

Kort klinisk retningslinje vedr.

Patella komponent i primær total knæ alloplastik

Anbefaling:

↑ Svag anbefaling for brug af patella komponent i total knæ alloplastik (TKA). Overvej brug af patella komponent da 5 års reoperations risikoen kan reduceres og 5 år funktionsscoren kan forbedres (+).

Udarbejdet af:

Dansk Selskab for Hofte- og Knæalloplastik (DSHK)

Forfattere:

Julie Ringstrøm Brandt (DSHK)

Mikkel Rathsach Andersen (DSHK)

Ann Ganestam (DSHK)

Baggrund for valg af spørgsmål:

Der er ikke konsensus vedrørende brug af patella resurfacing ved primær total knæalloplastik (TKA). Hvilken teknik der giver bedst resultater, er uklart. I Danmark blev i 2020 foretaget patella resurfacing ved 71,8% af primær total knæalloplastik operationer[1]. Den høje procentdel af patella resurfacing afspejler en antagelse af at færre patienter revideres for anteriore knæ smerter ved brug af denne teknik. Begge teknikker anvendes i dag og regnes for ligestillede, hvorfor DSHK finder det relevant at sammenligne teknikkerne mht. risiko for reoperation, patientrapporteret funktionsevne og smerter.

Denne retningslinje omhandler:

PICO spørgsmål:

Retningslinjen er udarbejdet med udgangspunkt i følgende PICO-spørgsmål:

Har patienter med primær knæledsartrose med indikation for indsættelse af en TKA bedre effekt uden indsættelse patellakomponent end TKA med indsættelse af patellakomponent, med hensyn til reoperation samt funktionsevne og smerter?

Population: Alle patienter med primær knæledsartrose, hvor der er indikation for indsættelse af en total knæalloplastik

Intervention: Total knæalloplastik uden patellakomponent

Comparator: Total knæalloplastik med patellakomponent

Outcome: Reoperation indenfor 1 år (Kritisk outcome).

Reoperation indenfor 5 år (Kritisk outcome)
Patient reporteret funktionscore (PROM) og smerter 1 år postoperativt
(sekundært outcome)

Eksklusion: Patella omformning (reshaping), neurogen denervering af patella, patellofemoral protese vs. TKA, ikke engelsk sprogede publikationer.

Studier: RCT, Meta-analyser

Reoperation definition: Alle kirurgiske indgreb på same knæ efter primær TKA.

Anbefaling:

Følgende symboler, indikerer styrken af anbefalingerne:

↑↑ = Stærk anbefaling for

↑ = Svag/betinget anbefaling for

↓ = Svag/betinget anbefaling imod

↓↓ = Stærk anbefaling imod

√ God praksis. Anvendes hvor der ikke findes evidens på området, men hvor arbejdsgruppen ønsker at fremhæve særlige aspekter af anerkendt klinisk praksis.

Følgende symboler angiver evidensniveau:

(+)(+)(+)(+) = Høj

(+)(+)(+) = Moderat

(+)(+) = Lav

(+) = Meget Lav

↑ Svag anbefaling for brug af patella komponent i total knæ alloplastik (TKA). Overvej brug af patella komponent, da 5 års reoperations risikoen kan reduceres og 5 år funktions scoren kan forbedres (+).

Litteratur:

Søgningen er gennemført d 0903.2023 (Se Søgestreng, Bilag 1). Alle søgninger er foretaget af minimum 2 fra arbejdsgruppen. Vi har søgt på metaanalyser og RCT-studier. Der blev i litteratursøgning identificeret 30 RCT-studier som kunne besvare PICO spørgsmålene (Bilag 2). Der foreligger 2 nyere metanalyser, som er publiceret henholdsvis 2021 og 2023 og som begge er omfatter alle 30 RCT-studier[2,3]. Der er ikke siden publiceret relevante RCT'er. Vi har vurderet den metaanalyse som bedst svarerede på vores PICO-spørgsmål vha. Amstar 2 (Bilag 3). Der foreligger endvidere NICE-guideline fra 2020 hvor mange af de samme RCT er inkl., denne var inkonklusiv ift. til anbefaling af patella resurfacing [4-33].

