Book report

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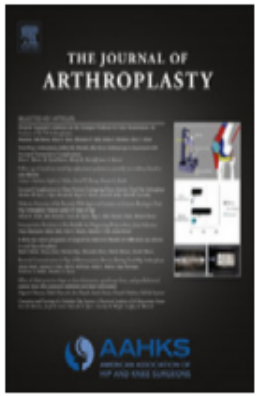

Does Recession of the Posterior Cruciate Ligament Influence Outcome in Total Knee Arthroplasty?

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Introduction

Total knee arthroplasty (TKA) √ OA +RA

. Two main types of total knee replacements:

the cruciate-retaining (CR) TKA retain

the posterior-stabilized (PS)TKA resect

PCL

choose which one?

CR TKA — no clinically relevant differences — PS TKA

PCL-retaining total knee arthroplasty(CR-TKA)

need proper soft tissue balancing(including PCL recession)

to function suitably

when the recession of the PCL is needed,

a debate whether a cruciate-retaining (CR) TKA should be converted to a posterior-stabilized （PS）TKA？

due to the concern of instability and poorer clinical outcomes.

The purpose of this study is to determine
whether recession of the PCL adversely affects clinical outcomes in patients who undergo CR TKA
and to evaluate
the necessity of converting a CR knee to a PS knee when the recession of the PCL is required for adequate knee balancing

本研究的目的是确定PCL的松解是否会对CR TKA患者的临床结果产生不利影响，评估当需要 PCL 的松解以实现足够的软组织平衡时将 CR假体转换为 PS假体的必要性

Methods

From: London Health Science Centre institutional database

Number：In total, 743 primary total knee replacements

Time: between December 2006 and July 2015.

677 CR total knee replacements of the same design were included in the study.

Methods

677CR-TKA patients

- PCL Retained
- PCL Recessed
- PCL Excised

All of the 677 PCL-retaining TKAs studied had complete information regarding the status of the PCL.

Patients were excluded if the surgeon converted a planned CR TKA to a PS knee. No occurrences of PS conversion were noted during the chart review.

prosthesis → a DePuy P.F.C. Sigma CR primary knee system.

femoral component → a nonporous cemented implant.

tibial implant → a fifixed bearing cemented component with a posterior lipped tibial polyethylene insert

Table 1
Patient Mean Demographic (SD) Comparison Between Cruciate-Retaining Total Knee Replacement Groups With Retention, Recession, and Excision of the PCL.

Patient Demographic	PCL Retained	PCL Recessed	PCL Excised	*P* Value
Age (y)	68.1 (10.2)	69.2 (8.2)	68.7 (9.1)	.751
Gender (% male)	36.7	41.7	53.1	.005[a]
BMI (kg/m^2)	34.41 (17.6)	32.17 (6.5)	33.04 (6.8)	.618
Follow-up (y)	2.71 (2.0)	2.6 (1.9)	2.11 (1.6)	.073

SD, standard deviation; PCL, posterior cruciate ligament; BMI, body mass index.
[a] Significant.

3组术前人口统计学数据
平均随访时间为.：2.5±1.9 年，范围为 3 个月至 8 年

Patients were evaluated before and after surgery

- routine knee X-ray
- clinical outcome easurements
  - The SF-12 scale
  - WOMAC score
  - the Knee Society Clinical Score (KSCRS)
  - revision rate were collected

Table 2

Preoperative Clinical Score Mean (SD) Comparison Between Cruciate-Retaining Total Knee Replacement Groups With Retention, Recession, and Excision of the PCL.

Outcome Measures	PCL Retained	PCL Recessed	PCL Excised	*P* Val
SF12-MCS	52.68 (11.0)	54.2 (11.5)	55.61	.175
SF12-PCS	31.24 (8.4)	28.71 (8.6)	31.27	.385
KSCRS	95.23 (24.6)	88.71 (23.2)	98.34	.39
WOMAC	45.14 (17.2)	43.49 (14.4)	49.78	.257

SD, standard deviation; PCL, posterior cruciate ligament; SF12, Short Form-12; MCS, Mental Health Composite Score; PCS, Physical Composite Score; KSCRS, Knee Soc
Clinical Rating System; WOMAC, Western Ontario and McMaster Universities Osteoarthritis Index.

3组患者的术前评分，无统计学差异

Result

677CR-TKA patients

- PCL Retained 540
- PCL Recessed 24
- PCL Excised 113

Of the 677 CR TKAs, the PCL was retained in 540 cases, partially recessed in 24 cases, and completely excised in 113 cases.

There were no significant differences in clinical outcome when the PCL was retained, partially recessed, or completely excised (Fig. 2, Table 3).

