Advances in Clinical Medicine 临床医学进展, 2023, 13(5), 7954-7959
Published Online May 2023 in Hans. https://www.hanspub.org/journal/acm
https://doi.org/10.12677/acm.2023.1351114

Hans汉斯

双膝关节骨关节炎全膝关节置换术时间策略的研究进展

曹文文[1]，张斌飞[2]，张育民[2*]

[1]西安医学院研究生工作部，陕西 西安
[2]西安交通大学附属红会医院关节病院髋关节病区，陕西 西安

收稿日期：2023年4月17日；录用日期：2023年5月9日；发布日期：2023年5月19日

摘　要

全膝关节置换术(total keen arthroplasty, TKA)是治疗终末期膝关节骨性关节炎(osteoarthritis, OA)最主要的方法，对于双侧膝关节OA病变的患者，TKAs可以在以下几种手术方案下完成：同期手术(一次入院一次麻醉双侧手术)、同期入院分期手术(一次入院两次麻醉两侧手术，间隔几天左右)或分期入院分期手术(两次入院两次麻醉两次手术，手术间隔几周或几个月不等)。目前国内外已经进行了一些双侧膝关节OA患者行不同手术方案TKAs治疗的对比研究，但是时间的选择上尚未达成统一。选择合适的手术方案对行双侧全膝关节置换的患者而言可以降低因双侧手术间隔时间带来的影响，包括术中及术后出血及输血情况、围术期并发症、术后功能恢复、住院费用、术后生活质量等，因此本文就上述内容的研究进展进行综述，为临床选择合适手术方案提供建议。

关键词

双膝骨关节炎，全膝关节置换术，间隔时间

Research Progress in Time Strategy of Total Knee Arthroplasty for Osteoarthritis of Both Knees

Wenwen Cao[1], Binfei Zhang[2], Yumin Zhang[2*]

[1]Graduate Department of Xi'an Medical University, Xi'an Shaanxi
[2]Hip Joint Ward, Joint Hospital, Honghui Hospital Affiliated to Xi'an Jiaotong University, Xi'an Shaanxi

Received: Apr. 17th, 2023; accepted: May 9th, 2023; published: May 19th, 2023

*通讯作者。

文章引用：曹文文，张斌飞，张育民. 双膝关节骨关节炎全膝关节置换术时间策略的研究进展[J]. 临床医学进展, 2023, 13(5): 7954-7959. DOI: 10.12677/acm.2023.1351114

Abstract

Total knee arthroplasty (TKA) is the most important method for the treatment of end-stage knee joint osteoarthritis (OA). For patients with bilateral knee OA lesions, TKA can be performed under the following surgical options: simultaneous operation (one admission, one anesthetic bilateral operation), simultaneous admission staging operation (one admission, two anesthesia bilateral surgery, interval of a few days) or staging operation (two admission, two anesthesia and two operations. The interval of the operation varies from several weeks to several months). At present, some comparative studies on TKAs treatment of bilateral knee joint OA patients have been carried out at home and abroad, but the choice of time has not been unified. Choosing an appropriate surgical scheme for patients undergoing bilateral total knee arthroplasty can reduce the impact caused by the interval between bilateral operations, including intraoperative and postoperative bleeding and blood transfusion, perioperative complications, postoperative functional recovery, hospitalization costs, postoperative quality of life, etc., so this paper reviews the research progress of the above contents and provides suggestions for the clinical selection of appropriate surgical schemes.

Keywords

Osteoarthritis of Both Knees, Total Knee Arthroplasty, Interval Time

1. 引言

膝关节骨性关节炎(osteoarthritis, OA)是一种好发于中老年人的慢性退行性疾病，以关节软骨的变性、破坏及骨质增生为主要特点，临床可表现为膝关节肿痛及活动受限，严重者甚至造成关节畸形。疼痛是膝关节 OA 的典型症状，患者往往会因此而就医并确诊。据 GBD2017 模型估计，50~69 岁人群的 OA 发病率为 565/100,000，70 岁及以上人群为 400/100,000 [1]。膝关节 OA 的患病率随年龄增长而升高，在 50~69 岁的男性和女性中，症状性膝关节 OA 的比例均约为 14%，而 70 岁及以上的男性和女性分别为 18%和 25% [1]。校正年龄后，影像学确认的症状性膝关节 OA 全球患病率预计为 3.8%，女性(4.8%)高于男性(2.8%) [2]。

