# 腱皮缝合术治疗锤状指畸形 54 例

贵阳中医学院一院（550001） 李良栋 方明智 沈 骏

**摘要** 本文采用腱皮缝合术加小夹板外固定治疗新鲜性和陈旧性锤状指畸形 54 例，疗效满意。文中从解剖、力学的特点分析其手术方式。此术式对于中、老年患者可作为首选。

**关键词** 锤状指畸形 腱皮缝合术 小夹板外固定

锤状指畸形是伸指肌腱在 I 断裂后手指末节立即发生掌屈而不能主动伸直的一种畸形，临床上较为常见。过去一直认为：伸指肌腱在此区损伤后处理较困难，效果欠佳[1]。从 1987 年 5 月至 1995 年 5 月，我院应用腱皮缝合术加小夹板短时外固定治疗新鲜性和陈旧性锤状指畸形 54 例，经 8 年来临床观察，修复后的手指外形及其功能均取得满意效果，国内尚未见同类报告，现介绍如下。

## 临床资料

本组 54 例，男 41 例，女 13 例，年龄 18～60 岁；右手 35 例，左手 19 例，其中食指 37 例，中指 6 例、无名指 11 例；新鲜性 31 例，陈旧性 23 例；受伤时间：最短者 1 天，最长者 32 天，平均受伤时间为 14 天；受伤原因：手指戳伤者 49 例；切割伤后处理不当，而后遗畸形者 5 例。

## 手术方法

在指根处指神经阻滞麻醉下，根据畸形的程度来决定切口的宽度，其方法有两种；一是新鲜性损伤者，于屈 DIP 横弧线作背侧皮肤关节处连线呈园形，近端

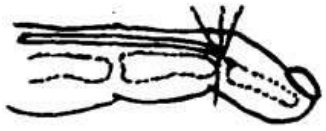

图 1

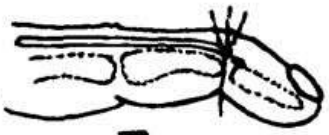

图 2

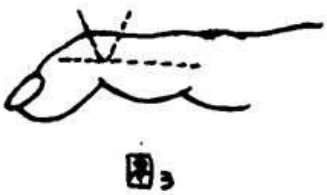

图 3

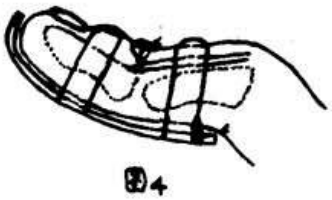

图 4

切口超远端切口 1/3，呈 2∶1（如图 1），因为新鲜性损伤时断端之间有一定的间隙或断端不整齐之原故；另一种是陈旧性损伤者，于屈 DIP 横弧线作背侧皮肤关节处连线后呈园形，远、近端切口各占 1/2，呈 1∶1（如图 2）。消毒铺敷后，在选择好的切口皮肤关节处作梭形切口（如图 3），深达关节囊，其关节囊周围不要作游离，防止术后粘连，切口两端不超过手指侧中线（如图 3），如有小骨片未超过基底 1/3 者可取出，然后在过伸位下全层缝合 2～3 针，外用酒纱及无菌干纱包扎，并用胫腓骨折前内或前外侧小夹板一端（主要是利用其夹板的弧度，如图 4），长约 5～6cm，作 DIP 过伸位外固定（如图 4）。两周后拆线去夹板，逐渐进行患指活动。注意，此时禁用强力屈曲，并可结合活血通络之中药湿热敷辅助治疗。

## 随访结果

经 1～8 年随访，本组患者锤状指畸形均完全得以矫正，DIP 无梭形肿胀，无疼痛，患指捏物有力，54 例 DIP 背伸接近 0°，屈曲开始时约减少 5°～10°，后逐步恢复到邻指的范围，TAM 法评判，优良率到达 100%。

## 讨 论

1、解剖特点和力学特点与锤状指畸形的关系：伸指肌腱止于末节指骨背侧基底，在接近止点处的一段肌腱比较薄弱，经过远指间关节囊时，与关节囊合在一起[2]，而且伸指肌腱末节只有一层疏松膜状腱周组织围绕，并与腱的腹侧形成腱系膜样结构，将腱之腹侧与膜状腱周组织连系起来[3]，当手指戳伤时，容易造成此段肌腱断裂，形成 DIP 屈曲畸形——锤状指畸形。

