



国人胫骨平台截骨面与西方进口胫骨假体解剖学参数的偏差

张博, 林源, 曲铁兵, 潘江, 张晓冬, 王志为, 任世祥, 温亮,

100020 首都医科大学附属北京朝阳医院骨科

Anatomical differences between the resected tibial surface and tibial component in normal Chinese

Zhang Bo, Lin Yuan, Qu Tiebing, Pan Jiang, Zhang Xiaodong, Wang Zhiwei, Ren Shixiang, Wen Liang

Department of Orthopaedics, Beijing Chao Yang Hospital, Capital Medical University, Beijing 100020, China

- 摘要
- 图/表
- 参考文献
- 相关文章

全文: [PDF](#) (1201 KB) [HTML](#) (1 KB) 输出: [BibTeX](#) | [EndNote](#) (RIS) [背景资料](#)

摘要 目的 测量中国北方汉族人胫骨平台截骨面与进口胫骨假体解剖学参数的偏差。方法 中国北方汉族健康志愿者82名(135膝),男52名(85膝),女30名(50膝);年龄19~82岁,平均47.2岁。行膝关节横断面CT扫描,获得“.dicom”格式图像。将图像存储至与CT机联网的计算机三维重建工作站(Adw 4.3),利用三维容积重建软件建立膝关节三维图像。对三维图像的胫骨进行旋转、切割,测量不同截骨高度及后倾角度各截骨面的胫骨近端横径、前后径及纵横比;采用5 mm容差范围法对三种西方进口假体(A、B、C)与国人胫骨平台截骨面的匹配程度进行初步评估。结果 男性胫骨近端截骨面横径平均值为(78.03±2.92) mm,女性为(69.85±2.70) mm;男性胫骨近端截骨面前后径平均值为(50.62±2.46) mm,女性为(46.14±2.61) mm;男性胫骨近端截骨面纵横比平均值为0.649±0.032,女性为0.661±0.031。不同性别胫骨近端截骨面横径与前后径的差异均有统计学意义,男性大于女性;纵横比平均值女性大于男性,差异有统计学意义。假体A对所有受试者各截骨面的平均涵盖率为42.55%,假体B平均为44.61%,假体C平均为27.41%。A与B两种假体涵盖率的差异无统计学意义,而两者与假体C涵盖率的差异均有统计学意义。结论 国人正常胫骨平台截骨面的几何形态与西方进口假体的匹配度普遍较低。

关键词: 胫骨 成像 三维 关节成形术 置换 膝

Abstract: Objective To obtain the linear parameters of proximal tibia in normal Chinese, and study the anatomical differences between the resected tibial surfaces and tibial baseplates of total knee prostheses. Methods A total of 82 normal Chinese / 135 knees (include 85 male and 50 female knees) was included, with an average age of 47.2 (range, 19-82) years. All of the volunteers were scanned by Spiral CT, and the original CT images were stored in the work station (Adw 4.3). Then 3-D models of Chinese normal knees were reconstructed and two parameters were measured through volume reconstruction software, including mediolateral (ML) width and anteroposterior (AP) length. A coordinate system was formed with the mediolateral width as the X-axis and anteroposterior length as the Y-axis. A circle, 5 mm in diameter, was used as the maximum coverage criterion. Three contemporary products (A, B, C) were used to analyze the data. From the results, we calculated the coverage percentage of the patients. Results The average ML width and AP length of the proximal tibia section were 78.03±2.92 mm and 50.62±2.46 mm in male, and 69.85±2.70 mm and 46.14±2.61 mm in female, respectively. The average ratio of AP length and ML width (RAP/ML) was 0.649±0.032 in male and 0.661±0.031 in female, respectively. AP length and ML width showed statistical significance between different genders. The RAP/ML was larger in female, and the difference was statistically significant. The average coverage rate of prosthesis A, B and C was 42.55%, 44.61% and 27.41%, respectively. There was no statistically significant difference between prosthesis A and B. However, all of them showed statistical significance with prosthesis C. Conclusion The geometry and anatomy of proximal tibia in Chinese showed significant differences with that in Western. Those characteristic differences should be considered when we use the tibial plateau prosthesis designed by the Westerners.

