

# Orthofix 支架治疗骨折术后并发症

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**摘要** 我院自 1993 年以来,应用 Orthofix 支架治疗四肢骨折 126 例。术后经 1~2 年随访,124 例骨性愈合。本文总结了该支架固定术后所出现的疼痛、针道出血与渗液、损伤神经、肢体远端肿胀、骨折再移位和再骨折、延迟愈合、骨折不愈合、针道炎症等并发症的原因,预防和治疗。

**关键词** 骨折 Orthofix 支架 并发症

我院自 1993 年以来,应用 Orthofix 支架治疗各种原因,不同部位的骨折 126 例。该支架具有适用各种原因的四肢骨折、操作简便、治愈率高,并可使患者早日离床活动等优点。<sup>[1~3]</sup>然而,该方法术后出现了不同程度的并发症。现就术后并发症的原因、防治进行总结

## 临床资料

本组 126 例中,男 93 例,女 33 例;年龄 7~86 岁。126 例骨折分布于四肢各部位,以股骨干、股骨颈、股骨粗隆间骨折最多见。126 例骨折中,陈旧性骨折 19 例,粉碎性骨折 30 例,开放性骨折 7 例,感染 2 例,多发性骨折 5 例,畸形愈合 3 例,骨不连 4 例,火器伤 2 例,骨缺损 1 例,病理性骨折 4 例,钢板内固定术后钢板折断 3 例,其余为一般新鲜骨折。

本组病例,确诊后,在 X 线透视监视下行闭合手法复位 102 例,切开复位 24 例。复位后,均用 Orthofix 支架固定。术后 2~3 天开始锻炼,下肢骨折术后 5~8 天扶拐下地不负重活动(粉碎性骨折术后 2~3 周扶拐下地不负重活动)。

术后经 1~2 年随访,拍片复查,126 例中 124 例骨性愈合,其中 98 例达到解剖复位,26 例功能复位,功能均满意,治愈率 98.40%。2 例骨折不愈合。124 例骨折愈合时间为 2~6 个月,,平均 4.5 月。

## 术后并发症

1. 疼痛:一般病人术后 3 天内均有不同程

度的疼痛,但可忍受,不需特殊处理,自行缓解。而股骨颈,股骨干骨折的部分病人,在活动疼痛较重。这是由于固定的 4~6 根针不在同一平面平行进针,使活动时一组肌肉和髂胫束在几根针上扭曲,摩擦致痛。因此,手术时尽量在同一平面平行进针,以保证肌肉在原正常行径收缩。

2. 针道出血与渗液:针道出血 72 例(202 根针),以股骨上段骨折为多见,发生于术后 1~2 天内。由于针固定在血运丰富的松质骨;近骨折端进针或切开复位后,断端出血沿针道流出;进针处皮肤切口过大;针损伤软组织小血管。渗液见于大多数病例。继发于出血后期;加压固定针压迫周围软组织致其坏死;转速过高的电钻钻孔时未用套管而损伤软组织。因此,术后在针进皮肤处缝合一针,术后及时换药,保持针孔清洁;松质骨处固定宜用松质骨专用针;用钻钻孔时,必须用套管,且转速不宜过高,以免造成局部软组织损伤;针距要适宜,两针之间勿有张力,以免使软组织缺血,坏死;术后尽量用 1~2 次止血药物。

3. 支架与针脱落:本组出现 3 例。1 例支架脱落,见于股骨干骨折。由于针进入体内过长,体外留针太短,针粗细不匀,支架仅夹住很短一段针且有两根针未夹住,致术后第 3 天患者活动时支架脱落。另 2 例支架与针同时脱落。1 例是用骨圆针固定,并且钻孔比骨圆针粗,术后第 2 天搬动时脱落。另 1 例,精神障碍,自己强行拔出。3 例均重新复位固定,2 例

