

· 临床研究 ·

克氏针支撑固定与切开复位接骨板固定治疗中老年 Colles 骨折的临床疗效观察

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【摘要】 目的: 比较闭合复位克氏针支撑固定与切开复位接骨板治疗中老年 Colles 骨折的近期临床疗效。方法: 回顾性分析 2018 年 1 月至 2023 年 1 月收治的 Colles 骨折患者 119 例, 其中男 39 例, 女 80 例, 年龄 48~74(60.58±6.71) 岁, 受伤至手术时间 1~13(5.29±2.52) d, 按照手术方式分为克氏针固定组(克氏针组)及接骨板内固定组(接骨板组)。克氏针组 68 例, 男 21 例, 女 47 例; 年龄 49~74(61.15±6.24) 岁; 左侧 41 例, 右侧 27 例。接骨板组 51 例, 男 18 例, 女 33 例; 年龄 48~72(59.78±5.71) 岁; 左侧 31 例, 右侧 20 例。记录并比较手术时间、术中出血量、住院天数、住院费用、术后并发症, 术前术后桡骨远端影像学参数(桡骨高度、尺偏角、掌倾角), 术后 3、12 个月采用 Gartland-Werley 和上肢功能障碍评分量表(disabilities of the arm, shoulder and hand, DASH)评分进行临床疗效评价。结果: 两组患者术后均获随访, 时间 12~19(13.32±2.02) 个月。克氏针组手术时间、术中出血量、住院天数、住院费用少于接骨板组[27.91(13.00, 42.00) min vs 67.52(29.72, 105.32) min, $Z=-8.74, P=0.00$; 3.24(1.08, 5.40) ml vs 21.91(17.38, 26.44) ml, $Z=-9.31, P=0.00$; (8.38±2.63) d vs (11.40±2.78) d, $t=-3.12, P=0.00$; 10 111.29(6 738.98, 13 483.60) 元 vs 15 871.11(11 690.40, 20 051.82) 元, $Z=-5.62, P=0.00$]。克氏针组并发症 2 例, 接骨板组 1 例, 差异无统计学意义($P>0.05$)。术后 3 个月克氏针组桡骨高度小于接骨板组[(11.45±1.69) mm vs (12.11±1.78) mm, $t=-2.061, P=0.04$], 尺偏角及掌倾角两者差异无统计学意义($P>0.05$)。术后 3 个月克氏针组 DASH 评分、Gartland-werley 评分较接骨板组高[(19.10±9.89) 分 vs (13.47±3.51) 分, $t=4.34, P=0.00$; (11.15±3.61) 分 vs (6.41±2.75) 分, $t=8.13, P=0.00$]; 术后 12 个月两组比较差异无统计学意义($P>0.05$)。结论: 与接骨板内固定相比, 闭合复位克氏针支撑固定虽然对桡骨高度的恢复稍差, 但术后 12 个月两组患肢功能评分无明显差异, 但手术时间短, 术中出血量少, 住院时间短, 花费少。

【关键词】 骨质疏松; Colles 骨折; 克氏针; 微创固定; 接骨板

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Clinical efficacy of open reduction and internal fixation with plates versus minimally invasive Kirschner wire fixation for osteoporotic Colles' fractures

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ABSTRACT Objective To compare the short-term clinical efficacy and safety of closed reduction with Kirschner wire fixation versus open reduction with plate fixation for treating osteoporotic Colles' fractures in middle-aged and elderly patients. **Methods** Between January 2018 and January 2023, 119 patients with Colles fractures were retrospectively analyzed, including 39 males and 80 females, aged from 48 to 74 years old with an average of (60.58±6.71) years old. The time from injury to operation ranged 1 to 13 days with an average of (5.29±2.52) days. According to the surgical method, they were divided into Kirschner wire fixation group (Kirschner wire group) and plate internal fixation group (plate group). In Kirschner wire group,

