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· 病例报告 ·

髌骨脱位导致的髌骨冠状面骨折 Herbert 钉内固定治疗 1 例

马圣茜, 张建, 王晨曦

(鄒城县中医医院骨伤科, 山东 菏泽 274700)

关键词 髌骨; 骨折; 髌骨脱位; 骨折固定术, 内

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Internal fixation with Herbert nail for coronal fracture of patella caused by patellar dislocation: a case report MA Sheng-qian, ZHANG Jian, and WANG Chen-xi. Department of Orthopaedics and Traumatology, Yuncheng County Hospital of TCM, Heze 274700, Shandong, China

KEYWORDS Patella; Fractures; Patellar dislocation; Fracture fixation, internal

患者,男,13岁,武校学生,左腿站立右腿向前内侧踢腿时,因站立不稳,左腿突然屈膝屈髌,感左

膝关节剧痛后摔倒,左膝肿胀不能活动来我院就诊,行膝关节正侧位片疑为股骨外髌骨折,以“左膝外伤,股骨外髌骨折?”收住入院。专科检查:双下肢皮肤完整,左膝关节明显肿胀,髌骨周围压痛,股骨外髌压痛更为明显,浮髌试验阳性,膝关节屈曲受限。

通讯作者: 马圣茜 E-mail: 53787630@qq.com

Corresponding author: MA Sheng-qian E-mail: 53787630@qq.com

为明确诊断复查膝关节 CT, 结果示左髌骨关节面内侧缘冠状骨折。入院第 2 天, 向患者家属介绍病情, 征得知情同意后, 在腰麻下行左髌骨骨折切开复位内固定术。取左膝关节前侧纵切口, 切开皮肤皮下组织, 沿髌腱表面游离皮瓣, 向内侧绕髌骨打开关节囊, 清除关节囊积血, 外翻髌骨, 探查见髌骨内后侧骨缺损, 约 3.5 cm×2.5 cm×1.2 cm, 大骨块游离至股骨外髌外侧, 关节腔内有 2 个小骨块。小骨块去除, 清理骨折端, 复位大骨折块, 上下以巾钳夹持临时固定, 选择骨折块较厚位置, 从髌骨关节面向浅层朝向髌骨前外侧穿入 2 枚导针, 至刚刚穿出髌骨前面, 测量导针钻入深度, 骨钻钻孔至测量深度减 2~3 mm, 埋头钻关节面侧钻孔, 选用测量深度减 2 mm 长度的 Herbert 钉, 将 Herbert 钉拧入并埋头至软骨下, 前侧刚好未穿出骨表面, 去除巾钳, 检查骨块固定牢固, 复位髌骨, 屈伸膝关节, 见髌骨无脱位, 冲洗后, 髌股内侧支持带紧缩缝合, 术后 1 周制动, 制动期间行股四头肌等长收缩训练, 1 周后佩戴膝关节支具并扶拐行走, 1 个月后去除支具弃拐杖行走, 每月门诊复诊。见图 1。

讨论

髌骨骨折约占全身骨折的 1%^[1-3], 是较常见的关节内骨折, 受伤原因为直接暴力和间接暴力所致。常见受伤机制: (1) 间接暴力: 跪地摔倒时, 股四头肌突然收缩, 造成髌骨骨折。(2) 直接暴力: 髌骨前方暴力撞击, 致使髌骨骨折。髌骨脱位导致的髌骨骨折较少, 受伤机制大致如下: 膝关节突然屈曲时, 髌骨向外侧脱位, 髌骨内侧关节面与股骨外髌面发生撞击, 致使髌骨发生骨折。这种骨折比较少见, 笔者在临床工作中遇到 1 例, 报告见上文。