手部任何一个关节的动作必然是屈肌、伸肌肌力平衡的结果[4]，在生物力学结构上屈指肌腱与伸指肌腱同属于肌肉—肌腱—骨力学结构，一旦伸指肌腱在 I 区断裂后，屈指肌腱与伸指肌腱就失去了应有的肌力平衡，它的肌肉—肌腱—骨的力臂结构失去连续性，力学效益丧失，其结果造成伸末节指无能。如果是陈旧性损伤，在断端之间形成瘢痕，又使伸指肌腱的肌肉—肌腱—骨的负荷力臂结构延长，其力学效益减弱，用同样的拉力也不能有效地伸直 DIP。willian L 指出：损伤后的瘢痕形成作用对伸指肌腱的影响更大，近侧指间关节部伸指肌腱滑移减少 2 毫米，可致该指动度丧失 50%[5]。所以，不论采用那一 种缝合，应使肌腱的断端

及缝合点靠近止点处，使其避开中节指骨，以减少缝合处与中节指骨粘连的机会，故伸指肌腱愈合的关键是肌腱滑动问题。

2、腱皮缝合术的原理和适应症：根据伸指肌腱的解剖特点、力学特点和与其腱周围组织的关系，以及手指受伤后的保护性动作，当伸指肌腱在 I 区断裂后，不像屈指肌腱那样容易回缩，此时如果采用 Fowler 法、Iselin 肌腱融合术、Snow 法、伸指肌腱移植以及固定时间过长，都可能会引起在中节指骨和关节囊周围的粘连，而影响其疗效。采用腱皮缝合术就是利用伸指肌腱断裂后不容易回缩的解剖特点，使新鲜性损伤靠近止点处愈合；使陈旧性损伤缩短其负荷力臂；加上手术创伤局限，从而又减轻了与中节指骨和关节囊粘连的机会；固定时间短，又给伸指肌腱早期滑动创造了条件，所以，临床上效果满意。鉴于以上情况，腱皮缝合术适用于新鲜性和陈旧性锤状指畸形的治疗，其中包括基底骨折片不超过 1/3 者；也适用于青年患者；对中、老年患者可作为首选术式。

3、腱皮缝合术加小夹板外固定的优点：为提高锤状指畸形治疗的效果，应从力学角度出发，抓住两个关键点，即缩短负荷力臂及在伸指肌腱愈合之前施以强大、持续、有效的过伸外力于 DIP，以抗拒屈曲因素，恢复伸指肌腱的连续性，提高力学效益。腱皮缝合术加小夹板外固定正好抓住了这两个关键点，恢复了伸指肌腱的肌肉—肌腱—骨力学结构和缩短了负荷力臂，使屈指肌腱与伸指肌腱的肌力平衡重新得到恢复，该术式还体现了有限外科和无创技术。

**参考文献**


1. 王澍寰．手外科学．第一版，北京：人民卫生出版社，1982；470—472.
2. 季新民．胥少汀．陈旧性锤状指手术治疗，手外科杂志 1988；1：47.
3. 陈履平．等．陈旧性锤状指的显微解剖与治疗研究，中华手外科杂志 1994；1：34.
4. 刘璠，待德．从力学角度探讨 I 区伸指肌腱断裂疗效不佳原因，中华手外科杂志 1994；1：31.
5. Willian L，et al. Managemen and Rehabilitation of Extensor Tenden Injuries. Orthop Clin of North Amer 1983；14 (4)：811.


（收稿：1995－07－21）

# 胫腓骨开放性多段粉碎性骨折一例

河北省昌黎县中医院　（066600）　董国庆　王千亮　董立新　何桂祥　刘凤华

董××，男，29 岁，农民，病历 93303 号。患者自述于 1993 年 8 月 20 日驾驶摩托车与运输汽车相撞，左小腿皮肤肌肉多处损伤，碎骨外露，流血不止。经某医院抢救，并经 X 线显示，左胫腓骨多段粉碎性骨折骨片残缺不全，软组织损伤，污染严重；该院建议截肢，患者请示考虑其它治疗方案，该院遂采取了清创缝合、跟骨牵引及抗生素的治疗方案；经治疗 20 余天，伤肢肿胀不见消退，骨折端外突，小腿上端胫骨内侧出现两处瘘孔，脓液外溢。

患者转入我院后，检查发现：左小腿及足背部重度肿胀，畸形，小腿中上 1/3 段内侧有一约 5cm 的伤口，其两端已愈合，中央剩有瘘孔，孔径 0.5～1cm，深达骨质，有脓液外溢，均有压痛，左小腿外侧及足背皮肤疼痛，温觉减弱，足趾活动明显受限，但左足背动脉搏动正常。X 线检查：左胫腓骨上、中、下多段粉碎性骨折，骨折碎片达 40 余块，骨片重叠，纵横交错，成角畸形，胫骨上 1/3 段骨质缺损。