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there were a total of 68 patients, comprising 21 males and 47 females. The average age was (61.15±6.24) years old, ranged from 49 to 74 years old. Among them, 41 cases involved the left side while 27 cases involved the right side. In the plate group, there were a total of 51 patients, including 18 males and 33 females. The average age was (59.78±5.71) years old ranged from 48 to 72 years old. Among them, there were 31 cases on the left side and 20 cases on the right side. The following parameters were recorded before and after the operation: operation time, intraoperative blood loss, hospitalization days, hospitalization expenses, postoperative complications, and radiographic parameters of distal radius (distal radius height, ulnar deviation angle, palmar tilt angle). The clinical efficacy was evaluated at 3 and 12 months after the operation using Gartland–Werley and disabilities of the arm shoulder and hand (DASH) scores. **Results** The patients in both groups were followed up for a duration from 12 to 19 months with an average of (13.32±2.02) months. The Kirschner wire group exhibited significantly shorter operation time compared to the plate group 27.91 (13.00, 42.00) min vs 67.52 (29.72, 105.32) min, $Z=-8.74, P=0.00$. Intraoperative blood loss was also significantly lower in the Kirschner wire group than in the plate group 3.24 (1.08, 5.40) ml vs 21.91 (17.38, 26.44) ml, $Z=-9.31, P=0.00$. Furthermore, patients in the Kirschner wire group had a shorter length of hospital stay compared to those in the plate group (8.38±2.63) days vs (11.40±2.78) days, $t=-3.12, P=0.00$. Additionally, hospitalization cost was significantly lower in the Kirschner wire group than in the plate group 10 111.29 (6 738.98, 13 483.60) yuan vs 15 871.11 (11 690.40, 20 051.82) yuan, $Z=-5.62, P=0.00$. The incidence of complications was 2 cases in the Kirschner wire group and 1 case in the plate group, with no statistically significant difference ($P>0.05$). At 3 months postoperative, the radial height of the Kirschner wire group was found to be significantly smaller than that of the plate group, with measurements of (11.45±1.69) mm and (12.11±1.78) mm respectively ($t=-2.06, P=0.04$). However, there were no statistically significant differences observed in ulnar deviation angle and palmar tilt angle between the two groups ($P>0.05$). The DASH score and Gartland–Werley score in the Kirschner group were significantly higher than those in the plate group at 3 months post-operation (19.10±9.89) vs (13.47±3.51), $t=4.34, P=0.00$; (11.15±3.61) vs (6.41±2.75), $t=8.13, P=0.00$). However, there was no significant difference between the two groups at 12 months post-operation ($P>0.05$). **Conclusion** Compared to plate internal fixation, closed reduction with Kirschner wire support fixation yields a slightly inferior recovery of radial height; however, there is no significant disparity in the functional score of the affected limb at 12 months post-operation. Nonetheless, this technique offers advantages such as shorter operation time, reduced intraoperative blood loss, decreased hospitalization duration, and lower cost.

KEYWORDS Osteoporosis; Colles' fractures; Kirschner wire; Minimally invasive fixation; Plate fixation

桡骨远端骨折是指发生在桡骨远端关节面 3 cm 以内的骨折,多发于儿童和年长患者,呈典型双峰分布^[1]。根据其受伤机制可分为 Colles 骨折、Smith 骨折、Barton 骨折等,其中以 Colles 骨折最为常见。中老年人 Colles 骨折占有骨质疏松性骨折的 18%^[2-3]。手术方案包括接骨板、克氏针内固定、外固定支架固定等,各有利弊^[4]。微创克氏针内固定是最常用的手术方案之一,具有损伤小、花费少、效果可靠等优点^[5],但对于中老年 Colles 骨折由于断端骨强度低,局部多粉碎,常规克氏针固定方案的固定可靠性下降,容易引起复位丢失,尤其桡骨短缩,最为常见^[6]。近年来采用克氏针经尺骨微创支撑固定治疗此类骨折,取得较好疗效^[7],为进一步明确该方案治疗效果,本研究回顾性分析 2018 年 1 月至 2023 年 1 月行微创克氏针支撑固定的骨质疏松性 Colles 骨折患者的临床疗效,并与同期行切开复位接骨板内固定患者进行对比,报告如下。

1 资料与方法

1.1 病例选择

纳入标准:(1)受伤至手术时间≤14 d。(2)单纯 Colles 骨折,AO/OTA^[8]分型为 A 型及 C 型,无合并损伤。(3)年龄≥45 岁。(4)骨密度 T 值≤-2.5,或简

单暴力引起骨折且 $-2.5<T$ 值 <-1.0 。(5)术后遵医嘱定期随访,且随访时间>12 个月。排除标准:开放性骨折;病理性骨折;合并糖尿病、周围血管神经病变等影响治疗效果的内科疾病;病历资料不完整者。

