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全膝关节置换术中髌骨置换对手术效果影响的 Meta 分析

李宣明¹, 刘权兴², 张时文¹

(1 四川省大竹县人民医院骨科 635100; 2 第三军医大学新桥医院胸外科, 重庆 400038)

[摘要] **目的** 评价髌骨置换与非髌骨置换对全膝关节置换术疗效的影响, 为临床治疗方案的选择提供循证依据。**方法** 检索 Pubmed、Cochrane、Medline、Embase、中国期刊全文数据库(CNKI)及万方等数据库, 收集有关全膝关节置换术时髌骨置换与否的随机对照研究。按照纳入、排除标准由两名研究人员独立进行筛选并提取相关数据, 以再次手术率、膝关节疼痛分数以及膝关节评分作为测量指标。采用 RevMan 5.3 软件进行 Meta 分析。**结果** 15 篇文献纳入分析, 共 1 788 例患者, 其中髌骨置换组患者共 871 例, 非髌骨置换组患者共 917 例。髌骨置换组患者的再次手术率明显低于非髌骨置换组患者($RR=0.50, 95\%CI: 0.33\sim0.76; P=0.001$), 且膝关节功能也得到明显改善($WMD=3.04, 95\%CI: 0.41\sim5.67; P=0.02$)。而两种手术方式患者的前膝关节疼痛($WMD=0.96, 95\%CI: -0.85\sim2.76; P=0.30$)、膝关节评分($RR=0.81, 95\%CI: 0.50\sim1.32; P=0.41$)差异无统计学意义。**结论** 全膝关节置换术时进行髌骨置换可以降低再次手术的风险, 改善术后膝关节功能, 但不能改善术后膝关节疼痛分数及膝关节评分指数。

[关键词] 全膝关节置换术; 髌骨置换; 再次手术率; Meta 分析

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A meta analysis of influence of patellar resurfacing on effect of total knee arthroplasty

Li Xuanming¹, Liu Quanxing², Zhang Shiwen¹

(1. Department of Osteology, Dazhu County People's Hospital, Dazhu, Sichuan 635100, China;

2. Department of Thoracic Surgery, Xinqiao Hospital, Third Military Medical University, Chongqing 400038, China)

[Abstract] **Objective** To evaluate the influence of patellar resurfacing and non-patellar resurfacing on the effect of total knee arthroplasty to provide the evidence-based basis for selecting the clinical treatment scheme. **Methods** The clinical randomized controlled trials (RCT) on the whether having patellar replacement in total knee arthroplasty were retrieved from the databases of Pubmed, Cochrane, Medline, Embase, CNKI and WanFang data. The screening was independently performed by two researchers according to the including and excluding criterion. The related data were extracted. The reoperation rate, knee joint pain score and knee joint score served as the measurement criteria. The RevMan 5.2 software was adopted to conduct the meta analysis. **Results** Fifteen literatures were included to analyze, involving 1 788 patients, among them 871 cases were in the patellar resurfacing group and 917 case sin the non-patellar resurfacing group. The reoperation rate in the patellar resurfacing group was significantly lower than that in the non-patellar resurfacing group($RR=0.50, 95\%CI: 0.33\sim0.76; P=0.001$), moreover the knee joint function was significantly improved($WMD=3.04, 95\%CI: 0.41\sim5.67; P=0.02$). However, the anterior knee joint pain($WMD=0.96, 95\%CI: -0.85\sim2.76; P=0.30$) and knee joint score($RR=0.81, 95\%CI: 0.50\sim1.32; P=0.41$) had no statistical difference between the two operation modes. **Conclusion** Conducting patellar resurfacing in total knee arthroplasty can reduce the reoperation risk and improves the postoperative knee joint function, but does not improve postoperative knee joint pain score and knee joint score

[Key words] total knee arthroplasty; patellar resurfacing; reoperation rate; Meta-analysis

全膝关节置换术(total knee arthroplasty, TKA)中是否进行髌骨置换, 目前仍然存在争议。一部分外科医生在手术时更倾向于进行髌骨置换, 因为其可以减少二次髌骨修复和其他再次手术的概率, 并且还可以减轻前膝关节疼痛。但另一部分外科医生却不推荐在 TKA 时进行髌骨置换, 以避免骨折、松动、不稳定以及膝盖骨肌腱损伤的出现^[1]。本研究对已有的随机对照试验结果进行 Meta 分析评价, 探讨 TKA 术中髌骨置换与否对 TKA 手术疗效差异, 为临床医生决策提供参考。