Key words: Tibia Imaging, three-dimensional Arthroplasty, replacement, knee

服务

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ E-mail Alert
- ▶ RSS

作者相关文章

- ▶ 张博
- ▶ 林源
- ▶ 曲铁兵
- ▶ 潘江
- ▶ 张晓冬
- ▶ 王志为
- ▶ 任世祥
- ▶ 温亮

引用本文:

张博,林源,曲铁兵等. 国人胫骨平台截骨面与西方进口胫骨假体解剖学参数的偏差[J]. 中华骨科杂志, 2014, 34(4): 394-399.

Zhang Bo, Lin Yuan, Qu Tiebing et al. Anatomical differences between the resected tibial surface and tibial component in normal Chinese[J]. Chin J Orthop, 2014, 34(4): 394-399.

链接本文:

http://www.chinjorthop.com/Jwk_zhgz/CN/10.3760/cma.j.issn.0253-2352.2014.04.008 或
http://www.chinjorthop.com/Jwk_zhgz/CN/Y2014/V34/I4/394

没有找到本文相关图表信息

- [1] 李国宏, 郑诚功. 胫骨近端几何形态分析与再置换胫骨组件的设计研究[J]. 医用生物力学, 2007, 22(4): 334-338. 
- [2] 张博, 潘江, 曲铁兵, 等. 国人正常胫骨近端线性参数测量及特性分析[J]. 医用生物力学, 2007, 4(22): 351-355.
- [3] 王寿文, 冯传汉, 吕厚山, 等. 膝关节几何学研究及其对膝假体设计的意义[J]. 中华外科杂志, 1992, 42(7): 434-439. 
- [4] 谢庆云, 吴海山. 正常中国成年人相当于全膝关节置换胫骨近端截骨部位的形态学测量[J]. 中国组织工程研究与临床康复, 2010, 14(39): 7226-7229.
- [5] 林源, 曲铁兵, 潘江, 等. 股骨远端旋转对线的初步研究[J]. 中华骨科杂志, 2005, 25(5): 271-275. 
- [6] Kuwano T, Miura H, Miura H, et al. Importance of the lateral anatomic tibial slope as a guide to the tibial cut in total knee arthroplasty in Japanese patients[J]. J Orthop Sci, 2005, 10(1): 42-47.
- [7] Kwak DS, Surendran S, Pengatteeeri YH, et al. Morphometry of the proximal tibia to design the tibial component of total knee arthroplasty for the Korean population[J]. Knee, 2007, 14(4): 295-300. 
- [8] Li G, Suggs J, Hanson G, et al. Three-dimensional tibiofemoral articular contact kinematics of a cruciate-retaining total knee arthroplasty[J]. J Bone Joint Surg Am, 2006, 88(2): 395-402. 
- [9] Uehara K, Kadoya Y, Kobayashi A, et al. Anthropometry of the proximal tibia to design a total knee prosthesis for the Japanese population[J]. J Arthroplasty, 2002, 17(8): 1028-1032. 
- [10] Erkman MJ, Walker PS. A study of knee geometry applied to the design of condylar prosthesis[J]. Biomed Eng, 1974, 9(1): 14-17.
- [11] Cheng CK, Lung CY, Lee YM, et al. A new approach of designing the tibial baseplate of total knee prosthesis[J]. Clin Biomech (Bristol, Avon), 1999, 14(2): 112-117. 
- [12] 柴瑞宝, 张辉, 刘洋, 等. TKA术后胫骨近端截骨块参数测量及其临床意义[J]. 中国矫形外科杂志, 2013, 21(5): 495-498.
- [13] 张健, 董纪元, 付忠田, 等. 国人膝关节尺寸与5种人工膝关节假体尺寸的对照[J]. 中国组织工程研究与临床康复, 2009, 13(4): 635-638.
- [14] 曲铁兵, 曾纪洲, 林源, 等. 华北地区成人正常胫骨内侧平台后倾角的测量及临床意义[J]. 中华骨科杂志, 2003, 23(8): 455-458. 
- [15] Dorr LD, Boiardo RA. Technical considerations in total knee arthroplasty[J]. Clin Orthop Relat Res, 1986(205): 5-11.
- [16] Stulberg BN, Dombrowski RM, Froimson M, et al. Computed tomography analysis of proximal tibial coverage[J]. Clin Orthop Relat Res, 1995 (311): 148-156.
- [17] Westrich GH, Laskin RS, Haas SB, et al. Resection specimen analysis of tibial coverage in total knee arthroplasty[J]. Clin Orthop Relat Res, 1994(309): 163-175.
- [18] Huang CH, Cheng CK, Liou JJ, et al. Morphometrical comparison between the resected surfaces in osteoarthritic knees and porous-coated anatomic knee prosthesis[J]. J Musculoskelet Res, 2000, 4(1): 39-46. 
- [19] Hitt K, Shurman JR 2nd, Greene K, et al. Anthropometric measurements of the human knee: correlation to the sizing of current knee arthroplasty systems[J]. J Bone Joint Surg Am, 2003, 85 Suppl 4: S115-122.
- [1] 潘江, 曲铁兵, 温亮, 林源, 王志为, 张博, 马德思, 刘百峰, 孟令鑫, 辛星, 赵潇雄, 陈伟, 黄伟, 陈虹, 王敏, 张强, 彭理斌. 汉族人群正常股骨远端旋转对线的研究及其临床意义[J]. 中华骨科杂志, 2014, 34(4): 387-393.
- [2] 彭慧明, 翁习生, 翟吉良, 金今, 林进, 钱文伟, 左宇志, 赵丽娟. 氨甲环酸结合术后引流管临时夹闭降低单侧全膝置换术后失血量的有效性及安全性[J]. , 2014, 34(4): 400-405.
- [3] 马俊, 黄泽宇, 胡旭栋, 黄强, 石小军, 胡钦胜, 沈彬, 裴福兴. 糖尿病患者初次全膝置换围手术期安全性及效果评价[J]. , 2014, 34(4): 406-410.
- [4] 黄钢勇, 夏军, 王思群, 魏亦兵, 吴建国, 陈飞雁, 陈杰, 石晶晨. 全膝关节置换术中腘血管损伤的危险三角区域[J]. 中华骨科杂志, 2014, 34(4): 411-416.
- [5] 伍凯, 黄建华, 林健, 王秋根. 超近端胫骨平台双髁骨折的临床特点及治疗策略[J]. 中华骨科杂志, 2014, 34(4): 441-447.
- [6] 魏世隼, 蔡贤华, 黄继锋, 徐峰, 刘曦明, 王庆, 黄卫兵, 王华松, 兰生辉. 内外翻不同损伤机制导致胫骨Pilon骨折的手术策略[J]. , 2014, 34(3): 298-305.
- [7] 田伟, 安岩, 李加宁, 刘亚军, 吴昕峰, 吕艳伟, 曾成. 斜坡枢椎角的正常值及其与延髓脊髓角的相关性研究[J]. , 2014, 34(3): 306-310.

