引治疗后,通过透视机观察骨折部位复位情况。剥离患者骨折处的骨膜,形成软组织隧道,将固定器放置骨折后方,在骨表面展开钢板安装操作,调整最佳位置。依靠 X 线获得最佳规定效果后,展开钻孔并拧入螺钉进行固定,冲洗、消毒切口骨折,止血后逐层缝合包扎切口。采用抗生素静脉滴注 3~5 日预防感染,达到消肿止痛的效果。

研究组:给予锁定加压板治疗。术前,对患者进行 X 线检查,对骨折部位实施牵引稳定骨折,并进行石膏外固定,以防软组织出现损伤。若骨折发生时间较短,仅仅出现局部轻微肿胀,可行急诊手术治疗。若患者局部肿胀较严重,且有合并伤,给予抗感染、补液等对症治疗。再行择期手术治疗。根据患者骨折的具体情况确定手术方法,并选择适合的钢板留以备用。行臂丛麻醉或者全身麻醉,于 X 线摄影像下矫正患者肢长,待复位满意后采用克氏针进行临时固定。于骨折近端或者远端进行 2~3 cm 的左右切口,于深筋膜下采用骨膜剥离器钝性分离肌肉及骨膜,形成软组织通道。在剥离中切开骨膜,确保骨折断端的闭合。选择适合的锁定钢板,经组织通道置入骨折部位,采用 C 型 X 线确定钢板放置部位加以调整。于患者近端及远端各置入一枚螺钉,调整满意后于近端、远端再置入 2~4 枚单皮质的锁定螺钉,拧入锁定螺钉之后,再次使用 C 型 X 线查看固定情况,确定固定良好之后,逐层缝合切口。术后给予常规抗感染治疗,预防感染。

1.1 一般资料

本次所选 84 四肢骨折患者来源于本院自 2017 年 12 月-2020 年 12 月就诊者。根据手术方法方法分为对照组(42 例,给予传统切开复位内固定术治疗)与研究组(42 例,给予锁定加压板治疗),其基本资料如下表 1 所示,经统计学分析,具有可比性($P>0.05$)。纳入标准:(1)所有患者均符合手术指征(2)自愿参与此次研究;排除标准:(1)严重心肝肾功能性疾病者;(2)凝血障碍者;(3)受试者依从性差,严重违背试验方案者;(4)长期饮酒史及服用精神类药物者。

1.3 观察标准

两组手术成功率、术中出血量、手术时间、骨折愈合时间、住院时间、术后恢复时间及并发症(切口感染、骨不连、内固定出现松动)。

1.4 疗效标准

随访 1 年,将临床疗效分为优、良、可、差。优:患者骨折部位对线及对位较满意,且无压痛,患肢功能完全恢复^[14,15]。良:患者骨折部位对线及对位较好,患肢功能基本恢复,但不可进行重体力活动。可:患者骨折部位对位及对线尚可,但有轻微压痛,且患肢功能未恢复正常。差:患肢功能未恢复,且压痛明显。优良率=(优+良)/例数×100%。

1.5 统计学方法

应用 SPSS 23.0,计量资料以($\bar{x} \pm s$)表示,组间比较采用独立样本 t 检验;计数资料用(%)表示,采用卡方检验(χ^2)。 $P<0.05$ 有统计学意义。

2 结果

2.1 两组不同手术指标比较

研究组手术成功 40 例,手术成功率 95.23%。对照组 35 例,手术成功率 83.33%,两组经对比分析有差异($P<0.05$)。

与对照组相比,研究组患者的手术时间、术中出血量、骨折愈合时间、住院时间、术后恢复时间均较短($P<0.05$)。详见下表 2 所示。

表 2 比较两组不同手术指($\bar{x} \pm s$)

Table 2 Comparison of two groups of patients with different surgical finger($\bar{x} \pm s$)

Groups	Operation time (h)	Intraoperative blood	Fracture healing time	Fracture healing time	Postoperative recovery
		loss(mL)	(d)	(d)	time (months)
Control group(n=42)	3.54± 0.26	213.56± 33.64	94.22± 7.88	19.22± 2.37	9.16± 2.49
Research Group(n=42)	2.16± 0.67*	89.83± 16.11*	80.16± 6.94*	12.16± 3.88*	5.85± 1.75*

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

2.2 两组临床疗效比较

($P<0.05$)。详见下表3所示。

研究组的临床疗效为92.86%,显著高于对照组的80.95%

表3 两组临床疗效比较(例,%)

Table 3 Comparison of clinical efficacy between the two groups (n,%)

