

学术探讨

撬拨法治疗胫骨平台骨折的生物力学初探

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摘要 本文用骨圆针撬拨法复位治疗胫骨平台骨折 10 例,其中 4 例平台塌陷超过 10mm 者予以双针同时撬拨,复位后远期疗效观察:良好 7 例,较好 3 例,并以生物力学原理分析了骨折、撬拨和固定、练功,认为其治疗是符合生物力学原理的。

关键词 平台骨折 撬拨法 生物力学

我们自 1982~1992 年 11 月间,以钢针撬拨法为主,治疗胫骨平台骨折 10 例,随访疗效较为满意,该法符合生物力学原理,现报告如下。

一般资料

本组 10 例,男 6 例,女 4 例;年龄最大 59 岁,最小 24 岁;因自行车、摩托车等致伤 6 例,跌伤 4 例;外侧平台骨折 9 例(包括塌陷劈裂 6 例中的向外劈裂 4 例,向后劈裂 2 例),内侧平台塌陷骨折 1 例;平台塌陷骨折片向下移位最大 19mm,最小 5mm,平均 10.3mm,劈裂移位最大 8mm,最小 3mm,平均 4.6mm,平台中外侧塌陷伴向后劈裂的 1 例尚合并有胫骨上段粉碎骨折,2 例伴内侧副韧带不全损伤。

治疗方法

10 例中,6 例局麻,4 例硬膜外麻醉,在 X 线下操作,抽吸关节积血。4 例平台塌陷劈裂向外侧移位者,用 4mm 直径骨圆针于骨折块下端或穿过骨折块,针尖对准平台塌陷下方,将其撬或顶拨复位,配合侧方牵引(内收小腿),将劈裂骨块撬起,再予以侧方对挤,使劈裂骨块复位。单纯平台塌陷骨折 4 例,予以侧方或侧前方进针撬拨。4 例(包括伴向后侧劈裂的 2 例)平台塌陷超过 10mm 者,在其侧方和侧前方同时各打入 1 枚骨圆针,针尖略向肢体远端倾斜,双针进入塌陷骨折片下 10~20mm,同时撬拨复位。向后的劈裂骨折,予以前后对挤,其中 1 例尚配合内侧打入一骨圆针,插入劈裂骨块向前撬拨。2 例侧方移位和 4 例塌陷超过 10mm 的平台塌陷骨折,在撬拨复位后,骨圆

针横穿入对侧皮质骨以作内固定。6 例石膏托固定,4 例夹板固定,时间 4~6 周。解除固定后,拔除骨圆针,并在床上功能锻炼,2~4 周后,下床逐渐负重活动。

治疗结果

根据马元璋氏^[1]胫骨平台骨折 X 线片整复和后期疗效标准,本组 10 例中,整复的 X 线标准观察:良好 6 例,较好 3 例,一般 1 例。10 例皆进行了随访,术后最长 10 年 8 个月,最短 9 个月,平均 4 年 8 个月,疗效观察:良好 7 例,较好 3 例。

讨 论

撬拨复位法,即利用杠杆原理,使局部塌陷移位的骨折块,以皮质骨为支点、骨圆针尖端为应力点,手部用力,在 X 线下行顶、撬、抬、拨,使其复位。撬拨进针时,要注意进针点和进针方向,塌陷移位较大,如超过 10mm 以上者,考虑平台塌陷下松质骨被压缩而脆弱,单针撬拨因着力点小,压强大,撬拨处的松质骨可从针旁滑落,或只能撬起关节面,关节面下仍空虚,拔除撬拨针后,关节面又会塌陷。故本组行双针,针尖扁平面向上,且以不同方向朝肢体远端塌陷面下倾斜打入,这样既使得针前端着力点处接触面增大,减小了撬拨时骨质从针旁滑落,又撬抬起较厚的平台下松质骨给复位后的平台以较好的支撑力,减少了复位平台再塌陷的可能。塌陷较大者,又给予平行于塌陷关节面下的横行骨圆针作内固定,其针的两端为皮质骨支撑,可靠,中间段穿行松质骨内,针有一定的弹性,在关节不负重,屈伸和股四头肌

用力收缩时,平台处仍有一定的压应力刺激,此种应力不仅不会使骨折再移位,相反通过其间断的应力刺激,对加速骨折端的愈合、提高愈合质量是有益的^[2],因此说,这种固定是符合生物力学原理的。

合理的固定和练功也是关节功能恢复的关键。胫骨上端平台为松质骨,骨折复位后应外固定 4~6 周,解除固定后仍不能负重行走,只可在床上配合中药熏洗行关节功能锻炼。适当的练功,可使关节面复位不平处通过活动,

亦即应力刺激,局部肉芽组织充盈,骨缺损处,逐渐转化为纤维软骨和骨组织,甚至可能转化为透明软骨^[1],加速了关节面的愈合,减少了创伤性关节炎的发生。此种机理,亦符合关节内骨折中,中医早期活动的所谓“关节内模造”理论。

参考文献

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胡氏治疗肱骨干骨折迟缓愈合经验

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兹将骨伤科专家胡黎生对肱骨干骨折迟缓愈合的内外施治法则,常规要领整理如下。

