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·临床研究·

改良 Brostrom 手术在训练伤致慢性踝关节不稳距腓前韧带损伤中的应用

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[摘 要] **目的** 探讨踝关节镜结合改良 Brostrom 手术在慢性踝关节不稳距腓前韧带损伤中的应用效果。**方法** 2012 年 1 月至 2015 年 6 月我科收治了 42 例慢性踝关节不稳距腓前韧带损伤的患者,均行改良 Brostrom 手术,术后采用 AOFAS 评分系统进行疗效评价。**结果** 所有患者获 9~17 个月随访,平均(12.7±3.5)个月。全部病例末次随访时均能正常参与日常跑步等训练任务。2 例合并距骨软骨损伤者运动水平较伤前下降,余 40 例能参加对抗性训练。全部病例术后 AOFAS 评分(88.4±4.9)分较术前的(43.3±7.8)分提高,手术前后比较差异具有统计学意义($P<0.05$)。**结论** 踝关节镜结合改良 Brostrom 手术在训练伤致慢性踝关节不稳距腓前韧带损伤中的应用疗效满意,有利于患者快速康复。

[关键词] 慢性踝关节不稳;关节镜;Brostrom 修复术;距腓前韧带
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Application of modified Brostrom procedure for chronic ankle instability combined with anterior talofibular ligament injury

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Abstract: Objective To discuss the clinical effects of arthroscopy combined with Brostrom repair in the treatment for chronic ankle instability talofibular ligament injury. **Methods** From January 2012 to June 2015, 42 cases of chronic ankle instability in our hospital were performed modified Brostrom repair. All the cases were evaluated by AOFAS scoring system. **Results** All the patients were followed up for 9 to 17 months, an average of (12.7±3.5) months. At the last follow-up, all cases could participate in normal daily running training mission. Activity levels of 2 cases with cartilage injury had a decline than before. The others were able to attend the confrontational training. Postoperative AOFAS score (88.4±4.9) increased compared with preoperative score (43.3±7.8), the difference was significant ($P<0.05$). **Conclusion** The curative effect of arthroscopy combined with Brostrom repair in treatment of chronic ankle instability talofibular ligament injury is satifactory. It can be helpful to the wounded rapid rehabilitation and good for the popularization and application in basic-level hospitals.

Keywords: chronic ankle instability; arthroscopy; Brostrom repair; anterior talofibular ligament

踝关节运动损伤占所有运动损伤的 10%~15%,在运动员中更是达到 5.23/10 000~9.35/10 000[1]。随着训练强度的增加,踝关节运动损伤极为常见,然而,多年来对此类伤情的认识尚不充分,加之急性期处理方式欠妥导致慢性踝关节不稳的发生率逐年上升。目前,国内外对于慢性踝关节不稳的手术治疗虽已达成共识,但是在对距腓前韧带手术方式的选择上,修复和重建哪种更优尚存争议。Brostrom 手术是最经典的修复类手术,随着技术的发展,各类改良 Brostrom 手术应用于距腓前韧带的修复中[2-3]。我科于 2012 年 1 月至 2015 年 6 月收治了 42 例慢性踝关节不稳距腓前韧带损伤的病例,通过行改良 Brostrom 修复手术取得了良好的临床疗效,现报告如下。

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1 资料与方法

1.1 临床资料

本组 42 例(42 踝)均为男性,年龄 21~35 岁,平均(26.7±4.1)岁,均为训练时扭伤踝关节,休息后再次训练中反复扭伤并出现疼痛、不稳。病程 1~10 年,平均(5.5±3.3)年,扭伤 5~32 次,平均(11.3±10.7)次,经休息、外用药物等保守治疗无效。前抽屉试验阳性,X 射线下距骨倾斜试验大于 5°,MRI 证实距腓前韧带撕裂、松弛或缺如,诊断为慢性踝关节不稳距腓前韧带损伤。