髌骨脱位的诊断: 急性髌骨脱位临床上少见, 几乎均为外侧脱位, 一般发生于运动时, 突然屈膝过程中, 髌骨向外侧滑脱, 伸直膝关节髌骨可自行复位。王欣等^[4]认为急性髌骨脱位受伤机制如下: 当膝关节屈曲时突然受到外翻的外力或旋转外力, 可导致股四头肌猛烈收缩, 使髌骨有向外移位的趋势, 膝内侧张力骤然增大, 由于股四头肌内侧扩张部较外侧薄弱, 造成股四头肌内侧扩张部撕裂; 膝关节在运动中突然扭转或小腿外旋、大腿内旋外翻扭转造成髌骨从膝关节脱出, 导致髌内侧软组织撕裂; 或当膝关节伸直时外力直接作用于髌骨侧缘, 使髌骨向侧方移位, 超过股骨髌间, 也可造成内侧支持带撕裂, 产生髌骨脱位。髌骨脱位后关节囊和滑囊均有不同程度的撕裂, 并且绝大部分患者伴有髌骨、股骨的损伤。本例髌骨冠状面骨折发生机制大致如下: 膝关节突然屈曲时, 髌骨向外侧脱位, 髌骨内侧关节面与股

骨外髌发生撞击, 致使髌骨内侧关节面发生骨折, 骨折块掉落至股骨外侧, 膝关节伸直髌骨自动复位。

因为急性髌骨脱位患者可“自然复位”, 故容易误诊和漏诊, 原因如下^[4]: (1) 缺乏特异性症状和体征。(2) 医师对此损伤认识不足。(3) X 线片存在较高的假阴性率。(4) 严重多发伤时对局部症状的掩盖。本病例漏诊误诊的原因大致有如下因素: 患者就诊时, 急诊医师对创伤机制缺乏认识, 简单询问病史后给予膝关节正侧位检查, X 线片仅发现股骨外髌有游离骨折片, 难以判断骨折部位, 入院体格检查仅发现膝关节积液, 关节活动受限, 未查见明显骨折及脱位体征, 经科室病例讨论后, 行膝关节 CT 检查, 才得以明确诊断。

髌骨脱位的治疗: 髌骨是人体最大的籽骨, 在膝关节伸膝功能中起着特殊的重要性, 有助于增加股四头肌的力臂。Kakazu 等^[5]研究指出髌骨增加了膝关节力臂多达 30%, 而且髌骨在蹲起时承受约 7 倍身体重量的压力, 在最后 15° 伸直膝关节时承受约 2 倍的扭矩, 实现最后 15° 的扣锁功能, 因此髌骨骨折手术治疗非常必要, 特别是移位的髌骨骨折, 最大限度地恢复膝关节的功能。通常手术内固定治疗目的是恢复关节面的平整, 修复伸膝装置并确切固定, 尽可能恢复早期活动^[6]。髌骨骨折的手术治疗方式常用的有克氏针张力带^[7-8]、钢丝环扎、分体式髌骨爪、记忆合金聚髌器等等, 也涌现一些新的治疗方法, 如跟骨锁定钢板^[8]、微型锁定钢板^[9]、关节镜下闭合空心钉内固定^[10-11]。

髌骨冠状面骨折的游离骨块较薄, 固定较难, 文献报道手术治疗方法有多种。杨云龙等^[12]报道髌骨冠状面骨折 1 例, 复位后髌骨钻 4 孔, 采用双股可吸收线贯穿固定; 李光明等^[13]采用带线锚钉固定髌骨内侧缘撕脱骨折块治疗髌骨脱位后髌骨内侧缘撕脱骨折 28 例; 陈力援等^[14]采用分体式髌骨爪结合克氏针内固定治疗波及冠状位髌骨粉碎性骨折的方法; 陈士秀等^[15]应用髌骨环联合 Herbert 钉治疗髌骨粉碎伴冠状面骨折; 徐农等^[16]应用 Herbert 钉结合髌骨针内固定治疗伴有冠状面骨折的粉碎性髌骨骨折, 都取得良好的效果。

