

活动半月板单髁关节置换术治疗膝骨性关节炎早期疗效分析

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摘要 目的:分析活动半月板单髁关节置换术治疗膝骨性关节炎的早期临床效果。方法:2009年6月至2010年2月,采用OXford活动半月板单髁关节治疗膝骨性关节炎患者23例25膝。结果:23例患者(25膝)随访3-8个月,无感染、假体位置不良及松动等并发症。HSS评分由术前56.9分提高至术后93.3分。结论:活动半月板单髁关节置换术治疗膝骨性关节炎短期疗效优良,成功的关键在于适应证的把握和手术技术的掌握,其远期疗效仍需观察。

关键词 单髁置换术,OXford活动半月板单髁关节,膝骨性关节炎。

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Analysis of Early Clinical Outcome of Mobile-bearing Unicompartmental Knee Arthroplasty for Knee Osteoarthritis

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ABSTRACT Objective: To analyze Early Clinical Outcome of Mobile-bearing Unicompartmental Knee Arthroplasty for Treatment of Knee Osteoarthritis. **Methods:** 25 cases of knee osteoarthritis were treated by OXFord Mobile-bearing Unicompartmental Knee Arthroplasty between June of 2009 and February of 2010. **Results:** All the patients were followed up for 3-8 months, No complication occurred. Average HSS score was increased from 56.9 before to 93.3 after operation. **Conclusion:** The short-term result of mobile-bearing arthroplasty is excellent. Patients selection and surgical techniques are the critical factors of the final results. And the long-term outcome of this therapy still needs observation.

Key words: Unicompartmental knee arthroplasty; OXFord mobile-bearing unicompartmental knee; Knee osteoarthritis

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前言

随着人民生活水平提高和医疗卫生事业的发展,人口老龄化趋势明显增加,骨性关节炎的发病率明显增加,研究资料显示,60岁以上人群中,50%人群在X线片上有骨性关节炎表现,其中35%~50%有临床表现;75岁以上人群中,80%有骨性关节炎症状^[1]。因此,膝骨性关节炎已经成为中老者的常见病、多发病。单髁关节置换术(UKA),由于具有手术时间短、手术创伤小、并发症少、术后恢复快等优点,以及假体设计、手术技术的改进,近十余年来使用例数明显增加。我科于2009年6月至2010年2月,采用OXford活动半月板单髁关节共治疗膝骨性关节炎患者23例25膝,其中双膝置换的2例。经3-8个月的随访,取得较好早期疗效。现将结果报告如下:

1 资料与方法

1.1 一般资料

2009年6月至2010年2月,第四军医大学唐都医院骨科

采用OXford活动半月板单髁关节共治疗膝骨性关节炎患者23例25膝,男性8例,女性15例;年龄51~73岁,平均61岁,均为内侧间室置。

1.2 手术适应症

①骨性关节炎,主要局限在膝关节内侧间室,②内翻畸形 $<15^\circ$,屈曲挛缩 $<15^\circ$;③ACL完整;④外侧间室软骨正常。

1.3 手术禁忌症

①外侧间室软骨退变,②感染性关节炎;③ACL和PCL损伤,侧副韧带不稳。④内翻畸形 $>15^\circ$,外翻畸形 $>10^\circ$ 。⑤屈曲挛缩 $>15^\circ$ 。

1.4 手术方法

置换前通常行患膝关节镜检查以确定手术方案。手术切口采用髌骨旁内侧直切口,一般为5~8cm,切开皮肤后在深筋膜下稍作游离,切开关节囊,不作软组织松解。分别进行胫骨、股骨截骨、用骨水泥固定假体,安装聚乙烯活动垫片,放置引流,缝合伤口,包扎伤口。

1.5 术后处理

术后48h拔除引流管,静脉使用抗生素术前1h及术后3~5d,术后第1天开始股四头肌主动收缩训练(等张收缩),第2天增加膝关节的被动活动,采用下肢CPM仪锻炼膝关节伸屈。术后第二天可做全负重行走。一般2~3周后即能恢复正常的行走。

1.6 评价方法

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疗效评定标准选用 HSS 膝关节评分系统 (纽约特种外科医院, 1976 年)。

2 结果

表 1 膝关节单髁置换术前、术后 HSS 评分
table 1. Preoperative and Postoperative HSS scores of UKA

术前(Preoperative)	随访时(follow-up)	t 值(t value)	p 值(P value)
56.9± 6.8	93.3± 4.7	10.23	<0.01

