

关节镜下双后内侧入路单向活瓣切除 治疗腘窝囊肿的临床疗效

李博文¹, 韩博闻², 吴大鹏², 宋凯², 黄媛霞², 梁秋冬²

1. 新乡医学院, 河南 新乡 453000; 2. 新乡医学院第一附属医院骨科, 河南 新乡 453100

摘要:目的 探讨关节镜下双后内侧入路单向活瓣切除技术在腘窝囊肿治疗中的应用及临床效果。方法 回顾性收集2020年1月至2022年3月于新乡医学院第一附属医院行关节镜下双后内侧入路单向活瓣切除技术治疗的24例腘窝囊肿患者的临床资料,使用疼痛视觉模拟评分法(VAS)、Lysholm膝关节评分、Rauschning和Lindgren腘窝囊肿分级对术前、术后1周、术后6个月膝关节的疼痛程度、关节功能及术后复发率进行评估,并对临床效果进行分级评定。结果 术后6个月随访,VAS评分术后低于术前[(1.75±0.85)分 vs (5.42±1.31)分, $P < 0.05$];Lysholm膝关节评分术后高于术前[(86.92±7.51)分 vs (53.33±9.37)分, $P < 0.05$];Rauschning和Lindgren腘窝囊肿分级,术后6个月(0级17例, I级4例, II级2例, III级1例)明显优于术前(II级19例, III级5例),差异有统计学意义($Z = 3.724, P < 0.01$)。所有患者术后均未出现关节感染、关节内血肿形成、下肢深静脉血栓形成或神经血管损伤等并发症及腘窝囊肿复发。结论 关节镜下双后内侧入路单向活瓣切除技术治疗腘窝囊肿,临床疗效好,复发率低,术后膝关节功能评分提升显著。

关键词: 腘窝囊肿; 关节镜; 双后内侧入路; 单向活瓣; 微创

中图分类号: R686.7 R684 文献标识码: B 文章编号: 1674-8182(2023)09-1379-05

Clinical effect of arthroscopic double posteromedial approach of one-way valve resection for popliteal cyst

LI Bowen*, HAN Bowen, WU Dapeng, SONG Kai, HUANG Yuanxia, LIANG Qiudong

* Xinxiang Medical University, Xinxiang, Henan 453000, China

Corresponding author: LIANG Qiudong, E-mail: 13837385528@163.com

Abstract: Objective To explore the application and clinical effect of double posteromedial approach of one-way valve resection under arthroscopy in the treatment of popliteal cysts. **Methods** A retrospective study was performed on the clinical data of 24 patients with popliteal cysts undergoing arthroscopic double posteromedial approach of one-way valve resection at the First Affiliated Hospital of Xinxiang Medical University from January 2020 to March 2022. The visual analog scale (VAS), Lysholm score of knee joint and Rauschning-Lindgren grade for popliteal cysts were used to assess the pain degree and joint function before surgery, 1 week after surgery and 6 months after surgery. The postoperative recurrence rate and clinical outcomes were observed. **Results** After 6-month postoperative follow-up, VAS score were significantly lower than that before operation (1.75±0.85 vs 5.42±1.31, $P < 0.05$). Lysholm knee score were higher than that before operation (86.92±7.51 vs 53.33±9.37, $P < 0.05$). Rauschning-Lindgren grade at 6 months after surgery (grade 0 in 17 cases, grade I in 4 cases, grade II in 2 cases, and grade III in 1 case) was significantly better than that before surgery (grade II in 19 cases and grade III in 5 cases) ($Z = 3.724, P < 0.01$). All patients had no postoperative complications such as joint infection, intra-articular hematoma, lower limb deep vein thrombosis or neurovascular injury and recurrence of popliteal cysts. **Conclusion** In the treatment of popliteal cysts, arthroscopic double posteromedial approach of one-way valve resection has a good clinical effect, low recurrence rate and significant improvement in

postoperative knee joint function.