1.2 一般资料

回顾性分析 2018 年 1 月至 2023 年 1 月符合纳入标准患者 119 例,其中男 39 例,女 80 例;年龄 48~74(60.58±6.71)岁;左侧 72 例,右侧 47 例;跌伤 100 例,骑自行车摔伤 16 例,坠落伤 3 例。骨密度 T 值 $-1.1\sim-2.9$ (-1.90 ± 0.49);受伤至手术时间 1~13(5.29±2.52) d;AO/OTA 分型,A 型 65 例,C 型 54 例。按照手术方式分为克氏针微创支撑固定组(克氏针组)及切开复位接骨板内固定组(接骨板组)。克氏针组患者 68 例,男 21 例,女 47 例;年龄 49~74(61.15±6.24)岁;左侧 41 例,右侧 27 例。接骨板组患者 51 例,男 18 例,女 33 例;年龄 48~72(59.78±5.71)岁;左侧 31 例,右侧 20 例。两组患者术前一般资料比较,差异无统计学意义($P>0.05$),有可比性,见表 1。本研究获医院伦理委员会批准(编号:LL-2021-1201)。

1.3 治疗方法

1.3.1 术前处理 患者入院后,常规行脊柱及髋关

表 1 两组 Colles 骨折患者术前一般资料比较

Tab.1 Comparison of preoperative general information of patients between two groups with Colles' fractures

组别	例数	性别/例		年龄($\bar{x}\pm s$)/ 岁	侧别/例		致伤原因/例			受伤至手术 时间($\bar{x}\pm s$)/d	骨密度 T 值 ($\bar{x}\pm s$)	AO 分型/例	
		男	女		左侧	右侧	跌伤	骑自行车摔伤	坠落伤			A 型	C 型
克氏针组	68	21	47	61.15±6.24	41	27	57	9	2	4.7±1.9	-1.93±0.47	38	30
接骨板组	51	18	33	59.78±5.71	31	20	43	7	1	6.1±3.0	-1.87±0.52	27	24
检验值		$\chi^2=1.01$		$t=1.24$	$\chi^2=0.00$		$\chi^2=0.12$			$t=1.63$	$t=-0.29$	$\chi^2=0.102$	
P 值		0.76		0.22	1.00		0.94			0.11	0.77	0.75	

节骨密度检查,完善术前准备。患者取仰卧位,采用臂丛麻醉或全麻,常规消毒铺巾。

1.3.2 克氏针组 采用牵屈手法复位骨折断端,以 2~3 枚直径 2 mm 克氏针自桡骨茎突斜行 45° 固定骨折断端,另以 2 枚直径 2 mm 克氏针自尺骨茎突近端斜向桡骨茎突近端,紧贴桡骨远端关节面下横贯尺桡骨穿入固定,透视骨折复位满意、克氏针位置良好后,折弯针尾,剪短,留于皮外,无菌敷料包扎(图 1)。术后给予前臂石膏夹外固定。

1.3.3 接骨板组 采用改良亨利入路切口,逐层切开皮肤、皮下和筋膜层,自桡侧腕屈肌腱的桡侧方进入,显露旋前方肌。于桡骨附着处纵行切开,向尺侧牵拉后,充分暴露骨折端。直视下复位骨折断端后,以锁定接骨板固定,透视见断端位置良好后,冲洗刀口,依次缝合。术后给予患肢石膏托保护。

1.3.4 术后处理 两组患者麻醉消退后即鼓励患者行患肢掌指、指间,以及肩、肘关节功能锻炼。接骨板组术后 7 d 去除石膏,开始腕关节功能锻炼;克氏针组术后 3~6 周去除外固定石膏及固定下尺桡克氏针,行腕关节功能锻炼。术后 1 d 及 3、6、12 周复查 X 线片,克氏针组 6 周内去除所有内固定克氏针。接骨板组中,骨折愈合后,是否移除内固定取决于是否存在接骨板引起不适及患者意愿。

1.4 观察项目与方法

记录两组手术时间、术中出血量、住院天数、住院费用、术后并发症,在 PACS 阅片系统中,根据术

前、术后 3 个月 X 线片测量患者桡骨高度、尺偏角、掌倾角。术后 3、12 个月,根据 GARTLAND 等^[9]制定的 Gartland-Werley 评分方法和肩臂手功能障碍评分量表(disability of arm shoulder and hand, DASH)^[10]评价临床疗效。Gartland-Werley 评分包括残余畸形、主观评价、客观评价、并发症,总分 51 分,优 0~2 分,良 3~8 分,可 9~20 分,差 ≥ 21 分。DASH 评分包括 A、B 两部分,A 部分主要评估肢体活动能力,B 部分主要评估自觉症状的严重程度,DASH = [A、B 两部分分值总和 - 30(最低值)] / 1.20,分值越低患肢功能越好,DASH = 0,表示上肢功能完全正常,DASH = 100 时表示上肢功能极度受限。