Reoperation total

5391 knæ cases fra de 30 RCT-studier blev inkluderet i metaanalysen til vurdering af risiko for reoperation, resurfacing 2702 cases, 2689 non-resurfacing cases. Der var signifikant forskel mellem de 2 grupper med større risiko for reoperation i non-resurfacing gruppen. Det konkluderedes at brugen af patellakomponent kunne nedsætte risikoen for reoperation. Gennemsnits follow-up for de publicerede RCT-studier var 3,6 (0,5-10,8) år.

Short term outcome med 10 inkluderede studier <3 års follow-up fandt ingen signifikant forskel på reoperations risiko. Af de 30 RCT-studier, præsenterede 18 data på reoperation mere end 5 års follow-up, her fandt man signifikant forskel med mindre reoperations risiko i gruppen med patella komponent.

Reoperation indenfor 1 og 5 år

De publicerede RCT-studer kan ikke belyse pico spørgsmålen med reoperation opdelt på 1 og 5 år.

Patient reporteret funktionsscore (PROM) og smerter 1 år postoperativt

18 RCT-studier med 2265 cases rapporterede Knee Society Score (KSS). Der var signifikant forskel med højere score i patella komponent gruppen.

16 RCT-studier med 1989 cases rapporterede funktions score fra KSS. Der var signifikant forskel med højere score i patella komponent gruppen.

6 RCT-studier med 2569 cases rapporterede Oxford Knee Score (OKS). Der var ingen signifikant forskel.

3 RCT-studier med 277 cases rapporterede The Knee Injury and Osteoarthritis Outcome Score (KOOS). Der var ingen signifikant forskel.

16 RCT-studier med 2163 cases rapporterede Anterior Knee Pain (AKP). Der var ingen signifikant forskel.

3 RCT-studier med 217 cases rapporterede Visual Analog Scale (VAS) for smerter. Ingen signifikant forskel.

Evidens:

Data er indhentet fra randomiserede studier. Der foreligger 30 publicerede RCT-studier af varierende kvalitet. Der foreligger metaanalyser som inkludererede relevante publicerede RCT-studier. Kvaliteten af evidensen er præsenteret for inkludere RCT med GRADE vurderinger for alle outcomes (Bilag 4). Generelt er risikoen for bias i RCT studierne vurderet lavt. I metaanalysens blev der dog ikke konkluderet kun på studier med lav RoB, og heller ikke diskuteret evt. bias indflydelse på resultatet (Bilag 5).

Reoperation indenfor 1 år og 5 år (Kritisk outcome)

De publicerede RCT-studer kan ikke belyse PICO spørgsmålen med reoperation opdelt på 1 og 5 år. Der anvendes forskellige observationsperioder i de forskellige studier. Der ses en signifikant forskel mellem de 2 grupper med større risiko for reoperation i non-resurfacing gruppen. Der er ikke

inkluderet en liste over samlede indikationer for reoperation. Der var ingen signifikant forskel for reoperation indenfor 3,6 år. Hyppigste årsag til nedgradering af GRAD er unøjagtighed (imprecision) på grund af brede konfidensintervaller

Derfor vurderes evidensen til at være meget svag (+)

Patient reporteret funktionsscore (PROM) og smerter 1 år postoperativt (sekundært outcome)

De er brugt flere forskellige scorere for at vurdere knæ smerter, hvilket kan medføre observations bias. Som eneste score fandt man i Knee Society Score (KSS) signifikant forskel med højere score i patella komponent gruppen.

I hverken Oxford Knee Score (OKS), The Knee Injury and Osteoarthritis Outcome Score (KOOS; Anterior Knee Pain (AKP) eller Visual Analog Scale (VAS) fandt man en signifikant forskel. Der var gennemgående høj grad af imprecision grundet brede konfidensintervaller.