Keywords: Popliteal cyst; Arthroscope; Double posteromedial approach; One-way valve; Minimal invasive

Fund program: Henan Medical Science and Technological Breakthrough Project (SB201901059)

腘窝囊肿,又称为 Baker 囊肿,其典型特征是膝关节后方的腓肠肌内侧头和半膜肌肌腱之间滑膜囊的扩张。目前对于形成滑膜囊囊肿原因获得较多认可的理论是膝关节内部的病变如膝关节骨性关节炎、半月板损伤和关节囊滑膜皱襞的单向活瓣机制等^[1]。单向活瓣机制使关节液通过活瓣单向流动至后方的滑膜囊,导致囊肿的形成和持续存在。对于有症状的体积较大的囊肿,手术切除治疗为首选。传统的开放手术是经典的手术方式,术中需将囊壁完整切除,创伤较大且复发率较高,且无法解决前方的单向活瓣问题^[2]。关节镜下单向活瓣切除治疗腘窝囊肿因其手术创伤小、复发率低,近年来得以快速发展及推广^[3-4]。2020年1月至2022年2月,笔者团队采用关节镜下双后内侧入路治疗腘窝囊肿。报道如下。

1 资料与方法

1.1 一般资料 回顾性收集2020年1月至2022年3月于新乡医学院第一附属医院行关节镜下双后内侧入路单向活瓣切除技术治疗的24例腘窝囊肿患者的临床资料。其中男8例,女16例;年龄31~72(55.17 ± 10.89)岁;左膝8例,右膝16例;关节内病因:滑膜炎3例(12.5%),半月板撕裂4例(16.7%),软骨损伤17例(70.8%),关节游离体3例(12.5%),有的患者不止1个病因。纳入标准:(1)经MRI检查存在与关节囊相通的腘窝囊肿;(2)Rauschnig和Lindgren腘窝囊肿分级I级以上;(3)无手术禁忌证,具备关节镜手术治疗指征。排除标准:(1)MRI未明确显示腘窝囊肿与关节囊相通;(2)半月板严重撕裂需缝合;(3)交叉韧带断裂需重建;(4)Rauschnig和Lindgren腘窝囊肿分级0级;(5)存在其他的手术禁忌证。本研究已获得医院医学伦理委员会批准(编号:2020041)。

1.2 手术方法 全身麻醉后,患者取仰卧位,放置下肢止血带减少出血及维持术野清晰。采用常规标准关节镜前内侧及前外侧入路对膝关节韧带、半月板、软骨、滑膜等组织进行检查。膝关节外展屈曲位,通过股骨内侧髁及后交叉韧带的间隙可进入后关节囊,关节镜定位,建立后内侧高位单通道,插入探针来定位腘窝囊肿活瓣的开口处,开口常位于腓肠肌内侧头与后内侧关节囊折返处。使用刨刀经后内侧高位入

口刨除关节囊反折褶皱,显露腓肠肌内侧头和半膜肌肌腱。此时使用刨刀完全扩大瓣膜开口,以重建双向活瓣。随后将关节镜切换到后内侧高位入口,沿着腓肠肌内侧头后内侧进入腘窝囊壁,建立后内侧低位入口(通常此位位于高位入口下或后2cm)。置入刨刀,吸出囊液,刨除囊肿内壁,冲洗关节腔,放置引流管,缝合切口。此外,可以通过改变膝关节屈曲角度及向外推囊肿以协助刨除囊肿内壁。

1.3 术后处理 术后多层敷料加压包扎囊肿部位,每3天换药1次,常规予镇痛、消肿等对症治疗,卧床适当抬高患肢促进静脉回流,术后24h鼓励患者开始加强踝泵运动、屈伸膝关节及完全负重下地活动。

1.4 观察指标

1.4.1 临床疗效 记录24例患者术前及术后6个月Rauschnig和Lindgren腘窝囊肿分级及复发率。0级为无肿胀和疼痛,无活动受限;I级为轻度肿胀和/或在剧烈活动后腘窝处有紧张感,轻度活动受限;II级为正常活动后肿胀和疼痛,活动受限 $<20^\circ$;III级为休息时也可出现肿胀和疼痛,活动受限 $\geq 20^\circ$ 。