**治疗方法**　于硬膜外麻碎后，行切开，骨折复位及内固定手术。术中见左腓骨头部骨折，重叠错位，肌肉嵌于骨折缝中，剥离复位后，钢丝缠绕，冲洗缝合；再将左小腿胫骨前外侧依次切口（全长 32cm），电凝止血，剥离骨膜，见胫骨粉碎片多达 40 余片，大小不等，参差重叠纵横交错；上 1/3 段骨质缺损 9×2.5cm，遂于胫骨粗隆部位打入一枚斯氏针，穿过骨折端，骨缺损处，取髂骨片修补，以钢丝缠绕固定，其它碎骨复位后，固定于斯氏针支架上；下 1/3 段粉碎骨缺损，以松质骨填补，外加钢丝缠绕固定；无活动性出血，清洗伤口，逐层缝合，最后上下用石膏托固定。手术经 3 小时 15 分完毕，12 天后切口拆线，一期愈合出院。

**治疗结果**　三个月后随访，患者述活动自如，来院经 X 线检查见：左胫腓骨的碎骨片对位良好，骨折线模糊，有大量骨痂生成，髓腔内斯氏针及钢丝固定牢固，左胫腓骨上、中、下段骨折部位已骨性愈合；膝踝关节活动自如。5 个月后已能参加轻微劳动。

**体会**　由于斯氏针牢固的支撑作用，和所缠钢丝的稳定作用，使碎骨对位良好，加速了骨痂形成。五周后去除石膏托，进行肢体功能锻炼，促其尽快恢复正常生理功能。由于采用抗生素治疗，结合精心护理控制了感染，利于创伤的修复。

（收稿：1995－01－24）

# Abstract of Original Articles

**Surgical treatment of the severe thoraco—lumbar burst fracture** *Chen Fen—yong, Song Jian—rong, Lin Jia—jun, et al Union Hospital of Fujian Medical College* (350001)

The authors reported 51 cases of severe thoracolumbar burst fracture treated with surgery. According to Frankel grades, there were 13 cases of grade A, 7 Cases of grade B, 14 cases of grade C, 5 cases of grade D and 2 cases of grade 3 in 11 cases, and total laminectomy decompression was done in 30 cases. The recovery rate was 73% in the incomplete paraplegia and 15. 4% in complete paraplegia. It was concluded 1. Burst fractures mainly injure the middle column of the spinal cord, and spinal canal de compression as well as internal fixation should be done, if the fragments of vetebra had compressed about 1/3 of the spinal canal and the sagital diameter of the later was less than 10 mm; 2. In ternal fixation should be selectedaccording to the condition and range of the injured vertebra, It is reasonable to choose the internal fixation procedure which can cause less injury of the spinal segment and get good results in reduction and fixxation; 3. The recovery rate of the incomplete paraplegia group was significantly higher than that of the complete paraplegia group when surgical treatment was applied.

**Key words** Thoracolumbar vertebrae Burst fracture Surgical treatment

(*Origiaol article on page* 3)

**The following—up analysis on the patients with artificial hip—prothesis** *Zhai Ming—yu, Zhao Yu—gui, Wang Chun—ping, et al. Zhengzhou Hospital of Orthopaedics, Henan Province* (450052)

108 cases (112 hips), applied with artificial prosthesis have been followed up after operation, for the average years of 6. 8. It was discovered that 37 cases of complication (about 33%) were produced due to the unproper operation; 46 cases of post—operational complication (41. 1%); and the stisfactory therapeutic effective rate being about 74. 1%.

The frequently encounted reasons and treatments of the various kinds of complications were put into stress to be analysed and discussed in this paper.

**KEY WORDS** Artificial prosthesis Disease of the hip region

(*Original articleon page* 5)

**Study of the effect of intermittent compressive pressure to the osteoblasts in vitro.** *Li Ke—xin, Shang Tian—yu, Dong Fu—hui, et al. Institute of Orthopaedics & Traumatology, Chinese Academy of TCM* (100700)

The experiment imitated the physiological changes of the cellular exte. ial circumstances, existed during skeletal functional movement, and supplied a intermittent compressive pressure (0. 098 MPa, 15 minutes pressrue, 15 minutes relax, 2 cycles/one hour, 8 hours/day) to the osteoblasts of experiment al groups in vitro. It was discovered that the numbers of osteoblasts and the reaction of alkaline phosphatase in the experimental group were markedly elevated than that of the control groups. The results indicate that the intermittent compressive prssure is able to improve the proliferation and differentiation of the osteoblasts.