Derfor vurderes evidensen til at være meget svag (+)

Reference liste:

- [1] 4699_dkr-aarsrapport-2021-budgivet2022offentliggjortversion.pdf n.d.
- [2] Simpson CJ, Ng N, Ndou S, Wright E, Yap NJ, Scott CEH, et al. Patellar resurfacing was not associated with a clinically significant advantage when a modern patellar friendly total knee arthroplasty is employed: A systematic review and meta-analysis. *Knee* 2023;41:329–41. <https://doi.org/10.1016/j.knee.2023.01.021>.
- [3] Chen K, Dai X, Li L, Chen Z, Cui H, Lv S. Patellar resurfacing versus nonresurfacing in total knee arthroplasty: an updated meta-analysis of randomized controlled trials. *J Orthop Surg Res* 2021;16:83. <https://doi.org/10.1186/s13018-020-02185-5>.
- [4] Ha C, Wang B, Li W, Sun K, Wang D, Li Q. Resurfacing versus not-resurfacing the patella in one-stage bilateral total knee arthroplasty: a prospective randomized clinical trial. *Int Orthop* 2019;43:2519–27. <https://doi.org/10.1007/s00264-019-04361-7>.
- [5] Thiengwittayaporn S, Srungboonmee K, Chiamtrakool B. Resurfacing in a Posterior-Stabilized Total Knee Arthroplasty Reduces Patellar Crepitus Complication: A Randomized, Controlled Trial. *J Arthroplasty* 2019;34:1969–74. <https://doi.org/10.1016/j.arth.2019.04.050>.
- [6] Gildone A, Manfredini M, Biscione R, Faccini R. Patella resurfacing in posterior stabilised total knee arthroplasty: a follow-up study in 56 patients. *Acta Orthop Belg* 2005;71:445–51.
- [7] Koh IJ, Kim MS, Sohn S, Song KY, Choi NY, In Y. Patients undergoing total knee arthroplasty using a contemporary patella-friendly implant are unaware of any differences due to patellar resurfacing. *Knee Surg Sports Traumatol Arthrosc* 2019;27:1156–64. <https://doi.org/10.1007/s00167-018-5120-2>.
- [8] Breeman S, Campbell M, Dakin H, Fiddian N, Fitzpatrick R, Grant A, et al. Patellar resurfacing in total knee replacement: five-year clinical and economic results of a large randomized controlled trial. *J Bone Joint Surg Am* 2011;93:1473–81. <https://doi.org/10.2106/JBJS.J.00725>.
- [9] Roberts DW, Hayes TD, Tate CT, Lesko JP. Selective patellar resurfacing in total knee arthroplasty: a prospective, randomized, double-blind study. *J Arthroplasty* 2015;30:216–22. <https://doi.org/10.1016/j.arth.2014.09.012>.
