

· 临床研究 ·

逆行交锁髓内钉联合单侧骨皮质锁定钢板固定治疗股骨髁上骨不连 *

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摘要 目的:探讨逆行交锁髓内钉联合单侧骨皮质钢板固定治疗股骨髁上骨不连的临床疗效。方法 对 25 例股骨髁上骨不连,均采用逆行交锁髓内钉联合单侧骨皮质钢板固定加自体髂骨植骨治疗。结果 25 例获 12~24 个月随访,平均 12 个月。4~8 个月内均获骨性愈合。结论 应用逆行交锁髓内钉联合单侧骨皮质钢板固定后骨折端可获得坚强内固定,手术操作简便、安全,可早期进行膝关节和股四头肌功能锻炼,是一种治疗股骨髁上骨不连的有效方法。

关键词:骨折;不连接;锁定钢板;逆行交锁髓内钉;植骨术

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Treatment of the Femur Supracondylar Nonunion with Lateral Locking Compression Plate and Retrograde Interlocking Intramedullary Nails*

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ABSTRACT Objective: To investigate effect of treatment of the femur supracondylar nonunion with lateral locking compression plate and retrograde interlocking intramedullary nails. **Methods**: All the 25 cases of femur supracondylar nonunion were treated with lateral locking compression plate and retrograde interlocking intramedullary nails combined with auto iliac bone graft. **Results**: All the 25 cases were followed up and the average following up period was 12 months (range 12-24 months). All the cases had bony healing without severe complications, in 4-8 months. **Conclusion**: Strong internal fixation and compression can be achieved through lateral locking compression plate and retrograde interlocking intramedullary nail. The operation is simple and safe and the early knee joint motion and quadriceps femoral muscle functional exercises were allowed. It is effective method to treat the femur supracondylar nonunion.

Key words: Fracture; Nonunion; Locking plate; Retrograde interlocking intramedullary nail; Bone graft

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前言

股骨髁上解剖部位特殊,若骨折后治疗不当,骨不连发生率高,后期处理较为困难,同时对膝关节影响较大,骨不连发生后如何既提高骨不连的愈合率又不影响早期膝关节活动,我们于 2005 年 3 月~2008 年 9 月,应用逆行交锁髓内钉联合单侧骨皮质锁定钢板固定治疗股骨髁上骨不连 25 例,效果满意。现报告如下。

1 材料与方法

1.1 临床资料

本组 25 例,男 15 例,女 10 例;年龄 18~70 岁,平均 35 岁。致伤原因:车祸伤 15 例,坠落伤 8 例,碾压伤 2 例。受伤至手术时间 8~30 个月,平均 12 个月。伤后首次内固定采用逆行交锁髓内钉固定 10 例,股骨髁支持钢板 9 例,动力髁钢板 3

例,顺行交锁髓内钉 3 例,其中钢板断裂 4 例。X 线表现为骨折断端明显,骨萎缩型 18 例,肥大 7 例,伴有骨质缺损 6 例,所有病例伴有膝关节不同程度僵硬,临床查体均有局部压痛和异常活动,患肢纵向叩痛阳性和肌萎缩。

1.2 手术方法

硬腰联合麻醉,仰卧位,三角架造成屈膝体位。首先沿原手术切口在取出内固定之前,手法松解膝关节,手触髌腱和股四头肌防止断裂,感受粘连解除,膝关节屈膝达 110° 后,取出内固定。清理骨折端,彻底清除断端无血运硬化骨质和增生的纤维结缔组织,直到有渗血为止,然后行骨折复位,注意保持力线,无需考虑骨质缺损,同时贯通远端髓腔。于股骨髁间窝后交叉韧带起点的前方 5-10mm 处开孔,依次扩髓,插入合适长度及直径的髓内钉,针尾位于关节面上 3-5mm,远近端分别锁钉固定。然后于骨折端前外侧置 6~8 孔塑形的锁定加压钢板,钻孔、攻丝,拧入单侧骨皮质螺钉,取自体髂骨植骨,如有大块

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骨缺损,应大块骨植入,将所有缝隙嵌实,使其无缝。生理盐水冲洗伤口,逐层缝合,放置负压引流管。术后第2天鼓励患者行股四头肌等长舒缩锻炼,第3天开始CPM被动锻炼,拔除引流管。屈膝达 110° 后,鼓励患者开始膝关节主动性功能锻炼。3个月内非负重下地,加强膝关节功能锻炼防止膝关节再度僵硬,术后定期摄X线片复查,了解骨折愈合情况及有无内固定物松动、断裂等情况,根据X线片最终决定负重下地时间。

2 结果

本组切口均一期愈合,术后未出现脂肪栓塞、下肢深静脉血栓、伤口浅深层感染和内固定断裂等并发症,膝关节僵硬明显改善。全部病例均获随访,随访时间12~24个月,平均15个月。4~8个月内均获骨性愈合。按Shelbourne等^[1]评定标准:优16例,良4例,可5例,优良率为80.00%。