1 资料与方法

1.1 文献检索 使用计算机检索 Pubmed、Cochrane、Medline、Embase、中国期刊全文数据库(CNKI)及万方等数据库, 检索时间均为建库至 2016 年 5 月 30 日。由两名研究人员根据纳入、排除标准独立严格检索筛选后确定纳入文献。对于重复发表的文献, 纳入报道最早且报道最全面的那篇文献。英文检索词: total knee arthroplasty、patellar resurfacing、randomized controlled trial。中文检索词: 全膝关节置换术、髌骨置换、

随机对照研究。

1.2 方法

1.2.1 纳入、排除标准 纳入标准: (1) 纳入所有比较 TKA 中髌骨置换与非髌骨置换临床疗效的文献; 语种限定英文和中文; (2) 研究对象为 TKA 术中髌骨置换与非髌骨置换的患者, 不分年龄、性别和种族等; (3) 比较指标为 TKA 术中髌骨置换与非髌骨置换两种方式的再次手术率、前膝关节疼痛分数及膝盖评分。排除标准: (1) 只采取一种手术方法, 且未作两种方法比较的研究; (2) 只有摘要而无法获得全文信息的会议论文以及未发表的数据; (3) 非随机对照研究或研究对象区分种族的研究。为避免重复统计, 对同批患者进行研究的多次研究合并为 1 次。

1.2.2 文献质量评估及数据提取 按照 Cochrane 评价手册的评估标准, 由 2 名独立的研究人员对文献是否符合纳入标准进行评估并从每一篇文献中提取相关数据, 对文献纳入和提取数据有质疑的由第 3 名研究人员介入并通过讨论达成一致。

提取的数据包括:文献信息、任意原因导致的再次手术、随访时间、TKA术后患者承受的前膝盖疼痛级别以及相关膝盖评分。

1.3 统计学处理 使用 RevMan 5.2 软件对提取的数据进行分析。对纳入的研究进行异质性检验,若 $P \geq 0.1, I^2 \leq 50\%$,认为各研究间无统计学异质性,则采用固定效应模型;若 $P < 0.1, I^2 \geq 50\%$,认为各研究间存在统计学异质性,则对其异质性来源进行分析,无法解决或无法判定异质性来源时采用随机效应模型进行分析,必要时采用敏感性分析判断结果的稳定性,无法合并的指标采用描述性分析。以 $P < 0.05$ 为差异有统计学意义。

2 结 果

2.1 文献检索结果 初步检索出文献 172 篇,其中英文文献 159 篇,中文文献 13 篇,经过阅读文献题目、摘要后得到文献共 35 篇,进一步满足纳入标准进行评价后得到文献共 15 篇,所有文献均为随机对照研究^[2-16]。共纳入髌骨置换患者 871 例,非髌骨置换患者 917 例,见表 1。

2.2 Meta 分析结果

2.2.1 再次手术率 14 篇文献报道了再次手术率,效应指标采用 RR 表示。 $P = 0.60, I^2 = 0\%$,无异质性差异,采用固定效应模型。结果显示相比非髌骨置换,进行髌骨置换能够降低 TKA 术后的再次手术率($RR = 0.50, 95\%CI: 0.33 \sim 0.76; P = 0.001$),见图 1。

2.2.2 术后前侧膝关节疼痛分数 10 篇文献报道了术后前侧膝关节疼痛的患者数,效应指标采用 WMD 表示, $P = 0.003, I^2 = 51\%$,存在异质性差异,采用随机效应模型。结果显示 TKA 手术中是否进行髌骨置换对术后前侧膝关节疼痛的影响差异无统计学意义($WMD = 0.96, 95\%CI: -0.85 \sim 2.76; P = 0.30$),见图 2。

2.2.3 膝关节评分 11 篇文献报道了膝关节评分的数据,效

应指标采用 RR 表示, $P < 0.0001, I^2 \leq 75\%$,存在异质性差异,采用随机效应模型。结果显示 TKA 手术中是否进行髌骨置换对术后膝关节评分的影响差异无统计学意义($RR = 0.81, 95\%CI: 0.50 \sim 1.32; P = 0.41$),见图 3。

表 1 纳入 Meta 分析的原始研究

第一作者	发表年份	髌骨置换/ 非髌骨置换 (n/n)	平均年龄 (岁)	研究类型
Feller 等 ^[2]	1996	19/19	70.8	双盲随机对照
Barrack 等 ^[5]	2001	58/60	66.2	双盲随机对照
Schroeder 等 ^[4]	1998	20/20	72.6	双盲随机对照
Newman 等 ^[3]	2000	42/42	72.0	双盲随机对照
Wood 等 ^[6]	2002	92/128	73.7	双盲随机对照
Waters 等 ^[7]	2003	243/231	69.0	双盲随机对照
Mayman 等 ^[8]	2003	50/50	70.0	双盲随机对照
Burnett 等 ^[9]	2004	42/48	78.0	双盲随机对照
Campbell 等 ^[10]	2006	46/54	72.0	双盲随机对照
Smith 等 ^[12]	2008	73/86	71.5	双盲随机对照
Burnett 等 ^[11]	2007	28/28	未提及	双盲随机对照
Burnett 等 ^[13]	2009	58/60	未提及	随机对照(未提及盲法)
Beaupre 等 ^[14]	2012	21/17	63.6	双盲随机对照
Liu 等 ^[15]	2012	68/64	67.7	双盲随机对照
鲍亮等 ^[16]	2012	35/34	未提及	随机对照(未提及盲法)