1. 用环形压垫:三列绷带于骨折部位环形缠绕 15~20 周。
2. 夹板固定要超肘跨肩:用上臂后侧板及前臂背侧板,在上下兑接的肘关节部位用胶布粘合牢固,即成为超肘能屈伸的活动夹板。上臂后侧板上自肩峰下至肘。
3. 超肘夹板及上臂内、外、前侧板安放好,屈肘前臂中立位,用胶布两条将上臂夹板环形固定后再用绷带将上臂及前臂缠绕固定,用扎带将上臂夹板三度缚定,松紧度要适宜。
4. 将上臂后、外、前侧板之上端用胶布跨肩 固定牢固。
5. 夹缚固定后,术者左手按患肩,右手托患肘,沿肱骨上下端纵轴对相挤按,并用右手掌根叩击患肘尖 5~6 下。每次调整夹缚均行肩肘对向挤按及肘尖叩击法。
6. 再用肩肘带兜托患肢,有效地控制患肢悬垂重力牵拉所致骨折端的分离移位,并增强固定作用。
7. 外固定要做到坚强牢固可靠,保证骨折断端无异常活动,要坚持至骨折顺利修复完成。自固定完成

后,前臂悬托胸前,即嘱患者作患腕手的功能锻炼。固定初期禁止上臂旋转活动,应在医师指导下进行全疗程的功能锻炼。

8. 定期复查,每周调整固定一次,在每次调整固定时医生及助手必须托住伤肢,否则可能引起再骨折,要遵照调整夹缚“切勿惊动患处”的教导。

9. 于治疗中后期,在调整夹缚时如肘尖叩击痛消失,经 X 片显示为骨性连接后,即可解除肩肘固定,改为上臂夹板继续固定,以保护骨折部的顺利愈合固结,又便于患肢关节练功活动。外治法尤宜辨证施治。临床检查骨折已符合临床愈合标准时,更需拍片复查方可解除固定。解除夹缚后即可开始用上肢熏洗药,以促进患肢关节功能早期恢复。

10. 内治法应辨证施治,着重补气血,益肝肾,壮筋骨,以促进骨折的愈合。

体 会

肱骨干骨折迟缓愈合和不愈合的主要原因是骨折复位后固定不牢,不能有效地制动,不能控制骨折端的剪力和旋转力。因此,治疗本病必须强调确实牢靠合理的外固定,必须做到骨折端无异常活动,消除剪力和旋转力以保证骨折的顺利修复完成。

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Abstract of Original Articles

A motive study of the capillary permeability during wound healing — First session of research program on “leaning on the pus to promote regeneration”

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Improved Saba capillary permeability experiment method was adopted in studying the mechanism of external application of Chinese herbs based on the theory of “leaning of the pus to promote regeneration” over the wound surface. The result of experiment indicated that external application of the Chinese herb could enhance local capillary permeability of the wound surface. There was significant difference ($P < 0.05$) between external application of the Chinese herb group and the control group during middle stage of healing of the wound surface with local fluorescent concentration method. But there was no significant difference ($P < 0.05$) between them with local plasma fluorescent clearance rate method and urinary excretion rat. It suggested that external application of the Chinese herb did not influence the capillary permeability of the body as a whole. It bears prominent regulating action of local capillary permeability.

Key words Capillary permeability External application of Chinese herb
Healing of the wound surface

(Original article on page 5)

Influence of experimental adhesion of flexor tendon treated with Injection Chuanxiongqin (CXQ)

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In this article, the influence of Injection CXQ in the treatment of adhesion of chicken deep flexor tendon model was observed and it was compared with antiadhesive action of dimethicone and normal saline. The results showed that sliding function of the CXQ and dimethicone group was better in small adhesion surface of the injured tendon. There were significant difference ($P < 0.05, P < 0.01$) as compared with normal saline group. But in aspect of repairment of the tendon, the CXQ group was superior than the dimethicone group. It indicated that locally application of injection CXQ within the sheath of the tendon bears both the action of alleviation of the peri-tendoneous adhesion and doesn't influence of healing process of the tendon itself.

Key words Injection Chuanxiongqin Adhesion of flexor tendon
Prophylactic and treatment

(Original article on page 8)

Electrophysiological study on rabbit sciatic nerve after clamp injury

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In this article ,the results of electrophysiological study on rabbit sciatic nerve after clamp injury indicated that firstly there were prolongation of insertion potential of EMG ten days after injury of the nerve,the duration shortened gradually along with regeneration of the nerve. Secondly ,regeneration small potentials could be recorded at 20 days post—traumatically. Thirdly, induced muscular contraction potentials could be recorded 30 days after nerve injury . Fourthly, the average standard nerve regeneration velocity was 2. 93mm/day,the utmost being 4mm/day. The aim of study is to offer a clinical criteria of nerve regeneration and a reference of related researches.

Key words Sciatic nerve Electromyography
Nerve regeneration Rabbit

(Original article on page 11)

A comment on treatment of traumatic obstinate swollen of the limb based on the theory of phlegm

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In this article ,treatment of traumatic obstinate swollen of the limb based on TCM theory of phlegm obtained good results. Thirty six caese were treated and cured copmletely. The theoretical basis and foundation of treatment based on the theory of phylegm were discussed in detail.

Key words Swollen of limb Traditional Chinese medicinal therapy

(Original article on page 13)

A preliminary exploration of biomechanics on fracture of tibial plateau treated with prize—poke reduction method

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Ten cases of fracture of tibial plateau treated by prize—poke reduction method with bone fracture round mail. Two nails were applied simultaneously in 4 cases of which the degree of cave in excessed more than 10mm. The remote therapeutic results after reduction were good in 7 cases;3, fair. Analysis of the principle based on biomechanics of reduction with the prize—poke method ,fixation and physical exercise were performed, it is realized that it coincides with the principle of biomechanics.

Key words Fracture of tibial plateau Prize—poke method Biomechanics

(Original article on page 31)