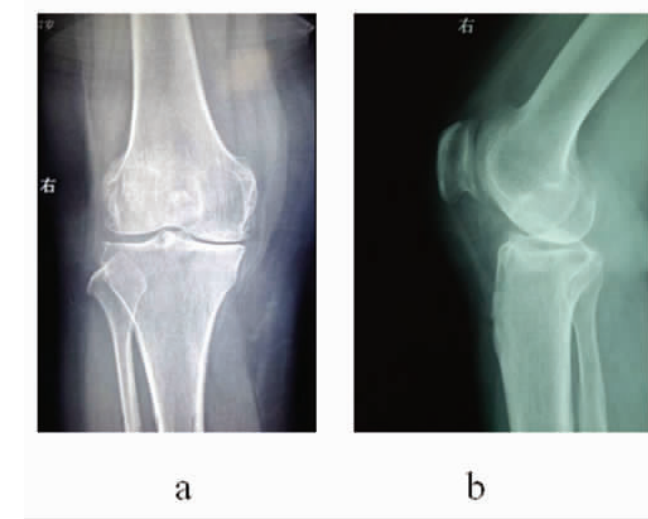


图 1 右膝骨性关节炎术前正侧位片
Fig.1 Preoperative(a)anteroposterior and lateral(b)radiographs of knee

3 讨论

膝关节骨性关节炎已经成为中老年者的常见病、多发病。主要病变是关节软骨原发性或继发性的退行病变,并在关节边缘形成骨赘。研究显示,在膝关节的三个间室中,膝关节骨性关节炎的特点是一个间室受累严重,其他两个间室只轻度受累或病变发展缓慢,而受累严重的大部分为内侧间室。在膝关节骨性关节炎的患者中,内侧间室单独受累者约占 25%,而外侧间室受累者仅占 5%^[2,3]。目前关于单间室骨性关节炎的治疗的主要手术方式有胫骨高位截骨术(HTO),单髁置换术(UKA),全膝置换术(TKA)由于各种术式都具有各自的优缺点,对于单间室骨性关节炎的外科治疗还存在一些争议^[4]。

3.1 单髁置换术的优势

多数学者认为单髁置换术的疗效主要依赖于患者年龄、活动度水平和畸形角度方面^[5-8]。单髁置换术(UKA)始于 20 世纪 70 年代初,由于早期手术效果不尽人意,使其发展较慢^[9]。近年来,随着假体设计、手术技术的改进,以及合适的患者选择,单髁置换术在治疗单间室骨性关节炎方面获得了良好的治疗效果^[9-12]。一些文献报道,单髁置换术后 20 年以上假体生存率达到 84%-86%^[13,14]。我们采用活动半月板单髁关节置换术治疗内侧间室骨性关节炎, HSS 评分术前平均 56.9, 术后 93.3, 取得了较好的治疗效果。

3.1.1 与胫骨高位截骨术(HTO)相比

经 3-8 个月的随访,结果见表 1、图 1 和图 2,取得较好早期疗效。

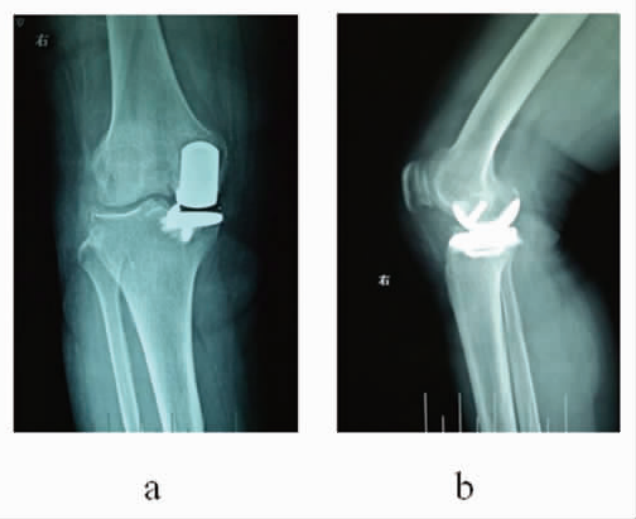


图 2 右膝骨性关节炎术后正侧位片
Fig.2 Postoperative(a) anteroposterior and(b)lateral radiographs of knee