图1 术前X光片

Fig. 1 X-ray of postoperation

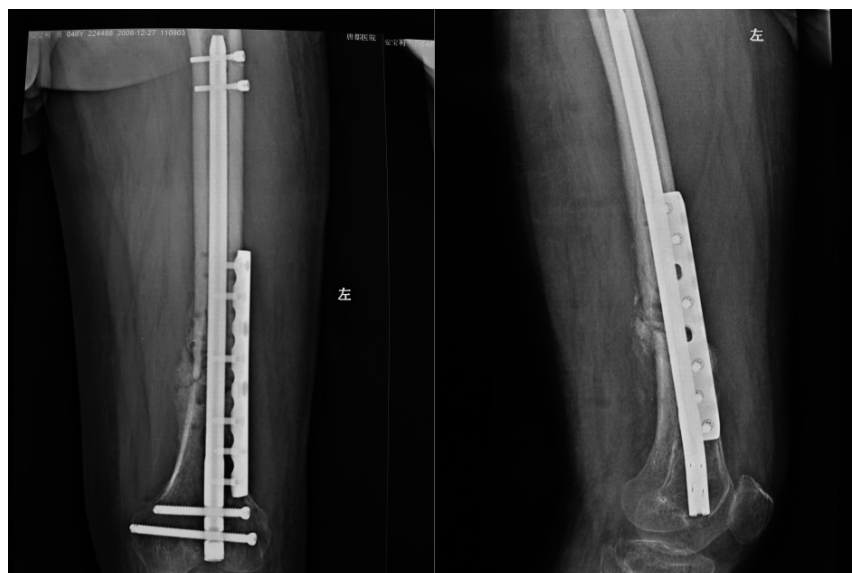


图2 术后X光片

Fig.2 X-ray of postoperation

3 讨论

本组25例股骨髁上骨不连的特点从术中来看,主要有以下几点:①手术创伤大,暴露广泛,血运破坏严重,由于血运遭受破坏导致多数病例骨折断端硬化导致不连。②骨折首次没有

解剖复位,导致断端接触面积减少,再加之股骨下端髓腔粗大,造成骨折端不稳定。③询问患者病史,多数患者没有遵从医嘱,早期负重早期活动,钢板是偏心固定,存在剪力,在骨折愈合和钢板疲劳的赛跑中,谁先到站谁就获得胜利,如果过早活动骨折断端还未形成骨性连接,钢板过度疲劳再加上剪应力集中,

就会导致钢板断裂,骨折不愈合。④ 期没有进行植骨,导致骨缺损存在,加重了内固定物应力负荷,造成内固定物过度疲劳,引起内固定物断裂和骨不连。⑤膝关节僵硬,股骨髁上骨折不管是髓内固定还是髓外固定,都会对膝关节进行骚扰,患者由于惧痛,长时间不进行膝关节主动性功能锻炼,再加之后期骨不连后断端间的疼痛,更不会加强活动,容易导致膝关节的僵硬,给后期的治疗增加了难度。

从股骨髁上骨不连的特点来看,由于股骨髁上骨折特殊的解剖结构,股骨髁上骨折的骨不连治疗需要强有力的稳定性、充分的植骨、膝关节早期活动的可能性以及骨不连部位专业的处理。逆行交锁髓内钉联合单侧骨皮质钢板固定治疗股骨髁上骨不连的优点主要表现在以下几个方面:①交锁髓内钉属于轴心固定,符合生物力学要求,手术暴露小对局部血运破坏也小,加之逆行交锁髓内钉扩髓时一方面贯通了髓腔,为断端提供新的血运支持;另一方面扩髓产生的碎屑对骨断端有愈合作用^[2,3,4,5,6]。侧方单皮质锁定钢板同样不需剥离太多骨膜^[7,8,9,10,11],所以交锁髓内钉加侧方钢板内固定对血运的破坏实际上并不大^[12,13]。②逆行交锁髓内钉更接近下肢力线,通过股骨中轴线固定,符合生物力学原理,不易引起内固定物断裂^[14,15,16,17,18],而钢板属于偏心固定容易遭受剪切应力,引起疲劳断裂。③交锁髓内钉属于相对稳定的固定方法,尤其在股骨髁上骨不连中稳定性更差,有些病例甚至存在明显的异常动度,用锁定加压单侧骨皮质钢板可以大大增强断端稳定克服交锁髓内钉的相对稳定缺点。不仅有利于骨折的愈合,还可早期进行关节功能锻炼^[19]。针对股骨髁上骨不连无论采用单一髓内钉还是钢板固定都会有一些不足,只有将两者结合起来取长补短才会取得良好的临床效果。骨不连患者长期肢体功能障碍,手术后需要尽早进行功能锻炼,也需要坚强的内固定保证。交锁髓内钉加锁定钢板内固定结合使用可以解决交锁髓内钉对减少骨折端剪切应力方面的不足,提供更好的力学稳定性,保证骨折端有稳定的骨接触,为骨不连的愈合提供一个很好的基础^[20]。

股骨髁上骨不连的治疗需要注意以下几个问题:①骨不连部位断端间存在异常动度,断端充满纤维结缔组织,骨端硬化,因此断端的处理非常重要,要彻底清除断端间的软组织,最大限度的去除硬化骨质,直到渗血为止。依次扩髓贯通髓腔,如原有骨折逆行髓内钉固定,原则上换用粗一号的髓内钉固定。②复位时保持力线,不要有成角畸形,同时注意肢体长度,不要有短缩畸形,遇有骨缺损,不要惊慌待侧方锁定钢板置入后再行植骨。③取骨要充分,植骨更要充分,如有大块骨缺损,最好大块骨植入,断端间缝隙务必碎屑屑嵌实打入,实行无缝隙技术。④手法松解膝关节僵硬时,一定要循序渐进,切忌粗暴防止股四头肌腱断裂。⑤严格的随访制度,定期邀请患者复查X线片并观察膝关节功能恢复情况,严格把握负重时间,对膝关节功能锻炼进行严格的指导,必要时请专业的康复师介入。

逆行交锁髓内钉联合单侧骨皮质锁定钢板固定治疗股骨髁上骨不连发扬了髓内固定和髓外固定的优点也克服了两者的缺点,在股骨髁上骨不连的治疗中体现得尤为明显,是一种值得推广和疗效确实的方法。

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