Groups	Excellent	Good	Can	Difference	Excellent and good rate
Control group(n=42)	9	25	5	3	34(80.95)*
Research Group(n=42)	14	25	3	0	39(92.86)

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

2.3 两组并发症比较

($P<0.05$)。详见下表4所示。

研究组并发症发生率为4.76%,显著低于对照组的21.43%

表4 两组并发症比较(例,%)

Table 4 Comparison of complications between the two groups (n,%)

Groups	Incision infection	Nonunion of bone	Loosening of internal fixation	Incidence rate
Control group(n=42)	2	4	3	9(21.43)*
Research Group(n=42)	1	1	0	2(4.76)

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

3 讨论

四肢骨折是临床较常见的骨折类型,当四肢受到外界暴力或车祸等发生严重的骨折时,患者的正常骨解剖结构被破坏,使得骨折端周围的血管及软组织受到严重的损伤^[16,17],容易出现局部组织坏死及感染等^[18]。因此在四肢骨折后,应及时给予手术治疗,及时复位及固定骨折部位,降低患者并发症的发生和功能损失^[19]。

切开复位钢板治疗是四肢骨折治疗的传统方式,该手术可取得较满意的固定效果^[20,21]。但该手术对患者创伤大。而普通固定钢板钉板间无锁定结构,其固定力仅仅依靠骨面与钢板间的摩擦力,使得钢板下骨缺血坏死严重^[22,23]。当置入钢板时,会进一步破坏骨折处血运,使愈合延迟,甚至不愈合^[24]。随着内固定技术和材料的不断成熟应用,锁定加压板在四肢骨折治疗中得到广泛应用。上世纪末,学者Palmar提出生物力学固定理论,坚持骨折生物学的原则,保护骨折部位的局部血运,进而促进骨折的愈合^[25,26]。此外,锁定加压钢板术在骨折近端或者远端小切口建立皮下组织通道,从皮下、肌肉或者骨膜间隙下置入钢板,可有效减少骨折暴露,保护血运、软组织及骨折端的骨膜^[27,28]。将螺钉锁定在接骨板内,可使得钢板、骨折块与锁定结合,较好的固定骨板,促进骨折愈合^[29]。钢板的交锁结构无需紧贴骨组织表面,进而避免了接骨板与骨面不贴合现象,进而减少对骨膜的损伤,降低骨组织缺血性坏死发生率^[30]。术中所使用的标准流螺钉在骨折固定时可达复位、纠正侧向移位的作用。更为重要的是经皮锁定加压钢板术对粉碎性骨折无需进行骨部位的复杂处理,可预防由于破坏血运导致的骨不连。由于对于年龄较大,且伴有骨折疏松的患者,可有效避免螺钉松动后拔钉情况的发生。对于较严重的粉碎性骨折合并开放性损伤者不适宜采用该方法。采用锁定加压钢板治疗中,螺钉的选择应确保与接骨板间形成一定角度,无需对骨折板进行精密折弯,进而减少骨膜损伤,避免螺钉松动发生。本研究数据调

查显示:研究组患者各项临床手术指标优于对照组,且研究组患者的并发症发生率低于对照组,与白中杰^[31]的研究类似,该学者研究分析分析锁定加压钢板内固定治疗四肢骨折的临床应用,结果显示两组患者的手术中的出血量、骨骼康复时间以及住院时间,锁定加压钢板内固定治疗组明显少于常规手术方法进行治疗组,说明在患者四肢骨折时,采用锁定加压钢板内固定治疗比使用常规手术进行治疗更有利于患者康复,并发症的发生率也较少,有助于提高患者在手术后康复。同时学者段虹昊^[32]的研究也与本研究类似,研究四肢骨折患者采用锁定加压钢板与传统内固定术治疗的效果,结果显示锁定加压钢板治疗的患者的治疗总有效率为88.33%,明显高于传统内固定术治疗的66.67%,锁定加压钢板治疗患者术中的出血量,手术时间以及骨折愈合时间,住院时间均显著优于传统内固定术治疗,锁定加压钢板治疗患者并发症总发生率是1.67%,明显低于传统内固定术治疗的16.67%,说明与传统内固定相比,锁定加压钢板对四肢骨折的治疗效果更佳。本研究的结果进一步确定了锁定加压板治疗四肢骨折对患者的创伤性较小,对患者的并发症的影响小,可以广泛的进行临床应用,但是本研究也存在一定的不足,样本量少,结果单一,后续研究需要进一步深入探究锁定加压板治疗四肢骨折对炎症指标等的影响,探究其治疗机制。

综上所述,锁定加压板治疗四肢骨折对患者的创伤性较小,降低了并发症的发生,可促进患者早日康复,具有临床推广应用的价值。

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