1.5 统计学处理

采用 SPSS 26.0 软件进行统计学分析。年龄、受伤至手术时间、骨密度 T 值等定量资料首先使用 Shapiro-Wilk 检验判断数据是否为正态分布,正态分布数据采用均数±标准差($\bar{x}\pm s$)表示,且方差齐性,两组间比较,采用成组设计定量资料 t 检验;非正态分布资料以中位数(四分位数) $M(P25, P75)$ 表示,采用 Wilcoxon 秩和检验。例数、性别、骨折侧别、致伤原因、AO 分型等定性资料采用 χ^2 检验。以 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 两组术后一般资料比较

两组术后均获随访,时间 12~19(13.32±2.02)个月。克氏针组在手术时间、术中出血量、住院天数、住院费用等方面优于接骨板组 ($P < 0.05$)。克氏针组术后出现并发症 2 例,均为针尾刺激症状,通过早期拔除克氏针等方法治愈;接骨板组出现并发症 1 例,为正中神经麻痹症状,通过应用神经营养药物等方法治愈。两组并发症比较,差异无统计学意义 ($P > 0.05$)。见表 2。

2.2 功能疗效比较

术后 3 个月,克氏针组 DASH 评分(19.10±9.89)分,高于接骨板



图 1 经尺骨微创克氏针支撑固定术中操作及术后外观 1a. 术中操作 1b. 术后外观

Fig.1 Intraoperative and postoperative appearance of minimally invasive Kirschner wire fixation via the ulna 1a. Intraoperative operation 1b. Postoperative appearance

组(13.47±3.51)分($t=4.34, P=0.00$); 术后 12 个月克氏针组(5.25±3.37)分, 接骨板组(4.98±1.69)分, 两组比较差异无统计学意义($t=0.52, P=0.35$)。

术后 3 个月, 克氏针组 Gartland-Werley 评分(11.15±3.61)分, 高于接骨板组(6.41±2.75)分($t=8.13, P<0.05$); 术后 12 个月, 克氏针组(2.98±1.74)分, 接骨板组(2.50±1.26)分, 两组比较差异无统计学意义($P>0.05$)。见表 3。

2.3 影像学参数比较

两组术前桡骨高度、尺偏角、掌倾角比较差异无统计学意义($P>0.05$); 术后 3 个月克氏针组桡骨高度小于接骨板组($P<0.05$), 两组尺偏角及掌倾角差异无统计学意义, 见表 4。典型病例图片见图 2、图 3。

3 讨论

3.1 中老年 Colles 骨折临床特点及治疗方案选择

中老年 Colles 骨折的发生, 主要原因是绝经或

衰老导致肢体骨质疏松, 又遭受轻微暴力引起, 多发生于骨质疏松性髌部及脊柱骨折之前, 能较早反应全身骨代谢异常。早期发现、积极处理, 可减少后期严重骨质疏松性骨折的发生^[11-16]。采用手术治疗还是保守治疗, 一直存在较大争议^[4, 17-20], 主要原因在于中老年患者功能需求差异大, 部分患者功能需求低, 对腕部畸形耐受性好, 简单固定即可达到较为满意的治疗效果; 而部分患者功能需求高, 希望能达到最佳的腕关节功能^[20-24], 不能一概而论。掌侧接骨板内固定被认为是桡骨远端骨折的首选手术治疗方案^[25-26], 具有复位效果好、固定可靠、早期腕关节功能恢复好等优点^[27], 但损伤大, 花费高, 严重并发症发生率高, 为其不足^[25, 28]。克氏针微创内固定也是目前常用治疗 Colles 骨折的方法之一^[26, 29], 常用穿针方法包括经桡骨茎突进针固定、克氏针横贯尺桡骨固定、克氏针经断端插入固定等多种^[30], 与接骨板内固定相比, 其最大优势在于微创、花费低^[5, 31], 被称为

表 2 两组 Colles 骨折患者术后一般资料比较

Tab.2 Comparison of general information between two groups of patients with Colles' fractures after operation