- [10] Bourne RB, Rorabeck CH, Vaz M, Kramer J, Hardie R, Robertson D. Resurfacing versus not resurfacing the patella during total knee replacement. *Clin Orthop Relat Res* 1995;156–61.
- [11] Deroche E, Batailler C, Swan J, Sappey-Marinié E, Neyret P, Servien E, et al. No difference between resurfaced and non-resurfaced patellae with a modern prosthesis design: a prospective randomized study of 250 total knee arthroplasties. *Knee Surg Sports Traumatol Arthrosc* 2022;30:1025–38. <https://doi.org/10.1007/s00167-021-06521-y>.
- [12] Smith AJ, Wood DJ, Li MG. Total knee replacement with and without patellar resurfacing: a prospective, randomised trial using the profix total knee system. *J Bone Joint Surg Br* 2008;90:43–9. <https://doi.org/10.1302/0301-620X.90B1.18986>.
- [13] Mayman D, Bourne RB, Rorabeck CH, Vaz M, Kramer J. Resurfacing versus not resurfacing the patella in total knee arthroplasty: 8- to 10-year results. *J Arthroplasty* 2003;18:541–5. [https://doi.org/10.1016/s0883-5403\(03\)00150-5](https://doi.org/10.1016/s0883-5403(03)00150-5).
- [14] Myles CM, Rowe PJ, Nutton RW, Burnett R. The effect of patella resurfacing in total knee arthroplasty on functional range of movement measured by flexible electrogoniometry. *Clin Biomech (Bristol, Avon)* 2006;21:733–9. <https://doi.org/10.1016/j.clinbiomech.2006.02.008>.
- [15] Raaij TMV, Meij EV, Vries AJ, Raay JJAMV. Patellar Resurfacing Does Not Improve Clinical Outcome in Patients with Symptomatic Tricompartmental Knee Osteoarthritis. An RCT Study of 40 Patients Receiving Primary Cruciate Retaining Total Knee Arthroplasty. *J Knee Surg* 2021;34:1503–9. <https://doi.org/10.1055/s-0040-1710369>.
- [16] Barrack RL, Wolfe MW, Waldman DA, Milicic M, Bertot AJ, Myers L. Resurfacing of the patella in total knee arthroplasty. A prospective, randomized, double-blind study. *J Bone Joint Surg Am* 1997;79:1121–31. <https://doi.org/10.2106/00004623-199708000-00002>.
- [17] Burnett RS, Boone JL, Rosenzweig SD, Steger-May K, Barrack RL. Patellar resurfacing compared with nonresurfacing in total knee arthroplasty. A concise follow-up of a randomized trial. *J Bone Joint Surg Am* 2009;91:2562–7. <https://doi.org/10.2106/JBJS.H.00109>.