愈合, 1 例反复 3 次而延迟愈合。术前要选择不适当的固定针; 进针以过对侧骨皮质 2~3mm 为佳; 对精神障碍患者, 要特殊护理。

4. 固定针松动: 有 12 例松动。由于: (1) 固定时间过长, 针金属电解作用; (2) 患者活动方式不当, 致使支架反复异常活动; (3) 骨折愈合后, 支架的固定支撑作用消失, 也可使针松动。因此, 要正确指导患者功能锻炼, 定期复查, 一俟临床愈合, 应尽早去除支架。

5. 损伤神经: 见于 1 例胫腓骨骨折, 外侧支架固定。由于选择进针位置不当, 损伤腓总神经。发现后即拔出损伤神经的针, 另选位置固定, 同时应用恢复神经的药物。1 个半月后, 神经功能逐渐恢复。手术时, 进针应避免血管神经行走位置。若术后 2 个月后未见神经功能恢复, 应行神经探查术。

6. 肢体远端肿胀: 大部分病人术后及下肢骨折患者下地活动时, 由于骨折创伤和手术损伤以及卧床, 致肢体末端静脉回流不良而出现肢体远端肿胀。术后应抬高患肢, 动静结合, 早期功能锻炼。

7. 骨折再移位和再骨折: 术后有 16 例出现骨折再移位。由于 (1) 用强度不够且有弹性的骨圆针固定, 固定不牢固; (2) 进针距折端过远使力矩过长, 骨折易移位; (3) 因该支架为单侧加压, 对长管状骨加压固定时, 本身有再移位倾向。经手法复位, 调整支架, 更换固定针后骨折愈合。1 例胫骨中段粉碎性骨折患者, 在拍片操作中远侧固定针处骨折, 加用石膏托固定愈合。应选用固定专用螺纹针, 勿使用其他代用针; 支架选择时, 应考虑骨折部位、类型和患者年龄。术后搬动肢体时, 勿粗暴, 以防再骨折。

8. 延迟愈合: 本组病例均比手法复位石膏或小夹板固定治疗的愈合慢。有些学者认为, 这可能与该支架在固定期间, 对骨折愈合过程中所需的应力有遮挡作用有关<sup>[1,4]</sup>。我们与这些学

者观点相同。应定期调节支架加压, 以抵消遮挡作用, 增加愈合所需生物应力。

9. 骨折不愈合: 见于 2 例大腿火器伤造成的股骨干缺损, 其软组织内有大量金属异物, 软组织损伤坏死过多, 术后伤口一直未愈合, 有液化坏死物流出, 骨折不愈合。应对火器伤进行特殊处理, 因其同时有机械伤和烧伤, 既有骨缺损, 又为开放性损伤, 并有大量金属异物。应彻底清创, 尽可能取除金属异物, 行带血管骨移植, 修补骨缺损, 预防感染, 增加局部血运。

10. 针道炎症: 文献报道 3~7%<sup>[3,5]</sup>。本组有 31 例 (42 根针) 针道口出现红肿疼痛和分泌物增多。我们曾对 21 例进行细菌培养, 其阳性者仅有 3 例 4 个针道。因此, 针道炎症可分为针道感染和物理性炎症。原因: (1) 进针处皮肤未用刀切开或切开不充分, 用钻强行在皮肤钻孔, 造成皮肤软组织压榨, 缺血, 坏死; (2) 针松动, 固定不确切, 引起针皮或针骨交界处不稳, 引起针周组织周期性应力刺激, 产生炎症; (3) 针道渗液引流不畅, 换药不及时; (4) 针道污染; (5) 手术中未按无菌技术操作。一旦发生炎症征象, 应停止锻炼, 抬高患肢, 及时清除分泌物, 必要时可切开引流。细菌感染应全身及局部应用抗生素。

#### 参考文献

1. 李起鸿, 主编. 骨外固定原理与临床应用. 四川: 四川科学技术出版社, 1992: 1~64.
2. 刘安庆, 陈君长, 王坤正等. 应用单侧多功能外固定支架治疗四肢骨折. 西安医科大学学报 1995; 16 (4): 445.
3. 兰斌尚, 王坤正, 刘安庆, 等. Orthofix 多功能架治疗四肢长管状骨骨折. 中国骨伤 1996; 9 (3): 14.
4. Behrens F. General theory and principles of external fixation. Clin Orthop 1989; 241 (4): 15.
5. 李起鸿, 主编. 骨外固定器及其临床应用. 北京: 人民军医出版社, 1988: 169~211.