组别	例数	手术时间 $M(P25, P75)/min$	术中出血量 $M(P25, P75)/ml$	住院费用 $M(P25, P75)/元$	住院天数 $(\bar{x} \pm s)/d$	术后并发症/例
克氏针组	68	27.91(13.00, 42.00)	3.24(1.08, 5.40)	10 111.29(6 738.98, 13 483.60)	8.38±2.63	2
接骨板组	51	67.52(29.72, 105.32)	21.91(17.38, 26.44)	15 871.11(11 690.40, 20 051.82)	11.40±2.78	1
检验值		$Z=-8.74$	$Z=-9.31$	$Z=-5.62$	$t=-3.12$	$\chi^2=0.21$
P 值		0.00	0.00	0.00	0.00	0.68

表 3 两组 Colles 骨折患者术后不同时间点 Gartland-Werley 各项评分比较

Tab.3 Comparison of postoperative Gartland-Werley scores between two groups of patients with Colles' fractures at different times

组别	例数	残余畸形 $(\bar{x} \pm s)/分$		主观评价 $(\bar{x} \pm s)/分$		客观评价 $(\bar{x} \pm s)/分$		并发症 $(\bar{x} \pm s)/分$		总分 $(\bar{x} \pm s)/分$	
		术后 3 个月	术后 12 个月	术后 3 个月	术后 12 个月	术后 3 个月	术后 12 个月	术后 3 个月	术后 12 个月	术后 3 个月	术后 12 个月
		克氏针组	68	0.43±0.29	0.43±0.29	4.15±1.54	0.80±0.78	4.70±2.97	1.51±1.42	1.87±1.32	0.24±0.21
接骨板组	51	0.39±0.28	0.39±0.28	2.91±1.98	0.59±0.53	2.50±1.81	1.29±1.09	0.61±0.56	0.23±0.21	6.41±2.75	2.50±1.26
t 值		0.76	0.76	3.71	1.75	5.00	0.96	7.07	0.26	8.13	1.95
P 值		0.45	0.45	0.00	0.08	0.00	0.34	0.00	0.80	0.00	0.06

表 4 两组 Colles 骨折患者手术前后桡骨远端影像学参数比较

Tab.4 Comparison of preoperative and postoperative imaging parameters of the distal radius between tow groups of patients with Colles' fractures

组别	例数	桡骨高度 $(\bar{x} \pm s)/mm$		尺偏角 $(\bar{x} \pm s)/^\circ$		掌倾角 $(\bar{x} \pm s)/^\circ$	
		术前	术后 3 个月	术前	术后 3 个月	术前	术后 3 个月
		克氏针组	68	5.81±1.72	11.45±1.69	12.59±2.69	22.37±1.75
接骨板组	51	5.79±1.83	12.11±1.78	12.76±3.14	22.98±1.94	-13.94±3.18	12.89±1.84
t 值		0.061	-2.061	-0.317	-1.796	-0.615	-1.511
P 值		0.951	0.042	0.751	0.075	0.540	0.134

