

关节镜下高强度线联合外排锚钉治疗前交叉韧带胫骨止点撕脱骨折

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【摘要】 目的:探讨关节镜下高强度线联合外排锚钉治疗 Meyers-McKeever II、III 型前交叉韧带胫骨止点撕脱骨折的临床疗效。**方法:**自 2014 年 3 月至 2016 年 6 月,采用关节镜下高强度线联合外排锚钉治疗 Meyers-McKeever II、III 型前交叉韧带胫骨止点撕脱骨折患者 21 例,其中男 13 例,女 8 例;年龄 18~48(26.40±5.42)岁。受伤部位:左膝 9 例,右膝 12 例。致伤原因:运动伤 12 例,坠落伤 6,车祸伤 3 例。Meyers-McKeever 分型:II 型 16 例,III 型 5 例。所有患者为新鲜闭合性单纯损伤,受伤至手术时间 2~15(6.20±2.63) d。观察并比较术前及术后 6 个月的 Lysholm 评分、IKDC 评分及膝关节活动度变化以评价膝关节功能。**结果:**术后 21 例患者获得随访,时间 12~24(14.30±3.01)个月。手术时间 40~65(45.10±4.82) min,出血量 5~15(10.05±2.75) ml。Lysholm 评分由术前的(50.29±6.67)分提高至术后 6 个月的(92.48±2.18)分;IKDC 评分由术前的(47.19±4.57)分提高至术后 6 个月的(90.71±2.22)分;膝关节活动度由术前的(83.05±5.33)°提高至术后 6 个月的(132.05±7.15)°。**结论:**关节镜下高强度线联合外排锚钉治疗 Meyers-McKeever II、III 型 ACL 胫骨止点撕脱骨折创伤小,固定牢靠,临床效果满意。

【关键词】 关节镜; 前交叉韧带; 胫骨骨折

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High strength wire under arthroscopy combined with outside anchor nail in treating Meyers McKeever II , III avulsion fracture of anterior cruciate ligament tibial check point SHEN Fu-xiang, DU Wei-bin, CHEN Rong-liang, and CAO Guo-ping. Department of Orthopaedics, Jiangnan Hospital Affiliated to Zhejiang University of Chinese Medicine Hangzhou Xiaoshan TCM Hospital, Hangzhou 311201, Zhejiang, China

ABSTRACT Objective: To explore clinical effect of high strength wire under arthroscopy combined with outside anchor nail in treating Meyers McKeever II , III anterior cruciate ligament tibial check point. **Methods:** From March 2014 to June 2016, 21 patients with Meyers McKeever II , III avulsion fracture of anterior cruciate ligament tibial check point were treated by high strength wire under arthroscopy combined outside anchor nail. There were 13 males and 8 females aged from 18 to 48 years old with an average of (26.40±5.42) years old. There were 9 cases injured on the left side, and 12 cases on the right side. The courses of disease included sports injuries of 12 cases, falling down injuries of 6 cases, and accident injuries of 3 cases. According to Meyers-McKeever classification, 16 patients were type II and 5 patients were type III. All fractures were fresh, closed and simple injury. The time from injury to operation ranged from 2 to 15 days with an average of (6.20±2.63) d. Lysholm score, IKDC score and the changes of knee mobility were observed and compared before operation and 6 months after operation. **Results:** Twenty-one patients were followed up for 12 to 24 months with an average of (14.30±3.01) months. Operation time ranged from 40 to 65 min with an average of (45.10±4.82) min, Blood loss ranged from 5 to 15 ml with an average of (10.05±2.75) ml. Lysholm score was improved from 50.29±6.67 before operation to 92.48±2.18 at 6 months after operation. IKDC scores was increased from 47.19±4.57 before operation to 90.71±2.22 at 6 months after operation. Knee joint activity was respectively (83.05±5.33)° and (132.05±7.15)° before operation and 6 months after operation. **Conclusion:** High strength wire under arthroscopy combined outside anchor nail in treating Meyers McKeever II , III ACL tibial check point has the advantages of less trauma, firm fixation, and satisfactory clinical effect.