2.2.4 膝关节功能分数 8 篇文献均报道了膝关节功能分数,效应指标采用 WMD 表示, $P < 0.0001, I^2 \leq 75\%$,无异质性差异,采用固定效应模型。结果显示相比非髌骨置换,进行髌骨置换能够改善 TKA 术后的膝关节功能,差异有统计学意义($WMD = 3.04, 95\%CI: 0.41 \sim 5.67; P = 0.02$),见图 4。

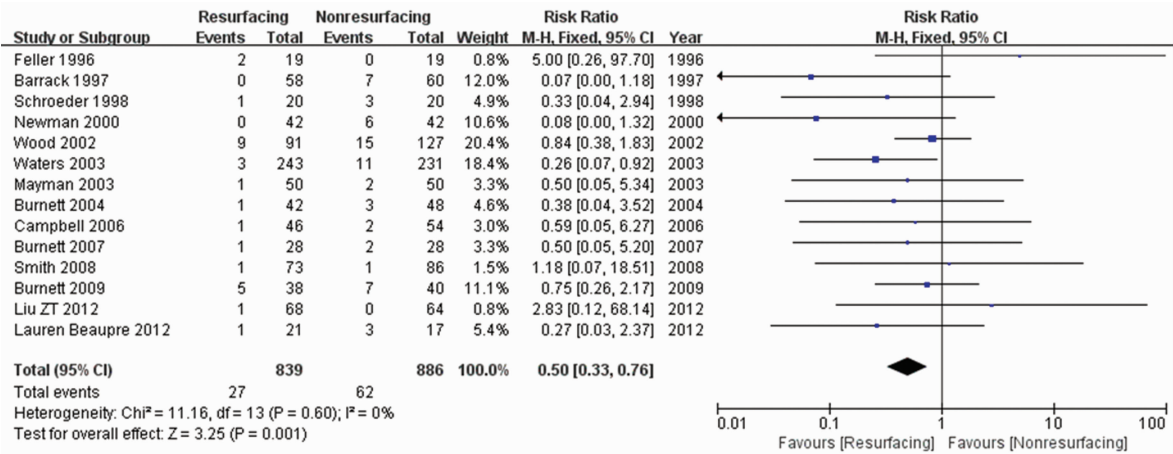


图 1 再次手术率的比较

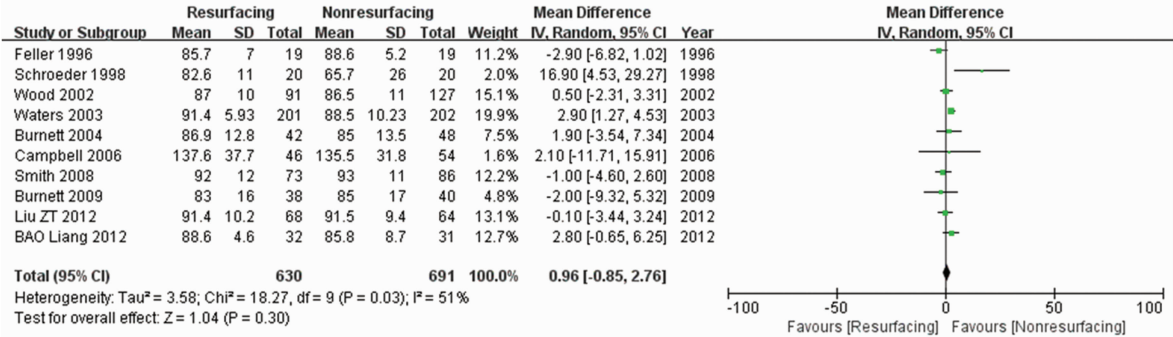


图 2 术后前侧膝关节疼痛分数的比较

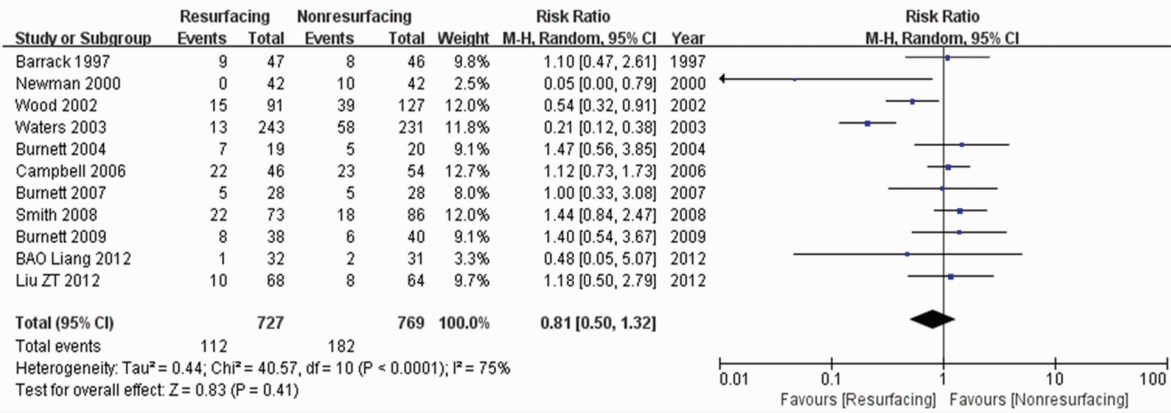


图 3 膝关节评分的比较

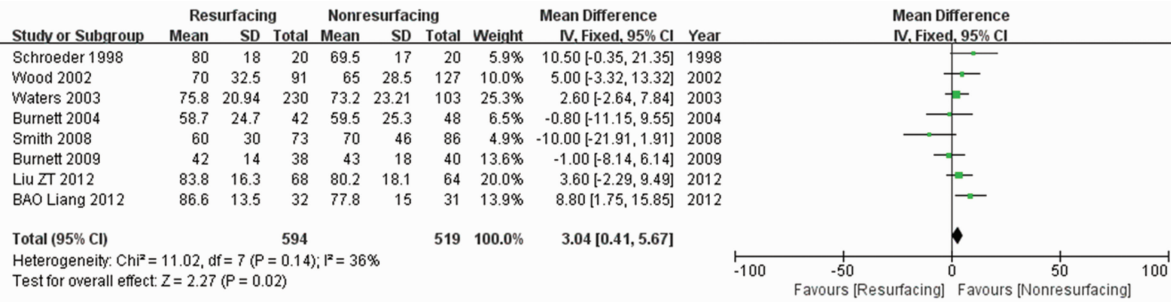


图 4 膝关节功能评分的比较

3 讨 论

通过 Meta 分析对纳入随机对照研究中的 1 788 例患者数据进行分析,结果显示在 TKA 中同期行髌骨置换可以显著降低 TKA 术后患者再次手术的概率($P=0.001$),并且能够改善术后膝关节功能($P=0.02$);而相比非髌骨置换,其对 TKA 术后前侧膝关节疼痛($P=0.30$)及术后膝关节评分则无明显改善($P=0.41$)。

本研究发现 TKA 中同期行髌骨置换可以降低再次手术率,这一结论与 Fu 等^[17]的研究结果类似,但是本研究并未对再次手术后的相关指标进行分析。而 Fu 等^[17]的研究中提示,再次手术后 76% 的患者膝关节相关性疼痛可以得到减轻。