1.4.2 膝关节功能 记录24例患者术前及术后1周、6个月膝关节Lysholm膝关节评分, Lysholm评分总分为100分,95分以上为优秀,94~85分为良好,84~65分为尚可,小于65分为差。

1.4.3 膝关节疼痛 记录24例患者术前及术后1周、6个月疼痛视觉模拟评分法(VAS)评分,评估患者膝关节疼痛程度,VAS评分总分为10分,分值越高,疼痛越严重。

1.5 统计学方法 采用SPSS 26.0软件进行统计学分析。符合正态性的计量资料以 $\bar{x} \pm s$ 表示,不同时点间比较应用重复测量方差分析及两两比较的LSD-*t*检验;单向有序等级资料的比较采用配对秩和检验。以 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 手术前后各项相关指标 所有患者均获得至少6个月的有效随访,随访时间为术后1周及术后6个月。VAS评分术前(5.42 ± 1.31)分,术后6个月随访(1.75 ± 0.85)分,术后评分低于术前,差异有统计学意义($P < 0.01$)。Lysholm膝关节评分术前(53.33 ± 9.37)分,术后6个月随访(86.92 ± 7.51)分,术后评分

高于术前,差异有统计学意义($P<0.01$)。见表1。Rauschnig 和 Lindgren 腘窝囊肿分级,术前Ⅱ级19例(79.2%)、Ⅲ级5例(20.8%),术后6个月0级17例(70.8%)、Ⅰ级4例(16.7%)、Ⅱ级2例(8.3%)、Ⅲ级1例(4.2%),术后分级显著优于术前,差异有统计学意义($Z=3.724, P<0.01$)。至末次随访,所有患者均未出现关节感染、关节内血肿形成、下肢深静脉血栓形成或神经血管损伤等并发症以及腘窝囊肿复发。

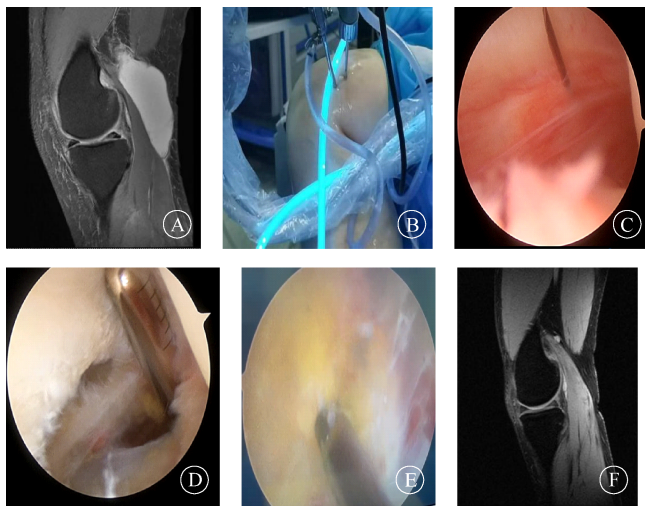
2.2 典型病例 (1) 例1: 53岁女性患者,以右膝关节肿胀、活动受限7月余为主诉入院,术前MRI显示右侧腘窝囊肿形成,诊断为右膝腘窝囊肿、内侧半月板损伤、骨关节炎。全麻下行关节镜下右侧膝关节双后内侧入路腘窝囊肿内引流术,术后复查右膝关节MRI显示腘窝囊肿消失。手术前后影像学资料及术中所见如图1。(2) 例2: 76岁女性患者,以右膝关节肿胀、活动受限2年为主诉入院,术前MRI显示右侧腘窝囊肿形成,诊断右膝腘窝囊肿、内侧半月板损伤、骨关节炎。全麻下行关节镜下右侧膝关节双后内侧入路腘窝囊肿内引流术,术后复查右膝关节MRI显示腘窝囊肿消失。手术前后影像学资料及术中所见如图1。