KEYWORDS Arthroscopes; Anterior cruciate ligament; Tibial fractures

前交叉韧带 (anterior cruciate ligament, ACL) 撕

脱骨折多发生于 8~14 岁的青少年,但成年胫骨棘撕脱骨折的发病率临床上也占 ACL 损伤的 14%^[1]。由于 ACL 胫骨止点撕脱骨折后骨折不愈合或畸形愈合的可能性大,最常见的并发症是引起膝关节功能

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表 2 Meyers-McKeeever II、III 型前交叉韧带胫骨止点撕脱骨折患者 21 例手术前后 IKDC 评分比较 ($\bar{x}\pm s$, 分)

Tab.2 Comparison of IKDS score of 21 patients with Meyers-McKeeever II, III avulsion fracture of anterior cruciate ligament tibial check point before and after operation ($\bar{x}\pm s$, score)

时间	疼痛	肿胀	交锁	不稳	运动	功能	自我评价	总分
术前	12.25±2.12	3.53±1.33	2.13±1.46	0.72±0.78	0.88±0.64	16.33±1.35	11.27±1.41	47.19±4.57
术后 6 个月	20.78±1.22	7.13±0.74	3.82±0.32	3.66±0.33	3.41±0.50	33.32±0.88	18.55±0.66	90.71±2.22
t 值	46.67	20.38	18.34	48.56	50.64	68.53	44.23	-39.29
P 值	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

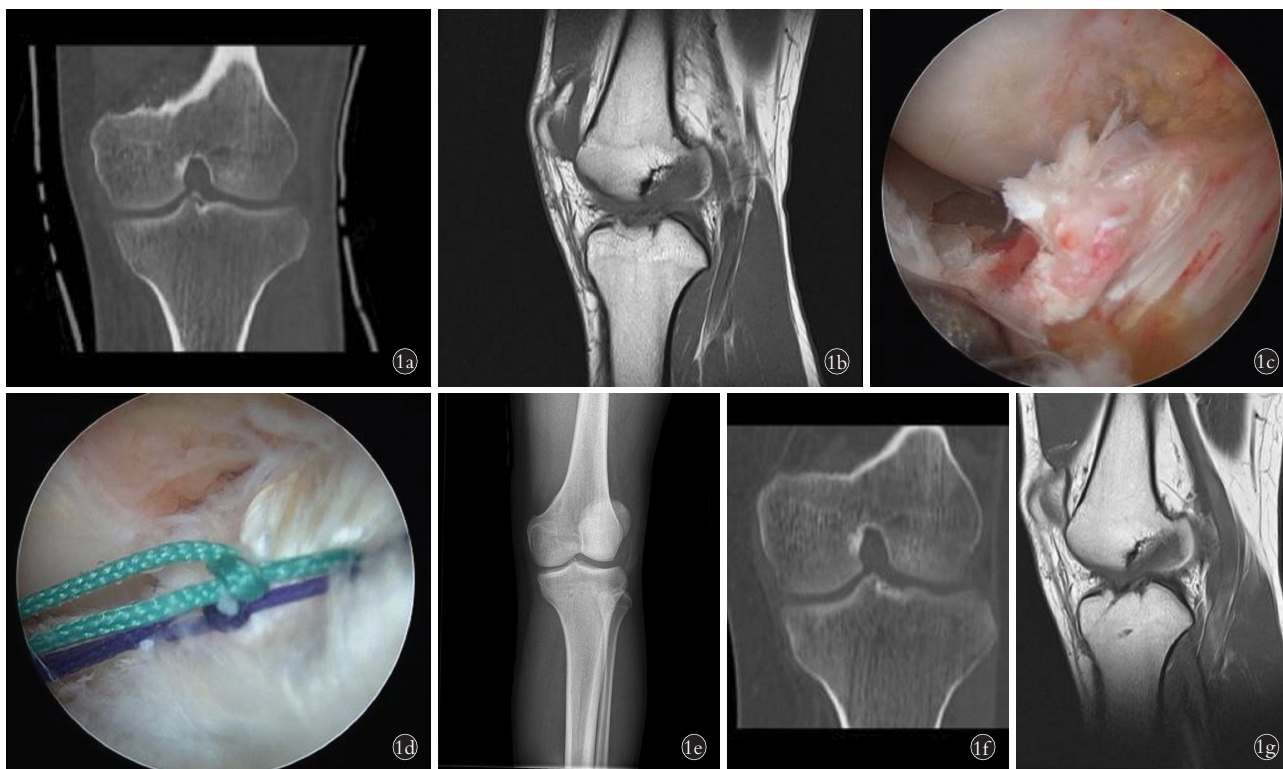


图 1 患者,男,22 岁,左 Meyers-McKeeever II 型前交叉韧带胫骨止点撕脱骨折 1a. 术前冠状位 CT 示左胫骨止点撕脱骨折 1b. 术前矢状位 MRI 示左前交叉韧带胫骨止点撕脱骨折 1c. 术中关节镜下见左前交叉韧带胫骨止点撕脱骨折 1d. 术中关节镜下见高强度线固定情况 1e. 术后正位 X 线片示左胫骨止点撕脱骨折复位情况 1f. 术后 6 个月冠状位 CT 示骨愈合情况 1g. 术后 6 个月矢状位 MRI 示骨愈合情况