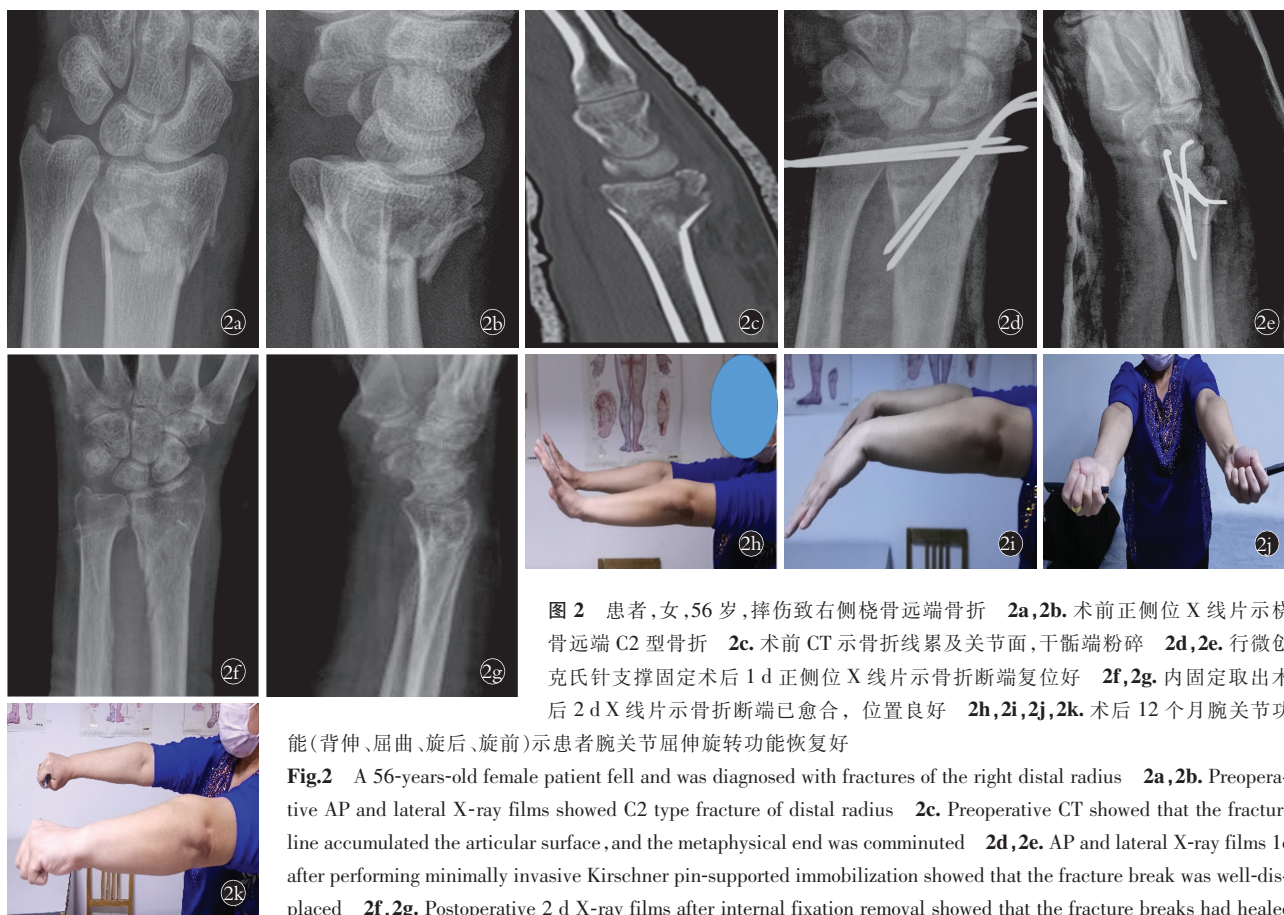


图 2 患者,女,56 岁,摔伤致右侧桡骨远端骨折 2a,2b. 术前正侧位 X 线片示桡骨远端 C2 型骨折 2c. 术前 CT 示骨折线累及关节面,干骺端粉碎 2d,2e. 行微创克氏针支撑固定术后 1 d 正侧位 X 线片示骨折断端复位好 2f,2g. 内固定取出术后 2 d X 线片示骨折断端已愈合,位置良好 2h,2i,2j,2k. 术后 12 个月腕关节功能(背伸、屈曲、旋后、旋前)示患者腕关节屈伸旋转功能恢复好

Fig.2 A 56-years-old female patient fell and was diagnosed with fractures of the right distal radius 2a,2b. Preoperative AP and lateral X-ray films showed C2 type fracture of distal radius 2c. Preoperative CT showed that the fracture line accumulated the articular surface, and the metaphyseal end was comminuted 2d,2e. AP and lateral X-ray films 1d after performing minimally invasive Kirschner pin-supported immobilization showed that the fracture break was well-displaced 2f,2g. Postoperative 2 d X-ray films after internal fixation removal showed that the fracture breaks had healed and were in good position 2h,2i,2j,2k. Wrist function (dorsiflexion, flexion, posterior rotation, anterior rotation) at 12 months postoperatively showed that the patient recovered well from flexion-extension-rotation function of the wrist joint