在进行文献检索过程中笔者发现,对于 TKA 中是否同期行髌骨置换术尚无严格的随机对照试验设计的证据。而目前不论是前瞻性的研究或是回顾性研究都无法得出一致的结论。比如,Pakos 等^[18]、Patel 等^[19]和 Calvisi 等^[20]的研究均表明 TKA 同期行髌骨置换将会降低再次手术率和减少术后前膝疼痛的发生。然而 Fu 等^[17]和 He 等^[21]仅仅发现同期髌骨置换有利于降低再次手术率,而对减少术后前膝疼痛的发生并无明显作用。有研究认为两组中再手术发生率的差异是因为髌骨损伤程度在两组中的不一致造成的。为此,Seo 等^[22]进行了一项回顾性研究,结果表明髌骨损伤程度与术中是否进行髌骨置换并无明显相关性。关于全膝关节置换术的一些研究文献^[23-24]显示术中软组织尤其是韧带的损伤程度对于是否选择进行髌骨置换尤为重要。Hwang 等^[23]研究表明,如果软组织能保持正常功能并且髌骨友好型假体的设计使用得当,保留髌骨的髌骨成形术是可行的,甚至对于髌骨严重损伤的患者也能进行髌骨保留。基于以上分析,TKA 术中是否同期行髌骨置换目前并无统一意见。本研究为针对这一问题提供了一个有力证据。

综上所述,TKA 中同期行髌骨置换可以显著降低再次手术率,并且改善术后膝关节的功能,然而术后前膝关节疼痛及术后膝关节评分则无明显改善。这一结论尚需要严格的随机

对照试验来支持。

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