- [18] Waters TS, Bentley G. Patellar resurfacing in total knee arthroplasty. A prospective, randomized study. *J Bone Joint Surg Am* 2003;85:212–7. <https://doi.org/10.2106/00004623-200302000-00005>.
- [19] Wood DJ, Smith AJ, Collopy D, White B, Brankov B, Bulsara MK. Patellar resurfacing in total knee arthroplasty: a prospective, randomized trial. *J Bone Joint Surg Am* 2002;84:187–93. <https://doi.org/10.2106/00004623-200202000-00004>.
- [20] Campbell DG, Duncan WW, Ashworth M, Mintz A, Stirling J, Wakefield L, et al. Patellar resurfacing in total knee replacement: a ten-year randomised prospective trial. *J Bone Joint Surg Br* 2006;88:734–9. <https://doi.org/10.1302/0301-620X.88B6.16822>.
- [21] Burnett RS, Haydon CM, Rorabeck CH, Bourne RB. Patella resurfacing versus nonresurfacing in total knee arthroplasty: results of a randomized controlled clinical trial at a minimum of 10 years' followup. *Clin Orthop Relat Res* 2004:12–25.
- [22] Aunan E, Næss G, Clarke-Jenssen J, Sandvik L, Kibsgård TJ. Patellar resurfacing in total knee arthroplasty: functional outcome differs with different outcome scores: A randomized, double-blind study of 129 knees with 3 years of follow-up. *Acta Orthop* 2016;87:158–64. <https://doi.org/10.3109/17453674.2015.1111075>.
- [23] Feller JA, Bartlett RJ, Lang DM. Patellar resurfacing versus retention in total knee arthroplasty. *J Bone Joint Surg Br* 1996;78:226–8.
- [24] Barrack RL, Bertot AJ, Wolfe MW, Waldman DA, Milicic M, Myers L. Patellar resurfacing in total knee arthroplasty. A prospective, randomized, double-blind study with five to seven years of follow-up. *J Bone Joint Surg Am* 2001;83:1376–81.
- [25] Beaupre L, Secretan C, Johnston DW, Lavoie G. A randomized controlled trial comparing patellar retention versus patellar resurfacing in primary total knee arthroplasty: 5-10 year follow-up. *BMC Res Notes* 2012;5:273. <https://doi.org/10.1186/1756-0500-5-273>.
- [26] Burnett RS, Boone JL, McCarthy KP, Rosenzweig S, Barrack RL. A prospective randomized clinical trial of patellar resurfacing and nonresurfacing in bilateral TKA. *Clin Orthop Relat Res* 2007;464:65–72. <https://doi.org/10.1097/BLO.0b013e31812f783b>.
- [27] Schroeder-Boersch H, Scheller G, Fischer J, Jani L. Advantages of patellar resurfacing in total knee arthroplasty. Two-year results of a prospective randomized study. *Arch Orthop Trauma Surg* 1998;117:73–8. <https://doi.org/10.1007/BF00703446>.
- [28] Bernstein J. Resurfacing of the patella in total knee arthroplasty. A prospective, randomized, double-blind study. *J Bone Joint Surg Am* 1998;80:925–6.
- [29] Kaseb MH, Tahmasebi MN, Mortazavi SJ, Sobhan MR, Nabian MH. Comparison of Clinical Results between Patellar Resurfacing and Non-resurfacing in Total Knee Arthroplasty: A Short Term Evaluation. *Arch Bone Jt Surg* 2018;6:124–9.
- [30] Murray DW, MacLennan GS, Breeman S, Dakin HA, Johnston L, Campbell MK, et al. A randomised controlled trial of the clinical effectiveness and cost-effectiveness of different knee prostheses: the Knee Arthroplasty Trial (KAT). *Health Technol Assess* 2014;18:1–235, vii. <https://doi.org/10.3310/hta18190>.
- [31] Vukadin OB, Blagojević ZB, Bašcarević ZL, Slavković NS, Stevanović V, Vukomanović BD. The Importance of Patellar Resurfacing in Total Knee Arthroplasty for Symptomatic Valgus Degenerative Deformity. *Acta Chir Orthop Traumatol Cech* 2017;84:30–4.
- [32] Simpson CJ, Ng N, Ndou S, Wright E, Yap NJ, Scott CEH, et al. Patellar resurfacing was not associated with a clinically significant advantage when a modern patellar friendly total knee arthroplasty is employed: A systematic review and meta-analysis. *Knee* 2023;41:329–41. <https://doi.org/10.1016/j.knee.2023.01.021>.
- [33] NICE, l-patella-resurfacing-pdf-315756469335.pdf n.d.