最具有效性价比的治疗方案^[32]。本研究也表明,克氏针组在手术时间、术中出血量、住院费用、住院天数等方面均优于接骨板组($P<0.05$)。其主要不足在于因钢针尾部外露,可引起针尾刺激、感染等并发症。本研究克氏针组也出现类似并发症,但通过积极处理,对整体治疗效果无明显不良影响。此外,由于固定强度较接骨板弱,术后需辅助石膏固定,不能术后即刻功能锻炼。对于骨质疏松性 Colles 骨折,由于患肢生物力学及骨微细结构的变化,断端多存在嵌插及粉碎,内在稳定性差,常规克氏针固定再移位率高,畸形愈合风险大^[6,33],尤其表现在对桡骨长度的维持^[6],考虑到尺骨远端及桡骨远端关节面下均为皮质骨,骨质坚硬,受骨质疏松影响较小,笔者将经桡骨茎突进针固定与横贯尺桡骨固定两种常用的固定方案相结合并进行改进,提出克氏针经尺骨微创固定的治疗方案,取得较好的治疗效果。本研究克氏针组术后掌倾角、尺偏角与接骨板组相比,差异无统计学意义,桡骨高度虽较接骨板组低,但与术前相比,差异有统计学意义,笔者认为已达到比较满意的复位固定效果。该治疗方案尤其适用于原始移位较小、干骺端非严重粉碎,或干骺端粉碎严重但年龄相对

较大、患肢功能要求略低的中老年 Colles 骨折患者。对 Barton 骨折并不适用。

3.2 克氏针支撑固定的技术优势

克氏针支撑固定主要技术优势在于:(1)利用完整而坚强的尺骨远端作为支撑柱,将 2 枚直径 2 mm 克氏针通过尺骨远端穿入骨质坚硬的桡骨远端关节面皮质下进行支撑固定,增加克氏针固定效果;同时 2 枚横行克氏针与 2 枚斜行克氏针以及完整的尺骨远端、骨筋膜构成一个类似三角形的稳定结构,大大减少后期再次的移位。(2)研究表明,相当部分桡骨远端骨折合并三角纤维软骨复合体损伤,部分文献报道其发生率甚至达 41.1%^[34],由于伤后患肢肿胀疼痛,术前查体往往难以发现此类损伤,易被忽略,而经尺骨微创支撑固定克氏针术中一并固定下尺桡关节,有利于合并的三角纤维软骨复合体损伤的修复,减少后期因此造成的旋转功能障碍。(3)微创内固定手术保留了断端的血运,有利于骨折的早期愈合。骨折的早期愈合,一方面可较早去除内固定克氏针及外固定石膏,有利于腕关节功能恢复;另一方面,增加了骨折断端内在的稳定性,减少再次移位的发生。