UKA 和 HTO 都用于治疗单间室的骨性关节炎。HTO 通过截骨达到纠正畸形,改变患肢的负重力线,使膝关节上的应力分布不均矫正,将负重转移至未受损的间室,减轻骨性关节炎的症状,减缓关节退变的进程。单髁置换术(UKA)通过对病变间室置换,去除病变软骨,清理骨赘,矫正畸形,缓解疼痛,改善功能^[15]。HTO 通过截骨改变患肢的负重力线而达到治疗目的,但并不能增加关节活动度。相反,UKA 通过直接去除病变关节面,在一定程度上可以改善和增加关节活动度^[16]。Kowronski 等应用 HSS 评分对 UKA 长期疗效进行报道,10 年优良率达 80%。认为 HTO 近期疗效尚可,远期疗效却无法与 UKA 相比^[17]。Stukenborg 等对 32 例胫骨高位截骨和 28 例 UKA 进行了 7-10 年的随访,按 HSS 评分,UKA 和 HTO 的优良率分别是 71%和 65%^[18]。

3.1.2 与全膝关节置换术相比

文献报道,单髁置换术在减少手术创伤和恢复时间,改善活动度、步态,保留了骨组织及容易翻修方面优于全膝关节置换术(TKA)^[19-21]。Furnes 等报道,单髁置换术在活动度及术后感染率方面明显优于全膝关节置换术^[22]。同时单髁置换术能明显降低患者的经济负担。相对于 TKA 而言,UKA 自身具有众多特点如术中保留了前后交叉韧带,切除骨量少,与正常膝关节生物力学更接近,手术创伤小,术后并发症少,关节功能恢复快^[23],本体感觉及关节活动觉较 TKA 为好^[24],在 UKA 失败后,病人仍可以行全膝关节置换手术。

因此,单髁置换术与胫骨高位截骨术及全膝关节置换术相比具有以下优势:创伤小、恢复快、保存骨量、并发症少、术后功能好、保留本体感觉、髌股关节咬合良好等优点。

3.2 适应症的选择

一些研究发现,患者体重、年龄、活动度、诊断以及术前畸形角度严重影响着单髁置换术的治疗效果^[5-8,25,26]。目前普遍认为手术适应症的选择是取得良好治疗效果的关键。1989年Kozinn和Scott总结出一套被广为采用的UKA手术适应证,内容包括:年龄大于60岁,轻微静息痛,体重不超过82kg,活动量少,膝关节活动度必须超过90°,屈曲挛缩不超过5°,被纠正后的膝关节内外翻畸形分别不超过15°和10°^[27]。近年来,随着研究的深入,以及技术改进,目前对单髁置换术适应症有了较统一的认识,普遍认为单髁置换适用于单间室的骨关节炎,即单侧间室间隙变窄(负重位相),无其它间室软骨软化或只是轻度退变,术前至少有90°的活动度,屈曲挛缩小于5°,内外翻畸形小于15°,患者关节韧带结构完整,非炎症性关节炎;体重小于90-95kg,BMI<30,对术后功能要求不高^[1]。本组研究我们选择适应症:①骨性关节炎,主要局限在膝关节内侧间室,②内翻畸形<15°,屈曲挛缩<15°;③ACL完整;④外侧间室软骨正常,⑤年龄>65岁,⑥体重<80kg。短期随访效果良好。因此我们认为对于这类患者单髁置换术具有经济、安全、效果良好的治疗优势。

3.3 假体的选择

目前临床上应用的单髁假体主要有两类,一类是固定衬垫型,用于内侧和外侧都可以。另一类是活动衬垫型,Oxford活动半月板单髁关节具有相对大的接触面和活动聚乙烯衬垫,非常小的磨损率。多数文献报道Oxford活动半月板具有较好的治疗效果^[3,28]。本组患者均采用Oxford活动半月板,术后未出现假体松动,位置改变表现。

4 结论

活动半月板单髁关节置换术治疗膝骨性关节炎短期疗效优良,由于具有手术时间短、手术创伤和并发症少,术后恢复快等优点。成功的关键在于适应证的把握和手术技术的成熟,其中、长期疗效还有待进一步研究证实。

参考文献(References)