1.2 手术方法

采用全身麻醉,取仰卧位,常规消毒无菌手术单。分别于踝关节处胫骨前肌内侧及趾长伸肌外侧各作 1 个长约 0.5 cm 的切口,穿刺进入关节腔,连接关节

镜系统并置入关节镜检查。将关节腔内增生、充血水肿的滑膜适度清除,屈伸活动踝关节,对前踝撞击的骨赘以磨钻去除,探查距骨负重区表面存在的软骨损伤予以清理,不稳定的软骨予以切除后行微骨折术,刨销刀、射频清理外踝距腓前韧带周围可见韧带松弛、撕裂或缺如。关节镜操作完毕后,取腓骨远端前内侧弧形切口,长约 3 cm,切开皮肤、皮下组织,分离外侧支持带,显露距腓前韧带,于该韧带腓骨附着点骨面新鲜化处理,再予韧带两侧打入 2 枚 3.5 mm 直径带线锚钉(施乐辉公司,美国)。取圆针利用尾线缝合外侧支持带,缝合前牵拉外侧支持带以保证其张力,完毕后再检查前抽屉试验阴性,关节稳定性均满意,不放置引流管,吸净关节内液体后予罗哌卡因进行局部浸润,缝合关闭切口,无菌敷料覆盖,短腿石膏托中立位外固定。

1.3 术后处理

冰袋冰敷患踝 24 h。术后预防性使用抗生素 48 h。术后 7~10 d 拆线,术后 1、3、6、12 个月和每年门诊随访。康复训练计划:术后即可进行踝关节以外关节的运动练习,术后第 1 天复查 X 射线片,短腿石膏托中立位保护性外固定 6 周,期间进行患踝去除石膏时可进行非负重下的背伸和外翻练习,4 周后开始跖屈和内翻练习。术后 6 周允许负重行走,3 个月后进行常规训练。

1.4 评价方法及统计学处理

疼痛评分采用视觉模拟评分法(visual analogue score,VAS),疗效判定参照 AOFAS 评分系统[4]。统计学处理采用 SPSS 15.0 软件,VAS 和 AOFAS 评分等定量资料以均数 ± 标准差($\bar{x} \pm s$)表示,组间比较采用两独立样本 t 检验,以 $P<0.05$ 为差异有统计学意义。

2 结果

2.1 VAS 及 AOFAS 评分情况

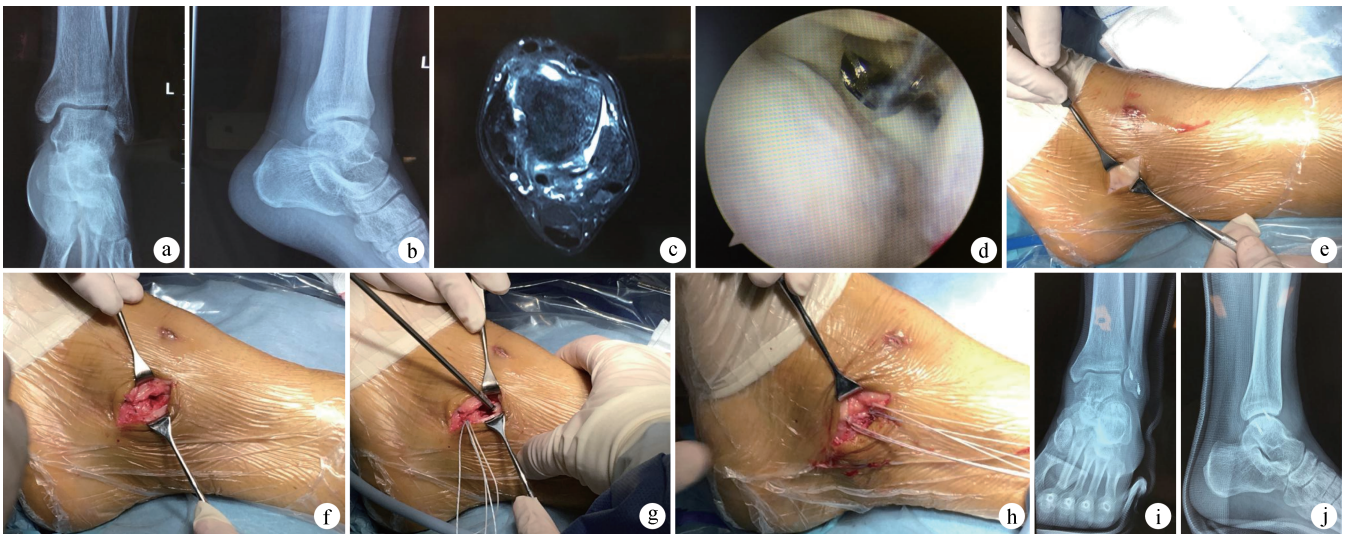
42 例获 9~17 个月随访,平均(12.7 ± 3.5)个月。全部病例末次随访时均能正常参与日常跑步等训练任务。2 例合并距骨软骨损伤者运动水平较伤前下降,余 40 例均能够参加对抗性训练。全部病例术前与术后 6 个月 VAS 评分比较,差异无统计学意义($P>0.05$),术后 AOFAS 评分较术前提高,差异具有统计学意义($P<0.05$)。未出现关节内或浅表感染、深静脉血栓等并发症,见表 1。