- [8] 路宽,丁文元,杨大龙,申勇,张为,郭旭朝,杨思东,王辉. 单节段脊髓型颈椎病伴下颈椎不稳的影像学表现及预后因素分析[J]. , 2014, 34(3): 273-279.
- [9] 杨伟铭,宁飞鹏,林定坤. 腰椎间盘突出症发病时的功能状态与影像学区域定位的关系[J]. , 2014, 34(3): 280-284.
- [10] 李丁峰,皇甫小桥,赵金忠. 腓骨长肌腱前半部作为自体移植材料的临床研究[J]. , 2014, 34(3): 285-292.
- [11] 李儒军,钟群杰,倪磊,林剑浩. 内侧半月板退变性损伤的关节镜下分型[J]. , 2014, 34(3): 293-297.
- [12] 周军杰,曹成福,庞金辉,高文武,陈贤奇. 立体影像学分析对组配式全髋关节置换术后股骨假体迁移的早期评估[J]. 中华骨科杂志, 2013, 33(9): 881-887.
- [13] 杨述华,许伟华,叶树楠,刘先哲,王晶,冯勇,华文彬. 髌臼重建及股骨转子下短缩截骨全髋关节置换治疗Crowe IV型髋关节发育不良[J]. 中华骨科杂志, 2013, 33(9): 888-894.
- [14] 王永清,毕红宾,赵志辉,战颖,杨志强,王京生. 晚期活动性全髋关节结核一期病灶清除全髋关节置换术的中远期疗效[J]. 中华骨科杂志, 2013, 33(9): 895-900.
- [15] 陈宜,吴宇黎,祝云利,符培亮,赵辉,吴海山. 股骨颈组配式假体在全髋关节置换术后偏心距重建中的作用[J]. 中华骨科杂志, 2013, 33(9): 901-905.

友情链接



版权所有 © 2012 中华骨科杂志

地址:天津市河西区解放南路406号天津医院内 邮编:300211

电话: 86-22-28334734 86-22-28278929 传真: 86-22-28241184 E-mail: gktougao@126.com

本系统由北京玛格泰克科技发展有限公司设计开发