- [1] INSALL J N,SCOTT W N.吕厚山译.膝关节外科学[M].北京:人民卫生出版社,2006.1532
INSALL J N,SCOTT W N.Lv Hou-shan translated.Knee Surgery[M]. Beijing:People's Medical Publishing House,2006.1532
- [2] Isaac SM, BarkerKL, Danial IN,etal·Does arthroplasty type influence knee jointpro- prioception? A longitudinalprospective study comparing total and unicompart- mental arthroplasty [J]·TheKnee, 2007, 14: 212-217
- [3] 刘晓东,蔡珉巍,涂意辉.微创单髁置换术治疗膝关节内侧间室骨性关节炎的初步临床报告 [J]. 中国矫形外科杂志, 2010, 18(7): 548-542
Liu Xiao-dong,Cai Min-wei,Tu Yi-hui. Primary clinical report of minimally invasive unicondylar knee arthroplasty for medial compartmental osteoarthritis of the knee [J]. Orthopedic Journal of

China, 2010, 18(7):548-542

- [4] Ryohei Takeuchi,Yusuke Umemoto,Masato Aratake et al. A mid term comparison of open wedge high tibial osteotomy vs unicompartmental knee arthroplasty for medial compart- ment osteoarthritis of the knee [J]. Journal of Orthopaedic Surgery and Research,2010,5:65-72
- [5] Cullu E,Aydogdu S,Alparslan B,Sur H.Tibial slope changes following dome-type high tibial osteotomy [J].Knee Surg Sports Traumatol Arthrosc, 2005,13:38-43
- [6] Kesmezacar H,Erginer R,Ogü t T,Seyahi A,Babacan M, Tenekecioglu Y.Evaluation of patellar height and measurement methods after valgus high tibial osteotomy [J].Knee Surg Sports Traumatol Arthrosc, 2005,13:539-44
- [7] Gü clü B,Gü zel B,Basarir K,Erdemli B,Cetin I.Midterm results of total knee arthroplasty in degenerative knee joint diseases with severe deformity[J].Acta Orthop Traumatol Turc, 2008,42:1-9
- [8] Aslan H,Ersan O,Baz AB,Duman E,Aydin E,AtesY. Midterm results of Oxford phase 3 unicondylar knee arthroplasty for medial osteoarthritis[J]. Acta Orthop Traumatol Turc, 2007,41:367-72
- [9] Atilla San car PARMAKSIZOGLU, Yavuz KABUKCUOOLU, UfukOZKAYA. Short-term results of the Oxford phase 3 unicompartmental knee arthroplasty for medial arthritis [J]. Acta Orthop Traumatol Turc, 2010,44(2):135-142
- [10] Iorio R,Healy WL.Unicompartmental arthritis of the knee [J].J Bone Joint Surg[Am], 2003,85:1351-64
- [11] Marcacci M,Iacono F,Zaffagnini S,Nofrini L,Neri MP, Russo A,et al.Minimally invasive unicompartmental knee arthroplasty in varus knee[J].Techniques in Knee Surgery, 2004,3:259-66
- [12] Bert JM.Unicompartmental knee replacement [J].Orthop Clin North Am, 2005,36:513-22
- [13] Callaghan JJ, O RourkeMR, Johnston RC. The uni experience: history tells it al.l Orthopedics, 2005, 28(9): 988
- [14] SquireMW, Callaghan JJ, Goetz DD, et a.l Unicompartmental knee replacement.A minimum 15 year follow up study. ClinOrthop RelatRes, 1999(367):61-72
- [15] Jamali AA,Scott RD,Rubash HE el al. Unicompartmental knee arthroplasty past present and future [J]. Am J Orthop 2009 38: 17-23
- [16] 王学谦,姜思权,侯嵌魁,等. 骨关节炎的诊断和治疗[M]. 第3版. 天津科技出版社, 2005 4:19422
Wang Xue-qian,Lou Si-quan,Hou Qian-kui et al.Osteoarthritis [M]. Third Edition.Tianjin Science and Technology Press, 2005:419422
- [17] Skowronski j ,Jatskewych J ,Dlugosz J et al. The Oxford II medial uni c ompartmental knee replacement a minimum 10 —Year follow—up study[J]. Ortop Traumatol Rehabil 2005 7:620-625
- [18] Stukenborg-Colsman C,W irth CJ,Lazovic D,etal.High tibial osteotomy versus unieompartmental joint replacement in unicompartmental knee joint osteo —arthritis: 7-10-year follow-up prospective randomized study[J].Knee, 2001, 8(3): 187-194
- [19] Levine W N,Ozuna R M,Scott R D,Thornhill T S.Conversion of failed modern Unicom- partm-ental arthroplasty to total knee arthroplasty[J].J.Arthroplasty,1996,11(7):797-801

(下转第 901 页)