吴丰财等^[17]应用不同方法治疗髌骨冠状面骨折, 分析认为: 冠状面骨折块较大, 有一定的厚度, 复位后选用合适长度 Herbert 钉从前向后固定; 冠状面骨折块较小, 仍有一定的厚度, 选用细克氏针平行关节面自骨折块钻入固定至主骨折块上, 再用钢丝行张力带固定; 冠状面骨折块比较薄, 骨块上钻小孔, 用非可吸收线固定。其中用 Herbert 钉从前向后内固定治疗骨折块较大、有一定厚度的髌骨冠状面骨

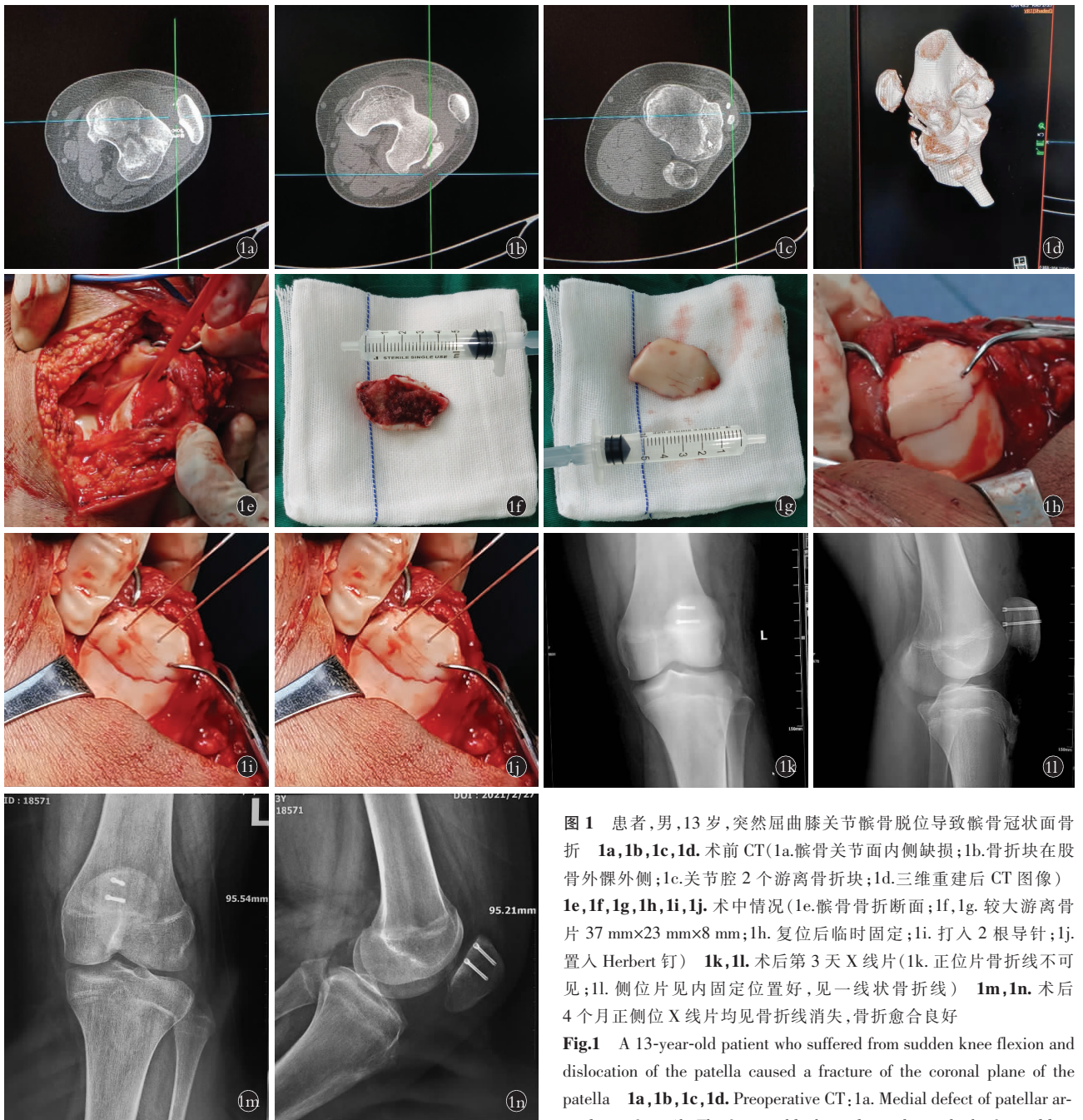


图 1 患者,男,13 岁,突然屈曲膝关节髌骨脱位导致髌骨冠状面骨折 **1a,1b,1c,1d**。术前 CT(1a.髌骨关节面内侧缺损;1b.骨折块在股骨外髌外侧;1c.关节腔 2 个游离骨折块;1d.三维重建后 CT 图像) **1e,1f,1g,1h,1i,1j**。术中情况(1e.髌骨骨折断面;1f,1g.较大游离骨片 37 mm×23 mm×8 mm;1h.复位后临时固定;1i.打入 2 根导针;1j.置入 Herbert 钉) **1k,1l**。术后第 3 天 X 线片(1k.正位片骨折线不可见;1l.侧位片见内固定位置好,见一线状骨折线) **1m,1n**。术后 4 个月正位 X 线片均见骨折线消失,骨折愈合良好

Fig.1 A 13-year-old patient who suffered from sudden knee flexion and dislocation of the patella caused a fracture of the coronal plane of the patella **1a,1b,1c,1d**. Preoperative CT: 1a. Medial defect of patellar articular surface; 1b. The fracture block was located outside the femoral lateral condyle; 1c. Two free fracture blocks in articular cavity; 1d. CT image after 3D reconstruction **1e,1f,1g,1h,1i,1j**. Intraoperative condition: 1e. Fracture surface of patella; 1f,1g. Larger free bone