Abstract

Background:

The usage of patella resurfacing in total knee replacement (TKA) is optional and the two methods are considered equals. In Denmark in 2020 71.8 % of total knee replacement was made with patella resurfacing. The high percentage of resurfacing reflects the assumption that the revision rate due to anterior knee pain is higher with the patella not resurfaced. DSHK (Danish society of hip and knee arthroplasty) therefore decided to assess the literature and make recommendations in a short clinical guideline (KKR).

Aim:

To investigate if patella resurfacing in primary TKA has better results concerning short and long term follow up revision rate, patient reported outcome and pain score, than non-resurfaced primary TKA.

Materials and methods:

Two meta-analysis was found, publiced in 2021 and 2023. Both included the same 30 RCT studys and no further RCT studys has been publiced since. AMSTAR II critical appraisal tool was used to assess the quality of the meta-analysis. GRADE assessment was used to evaluate the strength of evidence for the relevant outcomes.

Interpretation/Conclusion:

This KKR is a weak recommendation towards using patella resurfacing in TKA due to a significant lower revision rate after 5 years follow up.

Bilag 1: Søgestrategi og søgestreng

Patient

("arthroplasty, replacement, knee"[MeSH Terms] OR "knee Prosthesis"[MeSH Terms] OR ("knee"[Text Word] AND ("arthroplast*"[Text Word] OR "prothes*"[Text Word] OR "implant*"[Text Word] OR "replacement*"[Text Word])))

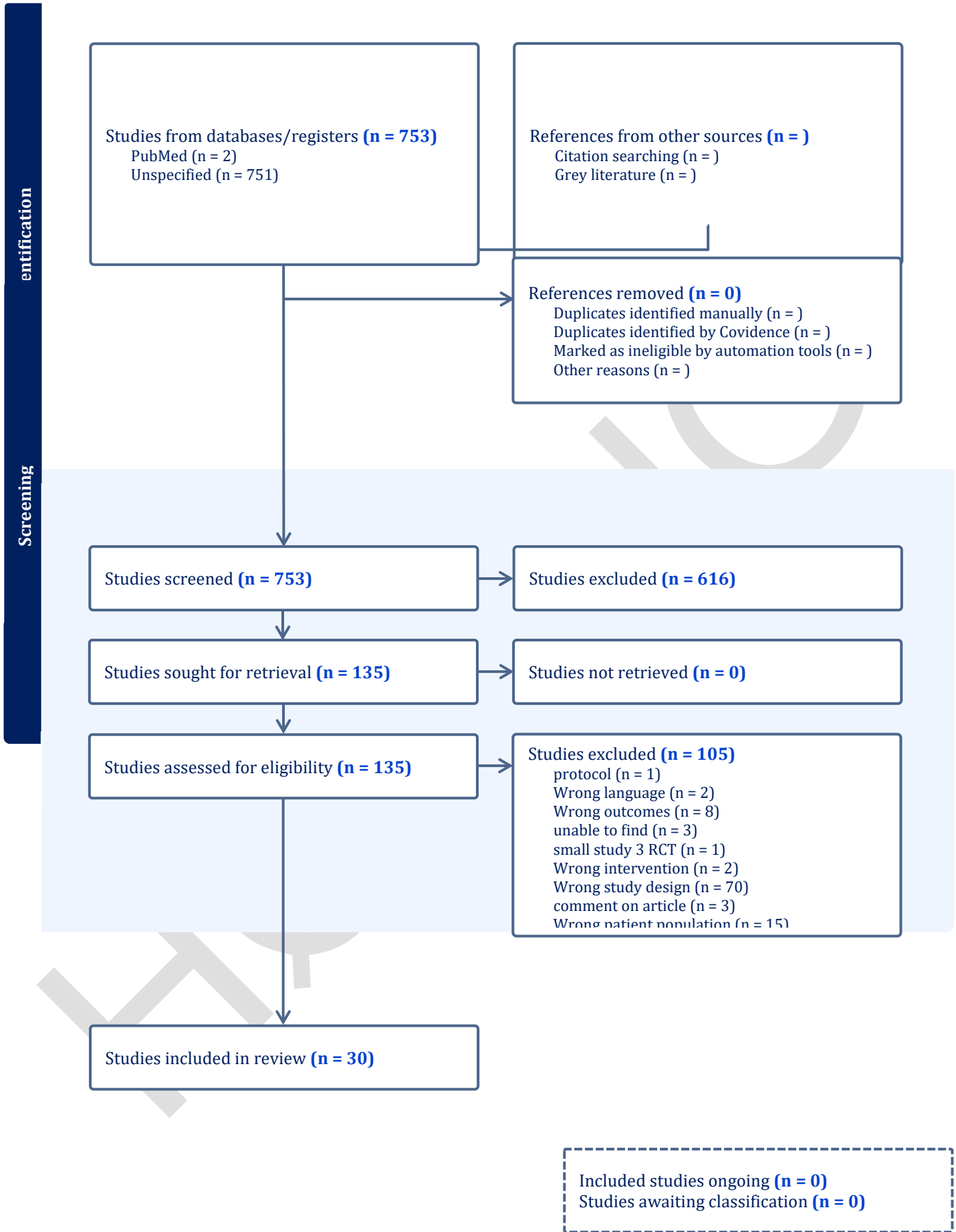
Intervention + Comparison

AND ("patella"[MeSH Terms] OR "patella*"[Text Word]) AND "resurfacing"[Text Word]