**KEY WORDS** Intermittent compressive pressure Osteoblast in vitro

(*Original article on page* 7)

**Experimental reseach on the restoration of bone defact with the complex of helorogenous deproteinized bone and the bone morphogenetic protein.** *Bai Meng—hai, Ge Bao—feng, Wang Yong, et al. Institute of Orthopaedics & Traumatology, Lanzhou General Hospital of the Military Region* (730050)

The filure of the implantation of the heterogenous deproteinized bone is always due to the intensive immune rejection. A new method for treating heterogenous bone was discribed in this paper. The bone of calf was deproteinized, i. e. extracted the main antigens and combined with bovine bone morphogenetic protein (BMMP) and then produced a kind of heterogenous deproteinized bone, not only without antigenicity, but also advantageous to the bone formation. Implanting this kinds of bone comples into the artificial defact (2cm) of the radius of Newzeland rabbit, the observation on the recovery with immunological, radioactive, and histological

methods, demonstrated that there was without any immune rejection in various kinds of experimental groups and there was indistinct margin between the implant and the fracture bed at 4th week; There were a great amount of lamella of new osteocytes and neogenetic vessels invension into the implant, at the 8th week.

The experimental result indicates that the large heterogenous bone implantation, treaed beforehand, can not only without any immune rejection, but also can achieve the expected restoration.

**KEY WORDS** Bone morphogenetic protein　Heterogenous bone implatation

(*Original article on page* 10)

**Evalution of the effect of ALQ on the experimental spinal cord injury, by means of evoked potential in the later.**

*pt. of Phyciology, Anhui Medical University* (230032)

Three kinds of experimental model of spinal cord injury (light, severe and complete) had been imitaled in sisty rabbits and part of them were treated by autohemotherpy of light quanta (ALQ). The effect of ALQ on paralysis was observed and reported, by means of spinal cord evoded potential (SCEP), a reliable electrophysio logical index. The results demonstrated that the percentage of the recovery of SCEP in the incomplete spinal injury of the treated group, was higher than that in the control group. It indicates that ALQ can promote the control group. It indicates that ALQ can promote the functional recovery of the spinal cord from the damage.

**KEY WORDS** Spinal injuries　Evoded potential　Autohemotherapy

(*Original article on page* 13)

**Techniques of needle manipulation for the treatment of metacarpophalangeal joint dislocation** *Ren Qi—uang, Guo Min. Department of Orthopedics, The First Affiliated Hospital, Anhui Medical University (Hefei* 230022)

The closed dislocation of the metacarpophalangeal joint is not common. The open—reduction is often needed to be done, owing to the speciality of its anatomical relationship. Here an experience of close reduction in success with prying and plucking manipulation, applied with Kirschner needle on 30 cases was introduced in this paper. The mechanism and procedure of this method was demonstrated with anatomical data, diagrams and typical cases and its practical value was also discussed.

**KEY WORDS** Prying and plucking manipulation with Kirschner needle　Dislocation of metacarponphalangeal joint.

(*Original article on page* 15)

**The Treatment of teno—skin sutureon 54 cases of mallet finger deformity** *Li Liang—dong, Fang Ming—zhi, Shen Jun, et al. First Affiliated Hospital, Guiyang College of Traditional Chinese Medicine* (550001)

54 cases of fresh and old mallet finger deformity have been treated with the combination of the teno—skin suture and small splinter fixation and achieved satifactory therapeutic effect. Analysis, according to the characteristics of the anatomy and mechanics of this kind of operation, indicated that this pattern of operation is the first choice for the middle and old aged patients.

**KEY WORDS** Mallet finger　Small splinter fixation

(*Original article on page* 17)

**The Demonstration of the functional digits of brachial plexus roots avulsion.** *Pei Lian—kui, Liang Bing—sheng, Zhang Jian—zhong.*

*Department of Orthopaedics, Second Affiliated Hospital of Shanxi Medical Cllege, Taiyuan* (030001)

In 1993, we had reported the functional digits demonstrated at different parts of upper—limbs. Now we demonstrate the digits and percentages of function on the patients attacked with brachial plexus roots avulsion. The results indicate that the digital demonstration in the orthopaedics is an useful quantitative method to identify the injuries and curative effect on the patients and it is more standized, objective and distinctive to evaluate the clinical curative effects.

**KEY WORDS** Functional digits　Brachial roots avulsion　Orthopaedics

(*Original article on page* 36)