- [10] 魏庄, 刘纪平, 及春兰. 0~2 岁儿童体块指数的动态变化及应用探讨[J]. 中国初级卫生保健, 2003, 17(9): 47
Wei Zhuang, Liu Ji-ping, Ji Chun-lan. children aged 0 to 2 dynamic changes of body mass index and application of [J]. Chinese Primary Health Care, 2003, 17(9): 47
- [11] 胡立群, 龚群. 儿童肥胖病因学研究进展[J]. 中国妇幼健康研究, 2008, 19(6): 589-591
Hu Liqun, Gong qun. Advances in Etiology of childhood obesity[J]. Chinese women and children health research, 2008, 19(6): 589-5
- [12] Gordon CM, Feldman HA, Sinclair L, et al. Prevalence of vitamin D deficiency among healthy infants and toddlers [J]. Arch Pediatr Adolesc Med, 2008, 162(6): 505-512
- [13] Liu PT, Stenger S, Li H, et al. Toll-like receptor triggering of a vitamin D-mediated human antimicrobial response [J]. Science, 2006, 311(5768): 1770-1773
- [14] Martineau AR, Wilkinson RJ, Wilkinson KA, et al. A single dose of vitamin D enhances immunity to mycobacteria [J]. Am J Respir Crit Care Med, 2007, 176(2): 208-213
- [15] Ford ES, Ajani UA, McGuire LC, et al. Concentrations of serum vitamin D and the metabolic syndrome among U.S. adults [J]. Diabetes Care, 2005, 28(5): 1228-1230
- [16] Harris SS. Vitamin D in type 1 diabetes prevention [J]. J Nutr, 2005, 135(2): 323-325
- [17] Tzotzas T, Papadopoulou FG, Tziomalos K. Rising serum 25-hydroxy-vitamin D levels after weight loss in obese women correlate with improvement in insulin resistance[J]. J Clin Endocrinol Metab, 2010, 95(9): 4251-4257
- [18] Hahn S, Haselhorst U, Tan S. Low serum 25-hydroxyvitamin D concentrations are associated with insulin resistance and obesity in women with polycystic ovary syndrome. [J]. Exp Clin Endocrinol Diabetes. 2006 Nov; 114(10): 577-83
- [19] Foss YJ. Vitamin D deficiency is the cause of common obesity. [J]. Med Hypotheses, 2009, 72(3): 314-321

(上接第 898 页)

- [20] Chakraborty G, Newman J H, Ackroyd C E. Revision of unicompartmental arthroplasty of the knee [J]. Clinical and technical considerations. J Arthroplasty, 1998, 13(2): 191-6
- [21] Springer B D, Scott R D, Thornhill T S. Conversion of failed unicompartmental knee arthroplasty to TKA [J]. Clin Orthop, 2006, (446): 214-20
- [22] Furnes O, Espehaug B, Lie SA, et al. Failure mechanisms after unicompartmental and tricompartmental primary knee replacement with cement[J]. J Bone Joint Surg Am, 2007, 89: 519
- [23] Patil S, Colwell CW, Ezzet KA, et al. Can normal knee kinematics be restored with unicompartmental knee replacement [J]. Bone Joint Surg Am, 2005, 87(2): 332-338
- [24] Isaac SM, Barker KL, Danial IN, et al. Does arthroplasty type influence knee joint proprioception? A longitudinal prospective study comparing total and unicompartmental arthroplasty [J]. Knee, 2007, 14(3): 212-217
- [25] Scott R D. Three decades of experience with unicompartmental knee arthroplasty: mistakes made and lessons learned [J]. Orthopedics, 2006, 29(9): 829-831
- [26] Berger R A, Meneghini RM, Jacobs J J, et al. Results of unicompartmental knee arthroplasty at a minimum of ten years of follow-up [J]. J Bone Joint Surg Am, 2005, 87(5): 999-1006
- [27] 高石军, 张延威. 单髁置换治疗膝单间室骨性关节炎[J]. 颈腰痛杂志, 2010, 31(2): 145-148
Gao Shi-jun, Zhang Yan-wei. Unicompartmental knee replacement in the treatment of osteoarthritis single compartment [J]. The Journal of Cervicodynia and Lumbodynia, 2010, 31(2): 145-148
- [28] K. L. Luscombe J. Lim P. W. Jones S. H. White. Minimally invasive Oxford medial unicompartmental knee arthroplasty [J]. International Orthopaedics (SICOT), 2007, 31: 321-324