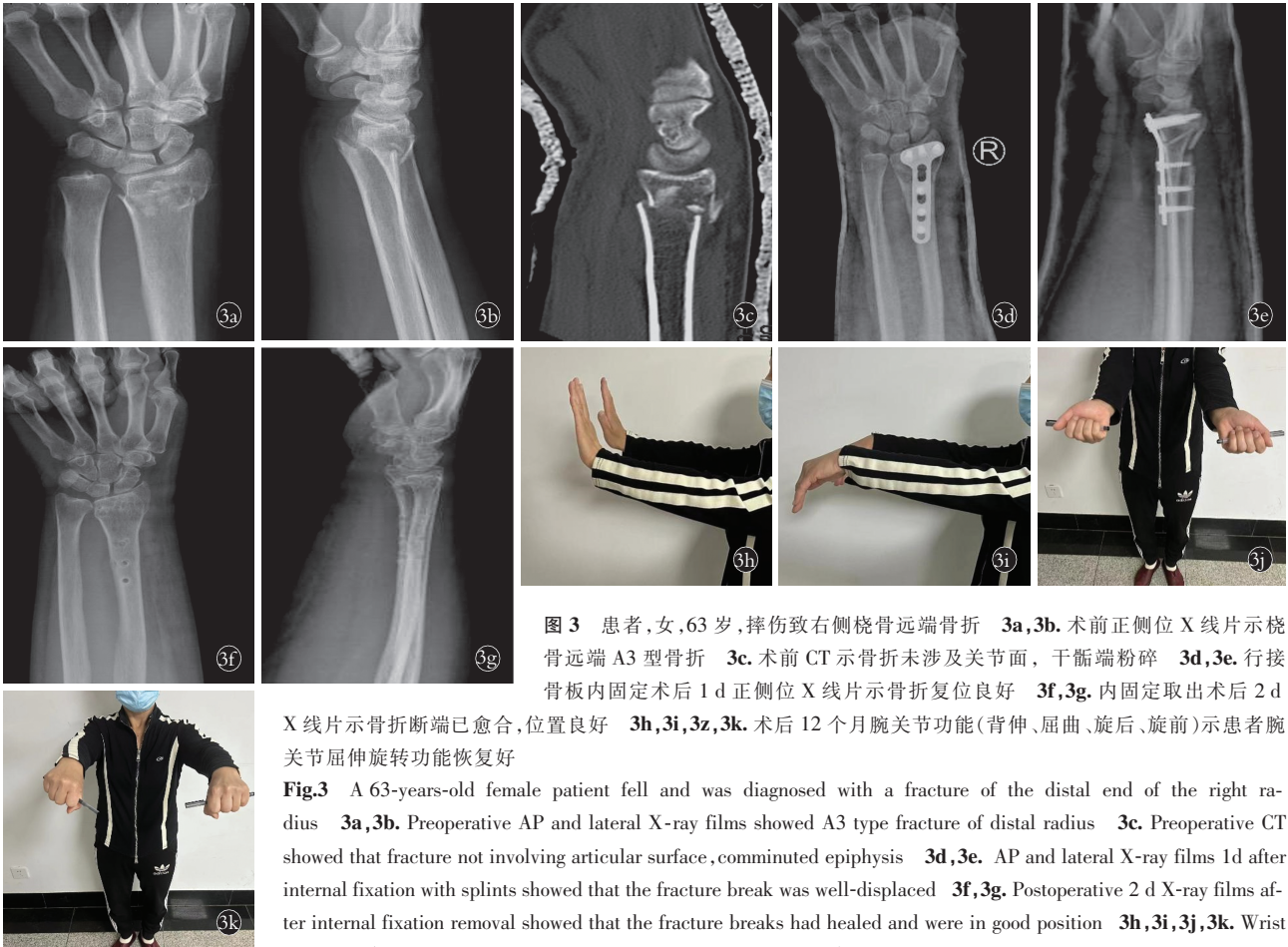


图 3 患者,女,63 岁,摔伤致右侧桡骨远端骨折 3a,3b. 术前正侧位 X 线片示桡骨远端 A3 型骨折 3c. 术前 CT 示骨折未涉及关节面,干骺端粉碎 3d,3e. 行接骨板内固定术后 1 d 正侧位 X 线片示骨折复位良好 3f,3g. 内固定取出术后 2 d X 线片示骨折断端已愈合,位置良好 3h,3i,3j,3k. 术后 12 个月腕关节功能(背伸、屈曲、旋后、旋前)示患者腕关节屈伸旋转功能恢复好

Fig.3 A 63-years-old female patient fell and was diagnosed with a fracture of the distal end of the right radius 3a,3b. Preoperative AP and lateral X-ray films showed A3 type fracture of distal radius 3c. Preoperative CT showed that fracture not involving articular surface, comminuted epiphysis 3d,3e. AP and lateral X-ray films 1d after internal fixation with splints showed that the fracture break was well-displaced 3f,3g. Postoperative 2 d X-ray films after internal fixation removal showed that the fracture breaks had healed and were in good position 3h,3i,3j,3k. Wrist function (dorsiflexion, flexion, posterior rotation, anterior rotation) at 12 months postoperatively showed that the patient recovered well from flexion-extension-rotation function of the wrist joint

3.3 注意事项

(1)术前严格掌握手术适应证,同时需充分体现个体化治疗思想,充分交代各种治疗方案利弊,重视患者知情选择权。(2)经尺骨支撑固定的 2 枚克氏针应尽量紧贴桡骨远端关节面下穿入,在冠状面平行,在额状面尽量向桡骨掌背侧分散,以达到最佳固定效果。(3)克氏针固定下尺桡关节后,对前臂旋转造成不良影响,一般于术后 3~4 周去除外固定石膏,拔除支撑固定克氏针,指导患者腕部功能锻炼,对于部分原始损伤严重、骨质疏松明显、原始移位明显的患者,可考虑延长至 6 周,但最长不应超过 6 周,以免影响后期功能恢复。本研究克氏针组患者内固定克氏针均于术后 6 周内拔除,虽术后 3 个月患肢功能评分低于接骨板内固定组,但术后 12 个月两者差异无统计学意义,均获得良好治疗效果。(4)注意对患者进行抗骨质疏松、预防跌倒及二次骨折宣教。

综上,对于中老年 Colles 骨折患者,克氏针支撑固定虽然不能早期功能锻炼,早期关节功能不理想,但具有手术时间短、术中出血量少、费用低、住院时间短,复位较理想,中期关节功能好等优点,建议在

充分告知患者各种治疗方案利弊的基础上,采用个性化治疗。

利益冲突:不存在利益冲突。

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