Fig.1 Patient, male, 22 years old, left Meyers McKeeever II, III avulsion fracture of anterior cruciate ligament tibial check point 1a. Preoperative CT on coronary position showed left avulsion fracture of tibial check point 1b. Preoperative MRI on sagittal position showed left avulsion fracture of anterior cruciate ligament tibial check point 1c. Left avulsion fracture of anterior cruciate ligament tibial check point could be seen under arthroscopy 1d. High strength wire fixed under arthroscopy 1e. Postoperative AP X-ray showed left avulsion fracture of tibial check point restoration 1f. Postoperative CT on coronary position at 6 months showed bone healing 1g. Postoperative MRI on sagittal position at 6 months showed bone healing

4 讨论

4.1 关节镜下治疗前交叉韧带胫骨止点撕脱骨折研究现状

临床上对于 Meyers-McKeeever I 型患者,大多数学者主张采取石膏等外固定非手术治疗,而 II-IV 型患者,因骨折块不稳定移位,ACL 处于松弛状态,若不进行良好内固定,会导致半月板、软骨等膝关节附属结构继发性损伤。同时由于半月板等的阻挡,骨折块达不到良好的骨性愈合,造成 ACL 失效^[6-7]。目前关节镜下治疗的主要固定方式包括螺钉、钢丝和带

线锚钉等,它们有各自的优缺点。螺钉固定牢靠,但受骨折块大小的限制,可引起骨折块碎裂。钉帽的过多外露,也易与髌间窝撞击;钢丝固定价格低廉,固定有效,但脆性较大,容易疲劳断裂,对韧带、骨折块及骨隧道切割作用较大;带线锚钉的把持力度相对优于螺钉及钢丝,又能重建止点,对较小骨块或者粉碎骨块,也能良好固定,但费用相对较高^[8-9]。

4.2 关节镜下高强度线联合外排锚钉治疗前交叉韧带胫骨止点撕脱骨折优势

本研究纳入对象为 Meyers-McKeeever 分型 II 型

及Ⅲ型患者,关节镜下采用高强线联合外排锚钉治疗 ACL 胫骨止点撕脱骨折效果良好。本手术方法优势在于:(1)手术切口小,瘢痕小,镜下使用高强线过韧带、过骨隧道,手术操作相对容易,避免了钢丝等过骨隧道操作难度大、易折弯等不足。(2)创伤小,出血少,手术不造成膝关节其他结构损伤,可有效清除关节内积血,清除游离碎骨块,术后对关节粘连影响小,有利于膝关节功能的早期康复。(3)高强线载荷大,生物力学强度高,费用相对较低,组织相容性好,无须二次手术取出,对骨折块有较好的弹性加压固定作用,对韧带、骨折块切割伤小,并且同样适用于粉碎性骨折或骨质疏松患者。王江涛等^[10]通过猪 ACL 胫骨止点撕脱骨折模型对不同固定方式进行了生物力学研究,结果显示高强线领带结固定的最大失效载荷达 (515.61 ± 66.77) N, 大于空心螺钉的 (260.02 ± 49.88) N 及带线锚钉的 (247.47 ± 12.20) N。已有较多研究表明高强线可提供坚强稳定的内固定,为术后早期功能锻炼打下坚实的基础。(4)外排锚钉可有效收紧高强线,使内固定更加稳定。关节镜下对于固定后前交叉韧带张力的判断比较直观,必要时可以调整位置,使前交叉韧带保持适当的张力,对于增生或者突起的隆突骨块必要时可予以成形,减少对韧带的磨损。(5)与传统切开手术相比,可在不暴露膝软骨的条件下,避免软骨基质水分、糖蛋白等丢失,使软骨结构免遭破坏,有利于软骨面的再生修复。

4.3 关节镜下高强线联合外排锚钉手术操作事项

术中注意事项:(1)予以彻底清除关节腔内的淤血,如发现半月板等其他附属结构损伤,应先给予修整或修补。(2)骨折块与骨床之间如有小碎骨片嵌顿需清理,有脂肪垫及横韧带嵌顿予以清除,骨隧道尽量内口位于骨床前内侧和前外侧,如韧带偏松弛将骨床挖深。(3)使用胫骨定位器时尽可能一次钻取成功,避免反复多次钻道。(4)对于骨隧道间距太大或太小,隧道骨质比较锐利容易导致高强线断裂。

综上所述,关节镜下高强线联合外排锚钉治疗 Meyers-McKeever II、III 型 ACL 胫骨止点撕脱骨折创伤小,固定牢靠,临床效果满意,能有效缓解膝关节疼痛,较快促进骨折愈合,改善膝关节活动能力,提高生活质量,是一种安全有效的治疗方法。但由于样本量尚小,远期效果还有待跟进,因此今后有待进行大样本、多中心等研究分析。

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