Is there a difference in the outcomes between cemented and uncemented primary total knee arthroplasty?

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Response /Recommendation: In mid-term follow up, the survival rates are similar between cementless and cemented TKA, regardless of the demographic characteristics including age, sex, and body mass index. There is no significant difference between the two groups in major complications and functional results.

Level of evidence: Moderate

Rationale:

Concerns about the risk of osteolysis with cemented total knee arthroplasty (TKA) in the 1980's spurred development of cementless designs. Cement fixation is still used for the majority of TKAs, but the use of cementless fixation continues to increase, with a 2021 report stating that 14% of all primary TKAs are performed without cement in the U.S. Although cemented TKA is still referred to as the gold standard of fixation, the reported results of cementless TKA appear to be promising.[1-3]

To compare the results of these two fixation methods , all studies with mid-and long-term(up to 25 years)follow ups including meta-analysis, RCTs, retrospective and prospective cohort studies published in reputable journals were evaluated. Based on the findings of this systematic review, the survivorship of cemented or cementless TKA appear to be similar.[2,4-30]

There is also no significant difference between the two groups in functional scores.[2,7, 8,12,13, 7,21-23,25-27,30-36]Age and sex have no effect on results[13, 15, 16, 33, 37, 38], however according to the American Joint Replacement Registry, cementless TKA can yield favorable outcomes with low revision rates but surgeons should exercise caution with a PS design and for women over 65 years old.[1]Most studies showed similar outcomes in BMI <40[4, 20, 33, 34], but in morbidly obese patients (BMI >40) the cementless PS TKA may have superior results than cemented PS.[39]In reviewing the literature there is no strong data to support the superiority of fixation methods affecting the revision rates due to PJI. [15,18,40] The other major complications such as periprosthetic fractures and component migration are similar in cemented and cementless TKA, although in one study there is some concern for tibial component migration in cementless fixation.[15,41-44]In most studies, the different component designs (CR ,PS ,mobile bearing)also have the same results.[12, 27, 34-36] There is no strong evidence about the results of patella component fixation but in limited studies the rate of migration or loosening of patellar component in cementless design is higher than cemented counterpart. [9,18,35]The cost of cementless components is higher than cemented designs but the cost-benefit has not been evaluated in current literature.[45,46]Most published

RCTs also support the similarity of cementless and cemented fixation in outcomes.[2,11, 16,22, 23,25, 30,42,43,47]

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