表1 患者术前术后各评价指标比较 ($n=24$, 分, $\bar{x}\pm s$)

Tab. 1 Comparison of each evaluation index of patients before and after surgery ($n=24$, point, $\bar{x}\pm s$)

时间	VAS	Lysholm 膝关节评分
术前	5.42±1.31 ^a	53.33±9.37 ^a
术后1周	3.00±0.98 ^a	60.75±8.94 ^a
术后6个月	1.75±0.85	86.92±7.51
F 值	103.054	183.856
P 值	<0.001	<0.001

注:与术后6个月比较,^a $P<0.05$ 。



注:A,术前MRI矢状位显示后关节囊后方腘窝囊肿形成;B,术中建立双后内侧入路通道,采用4字体位摆放;C,前侧入路视野下使用探针建立后内侧入路通道;D,使用刨刀扩大后内侧通道开口;E,视野下可见后关节囊腘窝囊肿;F,术后3个月复查MRI显示腘窝囊肿消失。

图1 例1患者手术前后影像学资料及术中所见

Fig. 1 Preoperative and postoperative imaging data and intraoperative findings of case 1

伤、骨关节炎。全麻下行关节镜下右侧膝关节双后内侧入路腘窝囊肿内引流术,术后复查右膝关节MRI显示腘窝囊肿消失。手术前后影像学资料如图2。



注:A,术前MRI矢状位显示后关节囊后方腘窝囊肿形成;B,术后1个月复查MRI显示腘窝囊肿消失。

图2 例2患者手术前后影像学资料

Fig. 2 Imaging data of case 2 before and after operation

3 讨论

关于腘窝囊肿的病因,大多数学者认为,其形成主要与关节内的病变有关。成人中高达94%的腘窝囊肿形成与关节内的病变有关,这些病理包括半月板撕裂、关节积液、骨性关节炎、软骨损伤、类风湿性关节炎、前交叉韧带撕裂等,这些病变可作为滑液的主要来源,控制滑液单向流动的阀门机制也促进了囊肿的形成^[5-7]。本研究也发现,退行性的软骨损伤是最常见的关节内病理。

关节镜技术处理腘窝囊肿的优势为何? 腘窝囊肿的手术治疗主要为囊肿切除,重建囊与关节腔的双向流通以及关节内疾病的处理。对于开放性手术而言,由于腘窝囊肿的囊壁非常薄,在术中很难将囊壁完整切除。彻底缝合关节囊可以降低复发率,反之则会提高^[8],且单纯切除囊肿无法解决关节内单向活瓣机制。因此,传统开放性的手术切除囊肿与关节内的病变无关,通常复发率高,暴露范围广,存在血管及神经损伤风险,创伤较大^[9]。近年来,关节镜下腘窝囊肿内引流术已被广泛接受。在早期,2007年Calvisi等尝试了在关节镜下采用全内缝合方式直接缝合单向活瓣来治疗腘窝囊肿。更早在1978年Lindgren等就通过检测腓肠肌-半膜囊及膝关节的压力提出单纯缝合活瓣无法维持关节内压力的变化,从而导致了术后有较高的复发率。两侧关节囊压力的不平衡也是导致术后复发的重要原因^[10]。关节镜下解决单向活瓣机制的另一种方法是扩大开口。2005年Takahashi等通过关节镜下后内侧入路切除囊后壁

的裂隙状结构,扩大开口。Ahn等^[11]通过后内侧入路进行了囊壁的切除,术后MRI复查所有患者的囊肿均减小或消失。因此,扩大开口对于解决单向活瓣机制是有效的。Chen等^[12]认为在寻找囊肿开口的过程中可能会损伤后内侧的囊肿,从而影响远期膝关节的稳定性,因此他们通过建立后内侧关节外途径的入路更安全的寻找囊壁并予以切除,也取得了良好的疗效。本研究中,建立了一个完整的关节镜下双后内侧入路,囊壁开口均显露充分。术中建立通道后使用“4”字体位摆放,更加方便术者操作,同时囊肿由于体位也紧贴前方,便于切除。24例患者在随访中均未出现复发,术后的VAS评分、Rauschning和Lindgren 腘窝囊肿分级及Lysholm评分均显示效果显著,与Gu等^[13]的研究方法与结果一致。