fragment (37 mm×23 mm×8 mm); 1h. Temporary fixation after reduction; 1i. Insert 2 guide pins; 1j. Insert Herbert screws **1k,1l**. X-rays third day after operation (1k. The fracture line was not visible on the anteroposterior film; 1l. The lateral radiograph showed good internal fixation and a linear fracture line) **1m,1n**. AP and lateral X-ray films 4 months after operation showed the fracture line disappeared, and the fracture healed well

折 16 例,取得较好的疗效。

笔者体会:(1) 临床诊断时要详细询问病史,仔细体格检查,如果 X 线片不能明确诊断时,膝关节 CT 和 MRI 检查可以发现关节积液,髌骨与股骨滑车部位的骨和软骨损伤,并可以鉴别诊断。(2) 结合本病例特点,髌骨冠状面骨折块较大,有一定的厚度,复位后可以选用合适长度的 Herbert 钉固定,并

且 Herbert 钉有加压作用,固定有力,术中大多采用从前往后穿入 Herbert 钉,本例采用从髌骨关节面向浅层朝向髌骨前外侧穿入,埋头加压固定骨折块的方法,直视下操作,容易达到解剖复位,效果较好。缝合切口时髌股内侧支持带紧缩缝合,加强了髌股内侧支持带,一次手术同时解决髌骨骨折及髌骨脱位两个问题,患者术后戴膝关节支具防止再脱位,配合

膝关节功能锻炼,术后 4 个月膝关节功能恢复正常。

本例手术方法优点:骨折块有一定的厚度,使用 Herbert 钉有加压作用,固定有力可靠,从髌骨关节面向浅层朝向髌骨前外侧穿入,直视下操作,方向及加压力度可控,既容易达到解剖复位,又可减少损伤。加上髌股内侧支持带紧缩缝合,同时解决髌骨骨折及脱位 2 个问题。本病例随访时间达 9 个月,未遗留关节疼痛、活动受限等并发症。缺点:从髌骨关节面向浅层朝向髌骨前外侧置入,损伤髌骨关节软骨,可能造成髌股关节炎。

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