

Glucagon-Like Peptide-1 agonists reduce 90 day surgical and medical complications in Total Hip Arthroplasty and Total Knee Arthroplasty: A meta-analysis and systematic review

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Background: Obesity and diabetes are risk factors for developing osteoarthritis, associated with worse outcomes following hip and knee arthroplasty. GLP-1 receptor agonists (GLP-1a) promote weight loss and improve glycaemic control. This study aimed to assess the impact of GLP-1a treatment on 90-day surgical complications following hip and knee arthroplasty.

Methods: A systematic review was performed according to PRISMA guidelines. Studies were included if they reported the effect of any GLP-1a on at least one outcome of interest following primary total hip arthroplasty (THA) or total knee arthroplasty (TKA). The primary outcome measure was 90-day surgical complication rate for the combined THA and TKA cohort. Secondary outcomes included 90-day medical complications, 90-day re-admission and all cause revision.

Results: Seventy-eight articles were reviewed, with ten matched cohort studies (96,356 patients; 30,350 hips and 66,606 knees). Mean age was 61.9 years, 60.3% female. Two studies had serious risk of overall bias and eight a moderate risk. The confidence of evidence as per GRADE was very low for all bar one outcome measures (healthcare cost: moderate). The rate of 90-day surgical complications was lower in the GLP-1a group: pooled risk ratio (RR) 0.73 (95% CI: 0.6-0.87) ($I^2 = 58\%$). GLP1a lowered 90-day medical complications and re-admission rates: RR 0.78 (95% CI: 0.63-0.96) ($I^2 = 88.3\%$) and RR 0.79 (95% CI: 0.70-0.90) ($I^2 = 61.6\%$). At 2-years, the revision rate ranged from 1.7-3.3% for the GLP-1a cohort and 1.7-4.5% for control.

Conclusion: GLP-1a treatment prior to THA and TKA reduces 90-day surgical complication, 90-day medical complication and 90-day readmission rates within higher-risk obese populations. In addition to the demonstrated clinical benefit, adoption of this treatment option by healthcare providers could potentially result in significant cost savings across healthcare systems.