关于腘窝囊肿囊壁的处理,在关节镜下腘窝囊肿内引流术中,除了同时处理关节内病变,是否切除囊壁对于囊肿的复发仍存在较大的争议。时志斌等^[14]在关节镜术中,扩开单向活瓣后,合并进行囊壁切除在短期疗效方面与保留囊壁并无显著差异。Jiang等^[15]在术中切除囊壁直至腓肠肌内侧头与半膜肌肌腱显露清晰,此时囊肿与后关节囊的交流口超过5 mm,开口已转为双向流动,并以此为手术原则。赵冬梅等^[16]及罗富强等^[17]都通过建立单后内侧通道后于关节镜下将活瓣内口扩大来完成手术。赵智君等^[18]同样建立改良双后内侧通道在更好的视野下对囊肿内壁进行刨除。在一项系统回顾和荟萃分析中综合分析显示,切除囊肿壁的手术成功率为98.2%,未切除囊肿壁的手术成功率为94.7%^[19],该项研究显示囊壁的切除可以提高疗效,但尚不能作为支持一种治疗策略的依据,未来需要更高质量和统一的评分方法来进行前瞻性研究,确定腘窝囊肿的最佳治疗方案。无论是否切除囊壁,关节镜内引流术均可治愈腘窝囊肿。本研究中,术中均尽可能切除囊壁,术后也得到了满意的效果。

综上所述,采用关节镜下双后内侧入路单向活瓣切除可以有效治疗腘窝囊肿,减小手术创伤,提高临床效果,减少术后并发症的产生,降低术后复发率。

利益冲突 无

参考文献

[1] Saylik M, Gökkuş K. Treatment of baker cyst, by using open posterior cystectomy and supine arthroscopy on recalcitrant cases (103 knees)[J]. BMC Musculoskelet Disord, 2016, 17(1): 435.

[2] Snir N, Wolfson T, Pham H, et al. Clinical outcomes after mini-open excision of popliteal cysts[J]. Bull Hosp Jt Dis, 2019, 77

(3): 159-163.

[3] Van Nest DS, Tjoumakaris FP, Smith BJ, et al. Popliteal cysts: a systematic review of nonoperative and operative treatment[J]. JBJS Rev, 2020, 8(3): e0139.

[4] Malinowski K, Synder M, Sibiński M. Selected cases of arthroscopic treatment of popliteal cyst with associated intra-articular knee disorders primary report[J]. Ortop Traumatol Rehabil, 2011, 13(6): 573-582.

[5] Calvisi V, Zoccali C. Arthroscopic patterns of the poster-medial aspect of the knee joint: classification of the gastrocnemius-semimembranosus gateway and its relationship with Baker's cyst[J]. Muscles Ligaments Tendons J, 2016, 6(4): 492-498.

[6] Li H, Zhang M, Li YK, et al. Comparison of clinical outcomes associated with arthroscopic cyst wall preservation or resection in the treatment of popliteal cyst: a systematic review and meta-analysis [J]. Arch Orthop Trauma Surg, 2021, 141(10): 1741-1752.

[7] Saylik M, Gokkus K, Sahin MS. Factors affecting Baker cyst volume, with emphasis on cartilage lesion degree and effusion in the young and middle-aged population[J]. BMC Musculoskelet Disord, 2021, 22(1): 851.

[8] 张均泉,张玉峰,叶茂,等.关节镜下双后内入路与传统开放手术治疗腘窝囊肿效果对比观察[J].湖北民族大学学报(医学版), 2022, 39(1): 91-94.