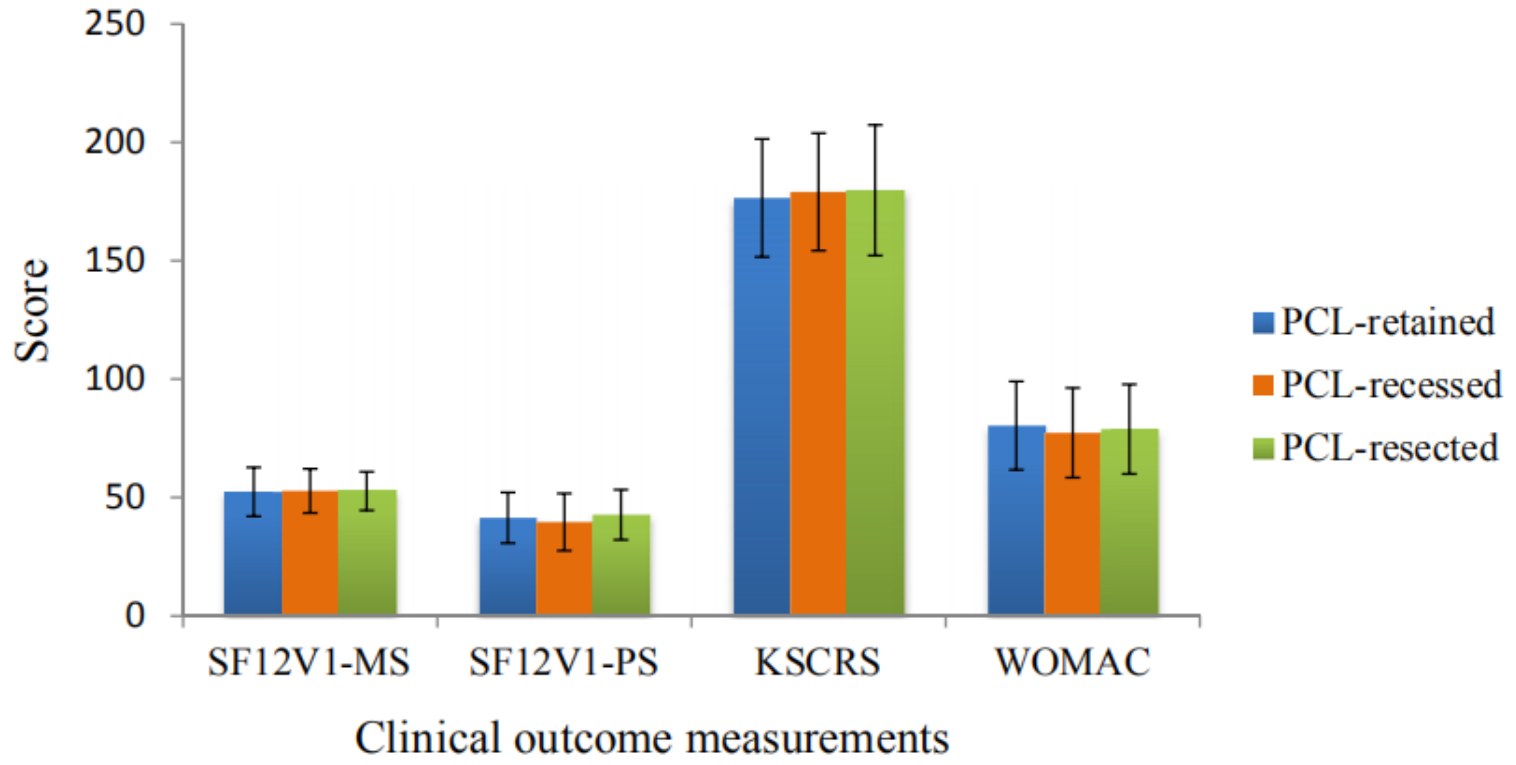

Fig. 2. Comparison of mean postoperative clinical outcome scores in cruciate-retaining total knee arthroplasty with the PCL retained, recessed, and resected. SF12V1-MS, Short Form-12 Version 1 Mental Health Composite Score; SF12V1-PS, Short Form-12 Version 1 Physical Composite Score.

Table 3
Postoperative Clinical Score Mean (SD) Comparison Between Cruciate-Retaining Total Knee Replacement Groups With Retention, Recession, and Excision of the PCL.

Outcome Measures	PCL Retained	PCL Recessed	PCL Excised	*P* Value
SF12-MCS	52.4 (10.3)	52.8 (9.4)	52.7 (8.2)	.894
SF12-PCS	41.4 (10.7)	39.6 (12.1)	42.7 (10.6)	.527
KSCRS	176.5 (24.9)	179.0 (24.8)	179.8 (27.6)	.415
WOMAC	80.4 (18.7)	77.3 (19.0)	78.8 (18.9)	.541

SD, standard deviation; PCL, posterior cruciate ligament; SF12, Short Form-12; MCS, Mental Health Composite Score; PCS, Physical Composite Score; KSCRS, Knee Socie
Clinical Rating System; WOMAC, Western Ontario and McMaster Universities Osteoarthritis Index.

Table 4
Postoperative Difference in Mean WOMAC Outcome Scores (SD) in Cruciate-Retaining Total Knee Replacement With Retention, Recession, and Excision of the PCL.