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## Abstract of Original Articles

**The Evaluation of Operation and Conservative Therapy on the Transient Contusion of Cervical Spinal Cord** *Fu Qin, Du Shixin, Zhang Yunqi, et al. The Second Clinical Institute, China Medical University, Shenyang (110003)*

The operation indication of the transient contusion of the cervical spinal cord has still not been very clear. Nine cases in total were studied. Among them, there were 3 cases treated with operation and the others with conservative therapy. The observation with Frankle evaluation had been followed up for 6–24 months. The results indicated that the spinal cord function of 3 cases in the conservative therapy group had been recovered basically to normal, and the function of hand in the operation group improved better than that in the former. It was suggested that the patients suffered from transient contusion, due to the injury of cervical spinal cord, should be treated, at first, with non-operative methods for 1–2 weeks; if the nervous function was not improved very well in this period, the operation should be applied as soon as possible, in order to recover the function of hand.

**Key words** Injury of spinal cord    Cervical vertebra MRI

(Original article on page 3)

**Complications following Treatment of Fracture with Orthofix Frame** *Zhang Kaifang, Wang Kunzheng, Liu Anqing, et al. The Second Teaching Hospital, Xian Medical University (710004)*

126 cases of limbs' fracture had been treated with Orthofix Frame since 1993, and bony union have been achieved in 124 cases. The complications induced by this kind of frame fixation are summarized as pain, bleeding and effusion from pin tract, injury of nerve, swelling at the distal part of limbs, retranslocation and refracture, delayed union, nonunion, and infection at pin tract, etc. The cause, prevention and treatment of such complications are discussed.

**Key words** Orthofix frame fixation    Complication Prevention and treatment

(Original article on page 6)

**Experimental Research on the Establishment of Osteoporosis Model in Pregeriatric Rat with Glucocorticoid** *Chen Dongyu, Shen Peizhi, Shi Yinyu, et al. Hospital of Shanghai Bao-Steel Metal Constructive Cooperation (200941)*

Owing to the effect of glucocorticoid, promoting bone substance absorption, the male pregeriatric SD rats had been injected intramuscularly with dexamethasone in different dosages (0.05, 0.1, 0.4mg/100g BW), and thereafter, the changes in bone density of whole body, volume of bone trabeculae, and intensity of anticurvation were observed. The experimental results demonstrated that all of these parameters are decreased significantly in middle dosage group ( $P < 0.05$ ); those parameters in low dosage group tend to decrease but without statistical significance ( $P > 0.05$ ). It is considered that the osteoporosis model in pregeriatric rats could be established by intramuscular injection of dexamethasone, in the dose of 0.25mg/100gBW, twice weekly, for 6 weeks.

**Key words** Glucocorticoid    Osteoporosis Pathologic model

(Original article on page 8)

**The Therapeutic Effect of Spinal Cord No. II on the Injury of Spinal Cord in Rats – Electrophysiological Study** *Liu Weidong, Han Fengyue. Institute of Orthopaedics and Traumatology, China Academy of TCM, Beijing (100700)*

The models of right hemi-transection of 12th thoracic spinal cord of 18 Wistar rats had been made and randomly divided into three groups. They were treated with Chinese herbs "Spinal Cord No. II", hydrocortisone, or normal saline respectively. The behavior changes of these experimental rats were observed daily, and the evoked electropotentials of the motion and the sensation were measured with electrophysiological methods for the evaluation of the function recovery after four weeks. It was discovered that there was good therapeutic effect of Spinal Cord NO. II, which was superior to that of hydrocorticoid in some extent.

**Key words** Injury of spinal cord    Evoked electric