·手术视频·

爱乔便携式膝关节导航系统辅助下的人工全膝关节置换术

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擅长骨科微创技术，研究方向为“骨关节病的基础与临床研究”。曾于美国华盛顿大学 Harborview Medical Center、瑞士达沃斯 AO 学术中心、香港大学附属玛丽医院交流学习。近年来，主持国家自然科学基金面上项目一项，省“333 工程”课题一项，以及多项市级科研项目。目前，作为通讯作者已发表 SCI 论文 30 余篇。

【摘要】 爱乔膝关节导航系统（I-join knee position assistive system, IKPAS）是一种便携式导航系统，可通过传感器技术在术中辅助医生进行精确地下肢力线的测量及截骨定位。相比传统的全膝关节置换手术，IKPAS可以通过内置的加速度计和陀螺仪提供个体化、精确化的测量数据，使得截骨更加准确和微创，从而获得更稳定的术后下肢力线及假体位置；同时，IKPAS不开髓，创伤小，使用便捷，可以有效减少术后并发症及翻修率。

【关键词】 全膝关节置换；导航；下肢力线
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Total knee arthroplasty assisted by I-join knee position assistive system

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【**Abstract**】 The I-join knee position assistive system (IKPAS) is a portable navigation system that uses sensor technology to assist doctors in precise measurement of lower limb alignment and osteotomy positioning

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during surgery. Compared with the traditional total knee arthroplasty, IKPAS can provide personalized and accurate measurement data through the built-in accelerometer and gyroscope, allowing for a more stable post-operative lower limb alignment and prosthesis position. In addition, IKPAS avoids opening bone marrow cavity, is less invasive and easy to use, which can effectively reduce the postoperative complications and revision rate.

【**Keywords**】 total knee arthroplasty; navigation; lower limb alignment

适应证：(1)严重的骨性关节炎；(2)高位胫骨截骨术失败后的骨性关节炎；(3)创伤性关节炎；(4)合并股骨畸形且需要全膝关节置换者；(5)严重的类风湿关节炎；(6)静息性结核性关节炎。

禁忌证：(1)膝关节周围肌肉瘫痪；(2)化脓性感染等未得到控制者；(3)合并其他严重的系统性疾病，不能耐受手术者。

术式评价：(1)爱乔便携式膝关节导航系统(I-join knee position assistive system, IKPAS)辅助下的人工全膝关节置换术可以实现精确的下肢力线测量以及截骨定位，提高了假体安装的准确性；(2) IKPAS不打开骨髓腔，出血量少，脂肪栓塞风险低，操作便捷，微创且更安全；(3) IKPAS局限性在于目前尚不能进行动态评估软组织张力平衡情况，远期结果仍需进一步随访。

Indications: (1) Severe osteoarthritis; (2) Osteoarthritis after failure of high tibial osteotomy; (3) Traumatic arthritis;(4) Patients with combined femoral deformities who require total knee replacement; (5) Severe rheumatoid arthritis; (6) Static tuberculosis arthritis.

Contraindications: (1) Patients with paralysis of the muscles around the knee joint; (2) Noncontrolled septic infections; (3) Patients combined with other serious systemic diseases and unable to tolerate surgery.

Evaluation of this operation: (1) Total knee arthroplasty assisted by IKPAS can achieve precise measurement of the force line of the lower limb and osteotomy positioning, which improves the accuracy of prosthesis installation; (2) IKPAS does not open the bone marrow cavity, has less bleeding, low risk of fat embolism, easy to perform, minimally invasive and safer; (3) The limitations are that the soft tissue tension balance cannot be assessed dynamically, and the long-term results still need further follow-up.

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