膝关节 OA 目前已经成为影响老年人生活的严重疾病之一，而全膝关节置换术(total keen arthroplasty, TKA)是其主要治疗方式之一[3]。TKA 也是世界上最经典的矫形外科手术之一[4]，其已被证明是治疗终末期膝关节 OA 的有效手段[5]。在过去的 30 年中，TKA 在缓解终末期膝关节 OA 患者疼痛、矫正关节畸形、恢复关节活动范围等方面取得了满意的效果[6]。

2. 双侧全膝关节置换的手术方案

根据已有文献报道，约 1/3 的膝关节 OA 患者同时存在双侧膝关节的退行性病变[7] [8]；37%的患者在行初次全膝关节置换术后，另一侧膝关节也需要在不同时间间隔后行 TKA 手术治疗[9]。对于双侧膝关节 OA 病变的患者，TKAs 可以在以下几种手术方案下完成：同期手术(一次入院一次麻醉双侧手术)、

同期入院分期手术(一次入院两次麻醉两侧手术，间隔几天左右)或分期入院分期手术(两次入院两次麻醉两次手术，手术间隔几周或几个月不等) [10]。

目前国内外已经进行了一些双侧膝关节 OA 患者行不同方案 TKAs 治疗的对比研究[11] [12] [13]。大多数研究认为：双侧膝关节 OA 患者进行同期手术、同期入院分期手术、或者分期入院分期手术，虽然在早期疼痛评分、肺栓塞、总住院时间、麻醉持续时间和住院医疗费用等方面存在一些差异，但在后期功能方面无明显的差别。但事实上，根据目前获得的结果，Johnson 等[11]研究报道：间隔 1 周的双侧 TKAs 总体恢复时间更短，90 天内再入院的可能性较小，但是输血的比例更大。Erossy 等[12]在一项纳入 38,764 例患者的对照研究中发现：同时进行双侧 TKAs 的住院时间更长，住院期间假体周围骨折、血肿、血栓伤口愈合不佳、感染等并发症要高于两阶段性 TKAs。同时，Yakkanti 等[13]在一项 172,366 例患者的对照研究中发现：同时接受双侧 TKA 的患者发生重要术后并发症和死亡的风险增加，研究结论并不推荐同期手术的方案。由此可见，在这几种手术方案的选择上，尚没有明确的推荐方案。

2.1. 同期手术

同期手术虽然具有一次手术麻醉、可提供双侧膝关节参照矫正、双膝同期康复、住院费用低廉等优势[14] [15] [16]。但是一些研究也发现：与同期手术相关的并发症发生率也比较高，包括术中失血量较大、围手术期输血量增加，手术时间较长下肢深静脉血栓栓塞、心肺并发症、神经并发症、切口愈合不良的发生率显著增加[17] [18] [19] [20]。研究分析认为老年患者由于高龄、心脑血管疾病合并症、恐惧手术及并发症等原因，有时会拒绝行同期手术。因此，仔细选择病人可以减少同期手术的围手术期并发症[21]。通常情况下，伴随有缺血性、充血性心力衰竭、晚期慢性阻塞性肺疾病、糖尿病血糖控制不佳、外周血管疾病、肾功能衰竭、病态肥胖、静脉血栓栓塞史的患者或年龄超过 75 岁的患者被认为不适合进行同期手术[22]。

2.2. 分期手术

分期入院分期手术通常被定义为两个 TKAs 程序，间隔一般为 90 至 365 天，分次入院[17]。分期入院分期手术可以在第一侧膝关节 TKA 完全康复后再进行对侧膝关节 TKA，但由于整体住院时间长、总花费高、需要二次入院和麻醉，以及双膝延迟改善，可能对患者造成不便，所以分期入院分期手术有时可能不会受到患者的青睐，但分期入院分期手术在围术期降低死亡风险、降低输血率、减少肺栓塞发生率等方面有优势[23]。目前来讲，出于安全角度考虑，分期入院分期手术依然是最普遍的双侧 TKAs 选择。

2.3. 同期入院分期手术

基于以上手术方案的不利条件，国内外已经开始并建立了新的治疗方案：同期入院分期手术(一次入院两次麻醉两侧手术，间隔几天左右时间)，其具有许多与同期手术和分期入院分期手术相似的优势同时也一定程度上避免了二者的不足，包括：患者倾向于单次住院可以缩短总体住院时间，并且对于合并复杂内科疾患的患者，同期入院分期手术可能为短期内连续矫正严重的双侧膝关节畸形提供了一种折中方案[22]。