表 1 手术前后 VAS、AOFAS 评分($\bar{x} \pm s$,$n=42$,分)

项目	术前	术后 6 个月	P
VAS 疼痛评分	1.2 ± 0.4	1.5 ± 0.7	0.170
AOFAS 评分	90.5 ± 4.4	86.2 ± 10.1	0.000

2.2 典型病例

患者,男,27 岁,左踝关节慢性不稳。术前 X 射线片可见距骨内上方骨质增生,距骨前移,MRI 示距腓前韧带撕裂,关节镜检查清理术中见距骨软骨损伤,选择改良 Brostrom 术切口,显露距腓前韧带并将止点的骨面新鲜化,打入 2 枚 3.5 mm 带线锚钉,将外侧支持带缝合,术后踝关节 X 射线片示锚钉位置佳,关节稳定性良好(图 1)。



a:术前 X 射线正位片;b:术前 X 射线侧位片;c:术前轴位 MRI 示距腓前韧带损伤;d:关节镜下可见距骨 4 区软骨损伤;e~h:手术中;i:术后 X 射线正位片;j:术后 X 射线侧位片

图 1 典型病例手术情况

3 讨论

踝关节扭伤即“崴脚”,在生活中和训练中十分常见,在美国每天有 23 000 例以上的踝关节扭伤发生[5]。踝关节扭伤的病例中,85% 为内翻位扭伤,其中 20% ~40% 可发展为症状性慢性不稳,在这些慢性不稳的病例中,85% 存在距腓前韧带损伤,90.8% 存在踝关节内的病损[6-7]。

距腓前韧带作为外踝韧带中最容易损伤的结构,其近端止于腓骨最远侧近侧 1 cm 处前侧软骨面旁,远端止于距骨关节面下方,在距下关节上 18 mm 处,长约 20 mm,宽 7 mm,和踝关节前方关节囊纤维交织,可有或无分支。在生物力学上,距腓前韧带于跖屈位紧张,防距骨倾斜,背伸位松弛。距腓前其力学强度是其容易损伤的另一个因素,甚至在做前抽屉试验过程中,给予过大的力量即可造成医源性损伤,有生物力学研究其轴向拉力超过 100 N 时已经启动的损伤的病理性改变[8-9]。

以往对于严重的踝关节扭伤即肿胀、疼痛剧烈甚至出现外踝撕脱骨折的患者,医生才于门诊或急诊给予石膏外固定,对于症状不明显的来诊患者多不予局部制动(石膏或支具),而且,患者往往由于工作、学习等原因亦不愿配合局部制动。随着病例的增多,理念和关节镜技术的提升,医生们对于踝关节扭伤急性期就诊的病例给予制动能够取得较好的临床疗效[10]。对于慢性踝关节不稳中距腓前韧带损伤的病例则采用手术的治疗方式,发展至今术式多达数十种,按类别分为修复术、重建术两大类。Brostrom 手术作为数十年来最经典的修复类手术得到全世界学者的推崇,各类改良 Brostrom 手术应用于距腓前韧带的修复中[11-14]。带线锚钉问世以来,在运动损伤修复的手术治疗中得到广泛应用,如跟腱撕裂、肩袖损伤、内侧副韧带损伤等,其对于距腓前韧带的修复效果无论在生物力学上还是在临床疗效方面亦得到肯定[15-16]。在本研究中,我们利用 2 根 3.5 mm 直径的带线锚钉对距腓前韧带进行修复,同时对外侧支持带进行加强缝合。42 例获平均(12.7 ±3.5)个月的随访,除 2 例合并距骨软骨损伤者运动水平较伤前下降外,40 例均能够参加对抗性训练。术后 AOFAS 评分较术前明显提高,疗效满意。