Samlet søgestreng:

("arthroplasty, replacement, knee"[MeSH Terms] OR "knee Prosthesis"[MeSH Terms] OR ("knee"[Text Word] AND ("arthroplast*"[Text Word] OR "prothes*"[Text Word] OR "implant*"[Text Word] OR "replacement*"[Text Word]))) AND ("patella"[MeSH Terms] OR "patella*"[Text Word]) AND "resurfacing"[Text Word]

Søgning foretaget d 9 marts 2023 i Pubmed



Bilag 3: AMSTAR 2 vurdering

Chen K, Dai X, Li L, Chen Z, Cui H, Lv S. Patellar resurfacing versus nonresurfacing in total knee arthroplasty: an updated meta-analysis of randomized controlled trials. J Orthop Surg Res. 2021;16(1):83.

1.	Did the research questions and inclusion criteria for the review include the components of PICO?	YES
2.	Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	Partial YES
3.	Did the review authors explain their selection of the study designs for inclusion in the review?	YES
4.	Did the review authors use a comprehensive literature search strategy?	Partial YES
5.	Did the review authors perform study selection in duplicate?	YES
6.	Did the review authors perform data extraction in duplicate?	YES
7.	Did the review authors provide a list of excluded studies and justify the exclusions?	Partial YES
8.	Did the review authors describe the included studies in adequate detail?	NO
9.	Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	YES
10.	Did the review authors report on the sources of funding for the studies included in the review	NO
11.	If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	YES
12.	If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	YES
13.	Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	NO
14.	Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	YES
15.	If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	YES
16.	Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	YES
	AMSTAR 2: 10/16 YES; 3/16 Partial Yes	

Bilag 4: Vurdering af evidens/GRADE

Quality assessment (GRADE) - RCT studier						
Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication	Quality

Outcome: Reoperation (Kritisk outcome)								
RCT 30 studier	Overvejende Lav. Et par studier med moderat risiko	Nej	Nej, svarer på vores PICO spørgsmål, dog uden de ønskede follow-up grænser.	Ja, RCT-studierne er kendetegnet ved store konfidensintervaller (CI), flere med få patienter og non- signifikante estimater.	Nej	Moderat	Nedgraderes grundet impresion	
Outcome: Knee Society Score (KSS) (sekundært outcome)								
RCT 18 studier	Overvejende lav.	Nej	Nej, svarer på vores PICO spørgsmål.	Ja, små patient antal, store CI	Nej	Moderat	Nedgraderes grundet impresion	
Outcome: KSS function (sekundært outcome)								
RCT 16 studier	Lav	Nej	Nej svarer på vores PICO spørgsmål.	Ja, små patient antal, store CI	Nej	Moderat	Nedgraderes grundet impresion	
Outcome: Oxford Knee Score (OKS) (sekundært outcome)								
RCT 6 studier	Lav risiko	Nej	Nej svarer på vores PICO spørgsmål.	Ja, få studier brede konfidensintervaller	Nej	Meget lav	Nedgraderes grundet impresion	
Outcome: The Knee Injury and Osteoarthritis Outcome Score (KOOS) sekundært outcome)								
RCT 3 studier	Lav	Nej	Nej svarer på vores PICO spørgsmål.	Ja, få studier brede konfidensintervaller	Nej	Meget lav	Nedgraderes grundet impresion	
Outcome: Anterior Knee Pain (sekundært outcome)								
RCT 16 studier	Lav	Nej	Nej svarer på vores PICO spørgsmål.	Ja, flere studier brede konfidensintervaller	Nej	Moderat	Nedgraderes grundet impresion	
Outcome: VAS pain (sekundært outcome)								
RCT 3 studier	Lav	Nej	Nej svarer på vores PICO spørgsmål.	Ja, få studier brede konfidensintervaller	Nej	Lav	Nedgraderes grundet impresion	

Bilag 5: Det metodiske kvalitet; bias-risikoen for hver RCT



Fig. 2 Risk of bias