Zhang JQ, Zhang YF, Ye M, et al. Comparative observation on the effect of arthroscopic double posterior internal approach and traditional open surgery in the treatment of popliteal cyst [J]. J Hubei Minzu Univ Med Ed, 2022, 39(1): 91-94.

[9] Ji JH, Shafi M, Kim WY, et al. Compressive neuropathy of the tibial nerve and peroneal nerve by a Baker's cyst: case report[J]. Knee, 2007, 14(3): 249-252.

[10] Su C, Kuang SD, Zhao X, et al. Clinical outcome of arthroscopic internal drainage of popliteal cysts with or without cyst wall resection [J]. BMC Musculoskelet Disord, 2020, 21(1): 440.

[11] Ahn JH, Lee SH, Yoo JC, et al. Arthroscopic treatment of popliteal cysts: clinical and magnetic resonance imaging results[J]. Arthroscopy, 2010, 26(10): 1340-1347.

[12] Chen Y, Lee PY, Ku MC, et al. Extra-articular endoscopic excision of symptomatic popliteal cyst with failed initial conservative treatment: a novel technique [J]. Orthop Traumatol Surg Res, 2019, 105(1): 125-128.

[13] Gu H, Bi Q, Chen J. Arthroscopic treatment of popliteal cyst using a figure-of-four position and double posteromedial portals[J]. Int Orthop, 2019, 43(6): 1503-1508.

[14] 时志斌,倪建龙,樊立宏,等.关节镜下单纯内引流术与联合囊壁切除术治疗腘窝囊肿的前瞻性对比研究[J].中国修复重建外科杂志, 2018, 32(10): 1326-1331.

Shi ZB, Ni JL, Fan LH, et al. Clinical prospective comparative study on short-term effectiveness of arthroscopic treatment of popliteal cyst between cystectomy and internal drainage combined with cystectomy [J]. Chin J Reparative Reconstr Surg, 2018, 32(10): 1326-1331.

- Pharmacovigil, 2015, 12(9):552-555.
- [6] 段蓉,李正翔.基于 openFDA 对达格列净上市后不良反应的分析研究[J].中国医院药学杂志,2018,38(22):2360-2362.
Duan R, Li ZX. Analysis of post-marketing adverse drug reactions of dapagliflozin based on openFDA[J]. Chin J Hosp Pharm, 2018, 38(22):2360-2362.
- [7] 王业辉.中国药品不良反应监测模式趋势研究[J].中国卫生标准管理,2017,8(24):87-89.
Wang Y. Study on the adverse drug reaction monitoring mode chinese trend[J]. CHSM, 2017, 8(24): 87-89.
- [8] 邢惟青,吴建茹,毛秋荣,等.住院患者自主报告药品不良反应路径探索及实践[J].中国药物警戒,2020,17(7):408-411.
Xing WQ, Wu JR, Mao QR. Self-reporting of adverse drug reactions by inpatients based on internet plus big data technology[J]. Chin J Pharmacovigil, 2020, 17(7):408-411.
- [9] Chen ZM, Peto R, Iona A, et al. Emerging tobacco-related cancer risks in China; a nationwide, prospective study of 0.5 million adults [J]. Cancer, 2015, 121 Suppl 17: 3097-3106.
- [10] Nishino M, Ramaiya NH, Awad MM, et al. PD-1 inhibitor-related pneumonitis in advanced cancer patients: radiographic patterns and clinical course[J]. Clin Cancer Res, 2016, 22(24): 6051-6060.
- [11] Antonia SJ, Villegas A, Daniel D, et al. Overall survival with durvalumab after chemoradiotherapy in stage III NSCLC[J]. N Engl J Med, 2018, 379(24): 2342-2350.
- [12] 李铃,娄安琦,余俊先.基于美国 FAERS 的 PD-1/PD-L1 抑制剂导致肺炎的数据分析[J].中国医院药学杂志,2021,41(13):1288-1292.
Li L, Lou AQ, Yu JX. Data analysis of the risks of pneumonia/pneumonitis induced by PD-1/PD-L1 inhibitors based upon FAERS database[J]. Chin J Hosp Pharmacy, 2021, 41(13): 1288-1292.
- [13] Schwarz M, Kocher F, Niedersuess-Beke D, et al. Immunosuppression for immune checkpoint-related toxicity can cause *Pneumocystis jirovecii* pneumonia (PJP) in non-small-cell lung cancer (NSCLC): a report of 2 cases [J]. Clin Lung Cancer, 2019, 20(3): e247-e250.
- [14] Younce CM, Lawton JM, Patel DR. Atezolizumab-induced hemolytic anemia-a case report[J]. J Oncol Pharm Pract, 2021, 27(4): 1026-1028.
- [15] Michot JM, Lazarovici J, Tieu A, et al. Haematological immune-related adverse events with immune checkpoint inhibitors, how to manage? [J]. Eur J Cancer, 2019, 122: 72-90.
- [16] Delaney N, Michot JM, Comont T, et al. Haematological immune-related adverse events induced by anti-PD-1 or anti-PD-L1 immunotherapy: a descriptive observational study [J]. Lancet Haematol, 2019, 6(1): e48-e57.
- [17] Seguchi K, Nakashima K, Terao T, et al. Febrile neutropenia in a patient with non-small-cell lung cancer treated with atezolizumab; a case report[J]. Respir Med Case Rep, 2021, 33: 101439.
- [18] Wright Z, Brown A. High-grade neutropenia in a patient successfully treated with nivolumab for refractory primary mediastinal B-cell lymphoma[J]. Blood Adv, 2017, 1(17): 1306-1308.
- [19] Huang L, Zalkikar J, Tiwari R. Likelihood-ratio-test methods for drug safety signal detection from multiple clinical datasets[J]. Comput Math Methods Med, 2019, 2019: 1526290.
- [20] 宗欣,王迎利.美国 openFDA 数据公开对我国食品药品监管数据管理的启示[J].中国药事, 2017,31(9):976-979.
Zong X, Wang YL. On openFDA and enlightenments for data nanagement of Food and Drug Administration in China [J]. Chin Pharma Affa, 2017,31(9):976-979.