2.4. 三种手术方案术后情况的比较

不管手术策略如何，双侧 TKAs 被认为是一种安全的手术方式[24] [25]。几乎在所有的研究中，同期手术、同期入院分期手术和分期入院分期手术显示出相似的死亡率[26]。此外，大多研究指出，与同期手术相比，同期入院分期手术策略下，术后肾功能不全结果与之相似[27] [28] [29] [30]。Koh 等[27]报道称，

在双侧 TKAs 患者中，同期入院分期手术后的急性肾损伤发生率低于同期手术和分期入院分期手术。另一方面，与同期手术和分期入院分期手术相比，同期入院分期手术是否会导致不同的手术相关并发症发生率尚不清楚。虽然在最近的文献报道中，采用快速康复理念将同期手术的并发症发生率降低到与分期入院分期手术相当甚至更低水平[21] [31]，但结果受到质疑，目前仍未得到可靠的结论[23] [26] [32]。

从最普遍的分期住院分期手术方案来看，目前大多数对于分期手术时间间隔与双侧人工全膝关节置换术患者情况的研究都是把间隔时间分为几个组，然后进行组间比较。比如 David 等[33]发表的文章，就是对 2016 年到 2018 年所有分期的双侧 TKAs 进行了回顾性调查。该研究纳入了 1005 名患者(2010 次双侧 TKAs)，根据两次 TKAs 的间隔时间，将人群分为 4 组：第 1 组：3~6 周，第 2 组：7~12 周，第 3 组：13~24 周，第 4 组：>24 周。术前和术后比较的数据包括膝关节活动范围(ROM)、加州大学洛杉矶分校(UCLA)活动评分、膝关节协会疼痛评分、膝关节协会临床评分和膝关节协会功能评分。评估术前年龄、体重指数和查尔逊共病指数。评估术后伤口并发症，90 天内假体周围关节感染，静脉血栓栓塞，以及各组之间 90 天内的内科并发症。他们发现分期双侧全膝关节置换术的间隔时间不影响早期内科或外科并发症。而后随访 3~37 个月，平均 10.7 个月后，比较了各组间的术后结果。临床结果显示，在第一膝或第二膝的 ROM、膝关节协会疼痛评分、膝关节协会临床评分、膝关节协会功能评分或加州大学洛杉矶分校活动评分方面没有显著差异。

因此对于因双膝 OA 行双侧膝关节置换术的手术方案医生有以下几种主张；一部分关节外科医师主张同期置换，一部分关节外科医师建议同期入院分期置换，一部分关节外科医师推荐为一侧术后 3 个月行对侧置换，而另一部分关节外科医师建议等待第一次手术侧膝关节功能锻炼良好后再进行对侧置换，甚至还有一部分关节外科医生认为一侧膝关节置换后当对侧膝关节不能忍受疼痛时再置换。事实上，两次置换的手术间隔时间主要取决于患者的一般情况、要求以及术者的手术经验。对于双侧 TKAs，分期置换间隔时间到底多久才能获得最满意的疗效，目前尚无明确的定论。

3. 总结和展望

以上可见，对于双侧膝关节 OA 患者的第二次手术的最佳时机，争议仍在持续。最重要的是，目前很少有研究指出双侧 TKAs 术后人群整体的生活质量如何。特别是，对同期手术、同期入院分期手术或分期入院分期手术的整体疗效没有达成共识。虽然对不符合同期手术条件的患者，同期入院分期手术可获得满意的临床结果，且有研究表明并发症发生率相对较低，但我们不能得出同期入院分期手术优于分期入院分期手术的结论，因为不能排除因患者选择偏倚对研究结论的影响。因此，对于双侧膝关节 OA 患者第二次手术的最佳时机需要进一步的研究。

毫无疑问，我们在对于双膝关节骨性关节炎需行双侧全膝关节置换术的患者制定手术方案时一定会考虑患者的具体情况，如一般身体状况，合并症，经济条件等。但是无论如何，手术的安全性应当放在第一位，因此对不同双膝 OA 患者而言，进一步确定双侧全膝关节置换不同危险因素人群以及探索最佳间隔时间，将会是我们进一步的研究方向。

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