WOMAC Outcome Measures	PCL Retained	PCL Recessed	PCL Excised	*P* Value
Pain	83.2 (19.5)	82.4 (19.3)	81.6 (20.4)	.754
Stiffness	73.6 (23.4)	69.0 (18.0)	71.0 (23.1)	.348
Function	80.3 (19.2)	76.3 (22.4)	80.2 (19.2)	.73
Total score	80.4 (18.7)	77.3 (19.0)	78.8 (18.9)	.541

SD, standard deviation; PCL, posterior cruciate ligament; WOMAC, Western Ontario and McMaster Universities Osteoarthritis Index.

Table 5
Number and Cause of Implant Failure for Primary TKA With Retention, Recession, and Excision of the PCL.

Cause of Implant Failure	PCL Retained (n = 540)	PCL Recessed (n = 24)	PCL Excised (n = 113)
Instability	0 (0)	0 (0)	1 (0.88%)
Pain/stiffness	1 (0.19%)	0 (0)	0 (0)
Periprosthetic fracture	1 (0.19%)	0 (0)	0 (0)
Aseptic loosening	1 (0.19%)	0 (0)	0 (0)
Polyethylene fracture	1 (0.19%)	0 (0)	0 (0)
Total	4 (0.74%)	0 (0)	1 (0.88%)

TKA, total knee arthroplasty; PCL, posterior cruciate ligament.

There were no significant differences in revision rates between PCL-retaining total knee replacements that were balanced via PCL retention, recession, or excision.

Discussion

This study presents evidence of equivalent clinical outcomes when the PCL is retained, partially recessed, or completely excised during CR TKA

The similarities in postoperative clinical outcomes between the 3 groups may be due to accurate balancing of the knee and restoration of native knee biomechanics.

Proper knee balancing during CR total knee replacement surgery offers excellent stability regardless of the status of the PCL.

conclusion

This study presents evidence of similar clinical outcome when the PCL is retained, partially recessed, or fully excised during PCL retaining TKA. This suggests that PCL-retaining total knee replacements undergoing partial recession or complete excision of the PCL should not routinely be converted to a PCL-substituting knee.

这项研究提供了在CR-TKA 期间保留 PCL，部分切除/松解或完全切除 PCL 的相似临床结果的证据。这表明经历部分切除或完全切除 PCL 的 CR假体的全膝关节置换不应常规地转换为PCL替代性假体


Thank
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保留后交叉韧带理论上存在以下优点:①后交叉韧带为膝关节稳定的重要韧带;②后交叉韧带可以制导股骨后滚，从而实现更大角度的屈曲，而不会出现后方撞击;③后交叉韧带存在本体感觉，其本体感觉的恢复有助于膝关节动力学的平衡;④使用CR假体可以避免PS股骨假体的髁间截骨，从而有助于保留骨量，以备将来翻修的不时之需，对股骨较小的更有利。

R ichard Sccot 的“POLO”试验，即为“抽出-poll out”及“抬离-lift off”试验，抽出试验为将弧形的试模衬垫安放后，在屈膝 90°时能否将其从股骨试模下抽出来，其测试的为屈曲间隙是否过大，即后交叉韧带是否松弛，如果衬垫能够抽出，则使用更厚的衬垫，直至抽出试验阴性。而**抬离试验**则是在膝关节屈曲 80° ～ 100°的情况下，观察胫骨试模及衬垫前缘是否翘起，其测试的为后交叉韧带是否过紧。如果胫骨衬垫翘起，并伴有股骨的过度后滚，后交叉韧带紧张，则需要对后交叉韧带进行松解，紧张的部分常为后交叉韧带的前外束，因此后交叉韧带的部分松解常为其前外侧束松解。其松解的技术包括从股骨止点松解、胫骨止点进行松解，直至后交叉韧带张力合适，胫骨衬垫前缘无翘起。如果抽出 — 抬离试验均为阴性，则表示后交叉韧带、屈曲间隙处于平衡状态

PFC-Sigma 假体包括以下下各种类型：

初次保留交叉韧带型全膝关节
(PRIMARY CRUCIATE-RETAINING TKR)
设计上，带有后唇衬垫可用于 PCL 功能正常的情况。PCL 紧张时，需行松解。

初次交叉韧带加强型全膝关节
(PRIMARY CRUCIATE-SUPPTEMENTING TKR)
使用曲线型衬垫可加大接触面，加强功能上过度松弛的 PCL，适应较大的匹配性。

初次交叉韧带替代型全膝关节
(PRIMARY CRUCIATE-SUBSTITUTING TKR)
在胫骨衬垫中央加入一个聚乙烯突起，可充当已不存在的 PCL 作用。相应的股骨假体使用前后向切骨及斜面切骨，与 PCL 保留型假体相同，在准备女子的植入点不行翻修术时，允许改变。

全膝关节置换翻修假体
(REVISION TKR)
胫骨衬垫的几何形状考虑到在翻修和复杂的初次置换时，替代 PCL 和 MCL，选择统一型式的胫骨、股骨干、衬垫，实际上是为翻修留有余地。该系统提供三种级别限制，满足各种翻修需要：稳定型、限制型或 TC3 型。