收稿日期: 2023-03-23 修回日期: 2023-04-28 编辑: 王海琴

(上接第 1382 页)

- [15] Jiang J, Ni L. Arthroscopic internal drainage and cystectomy of popliteal cyst in knee osteoarthritis[J]. J Orthop Surg Res, 2017, 12(1): 182.
- [16] 赵冬梅,李鹏程,韩黎文,等.全关节镜下腓窝囊肿切除术治疗腓窝囊肿的临床疗效[J].中国临床研究,2020,33(10):1354-1357.
Zhao DM, Li PC, Han LW, et al. Clinical effect of popliteal cyst resection with total arthroscopy for popliteal cyst [J]. Chin J Clin Res, 2020, 33(10): 1354-1357.
- [17] 罗富强,谢康麒,李载永,等.关节镜下腓窝囊肿单向活瓣切除的临床疗效分析[J].右江民族医学院学报,2022,44(3):408-411.
Luo FQ, Xie KQ, Li ZY, et al. Analysis of the clinical effect of arthroscopic unilateral valvectomy for popliteal cyst [J]. J Youjiang Med Univ Natl, 2022, 44(3): 408-411.
- [18] 赵智君,陈益果,徐西东,等.改良后内侧双通道关节镜手术治疗腓窝囊肿[J].中国骨与关节损伤杂志,2021,36(10):1085-1087.
Zhao ZJ, Chen YG, Xu XD, et al. Modified posterior medial double-channel arthroscopic surgery for popliteal cyst [J]. Chin J Bone Jt Inj, 2021, 36(10): 1085-1087.
- [19] Zhou XN, Li B, Wang JS, et al. Surgical treatment of popliteal cyst: a systematic review and meta-analysis [J]. Orthop Surg Res, 2016, 11: 22.

收稿日期: 2022-11-26 修回日期: 2023-02-08 编辑: 石嘉莹