笔者体会:①由于绝大多数训练伤致慢性踝关节不稳距腓前韧带损伤病例存在关节内病损,因此,关节镜的使用是非常必要的;②术前需准备踝关节牵引装置以备处理距骨顶区或胫骨远端穹窿关节面时使用;③全镜下操作是可行的且创伤更小,但需购置直径 2.7 mm的关节镜及配套设备方可操作;④医疗成本与取自体肌腱重建相当,较人工肌腱或同种异体腱优势明显;⑤本术式较重建术而言,具有切口小(约 3 cm)、无需取腱、损伤小的优点;⑥关节外科医生初学时需一定的学习曲线,掌握踝关节解剖及基本的踝关节镜操作。

综上所述,踝关节镜结合改良 Brostrom 手术在训练伤致慢性踝关节不稳距腓前韧带损伤中的应用疗效满意,有利于伤员快速康复。

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·临床研究·

术前椎动脉 CT 血管造影检查在上颈椎手术置钉中的应用

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[摘要] **目的** 探讨术前椎动脉 CT 血管造影(CTA)检查在上颈椎置钉中的指导作用。**方法** 回顾性分析我院自 2014 年 1 月至 2015 年 12 月收治的 170 例上颈椎手术患者资料,其中Ⅱ型齿突骨折 80 例,寰枢椎脱位 90 例;20 例行颈枕融合术,150 例行寰枢椎融合术。92 例术前未行椎动脉 CTA 检查(对照组),78 例术前行椎动脉 CTA 检查(观察组)。比较 2 组术中椎动脉损伤情况。**结果** 对照组有 6 例椎动脉损伤,椎动脉损伤发生率为 7%;观察组椎动脉单侧缺如 3 例,左侧先天性发育细小 5 例,异常分支 5 例,椎动脉发育异常的比率为 17%,椎动脉损伤率为 0。对照组椎动脉损伤率明显高于观察组,2 组比较差异有统计学意义($P<0.05$)。**结论** 在上颈椎手术中,术前椎动脉 CTA 检查可作为一项常规检查,便于术者术前仔细评估椎动脉与寰枢椎的毗邻关系,以便指导术者选择正确的置钉方式,从而避免椎动脉损伤。

[关键词] 椎动脉;CT 血管造影;上颈椎;置钉;颈枕融合术;寰枢椎融合入术

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Application of preoperatively vertebral artery CTA in screw setting of upper cervical spine

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Abstract: Objective To study the application of cervical vertebral artery CT angiography(CTA) preoperatively in the screw setting of upper cervical spine. **Methods** The data of 170 patients who underwent upper cervical spine surgery from January 2014 to December 2015 in our hospital were retrospectively analyzed, of whom 80 cases with type Ⅱ odontoid fractures, 90 cases with atlantoaxial dislocation; 20 cases were operated with occipitocervical fusion, 150 cases treated with atlantoaxial fusion. Seventy-eight cases were examinated by cervical vertebral artery CTA before sugery(observation group) but the other 92 cases(control group). The rate of the vertebral arterial lesion between the two groups were compared. **Results** Six cases with vertebral artery injury in control group, the incidence of arterial injury was 7%; unilateral vertebral artery was found in 3 cases, small congenital development of left cervical vertebral artery in 5 case, abnormal branch in 5 cases. The rate of dysplasia was 17%, and the rate of vertebral artery injury was 0. The rate of vertebral artery injury in control group was higher than observation group, the difference was significant($P<0.05$). **Conclusion** Vertebral artery CTA examination preoperatively may become a routine examination, in order to make the operator carefully evaluate the relationship between the vertebral artery with atlantoaxial vertebral, choose

chronic lateral ankle instability with and without subfibular ossicle[J]. Am J Sports Med, 2016, 44(12): 3158 – 3164. doi: 10.1177/0363546516660069.

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