SH24: Should anti-platelet medications (aspirin/clopidogrel) be discontinued prior to revision arthroplasty surgery? If, on medical grounds, it is continued, does its continued use result in greater complication rates, and in particular higher rates of PJI?

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Response/Recommendation: Unknown. There is no data in the shoulder literature about the effects of the usage of anti-platelet medications (aspirin/clopidogrel) prior to revision arthroplasty surgery on complication rates. No evidence-based guidelines exist for the perioperative use of clopidogrel even in elective hip and knee arthroplasty patients. However, based on available data, patients undergoing total hip and knee arthroplasty may be safely maintained on clopidogrel without an increased risk of bleeding, bleeding-related wound complications including infections, length of stay, readmission, reoperation, major medical complications, or mortality.[2-8] Further prospective research is warranted to confirm the effects of continuing clopidogrel prior to revision shoulder arthroplasty surgery.

Strength of Recommendation: Insufficient

Rationale:
A comprehensive literature review was performed to identify all studies on the usage of anti-platelet medications (aspirin/clopidogrel) prior to revision arthroplasty surgery. Searches for the terms "Arthroplasty, Replacement", "Clopidogrel", " Dual Anti-Platelet Therapy", "Anticoagulants", "Postoperative Complications", "Hematoma", "Infections" were performed using the search engines PubMed and Google Scholar which were searched through September 2024. Inclusion criteria for our systematic review were all English studies (Level I-IV evidence) that reported on the usage of anti-platelet medications (aspirin/clopidogrel) prior to revision arthroplasty surgery. Exclusion criteria were non-English language articles, nonhuman studies, retracted papers, case reports, review papers, studies with less than <10 patients in the sample size, studies without clinical follow-up/infection rates, and technique papers without patient data. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) criteria were followed. We identified zero articles from PubMed and zero articles from Google Scholar that met all criteria and could provide any answer to the question.

Searches were separately performed to identify studies for hip or knee arthroplasty on the effects of the usage of anti-platelet medications (aspirin/clopidogrel) prior to revision arthroplasty surgery.

There is no data in the shoulder literature specific to the usage of anti-platelet medications (aspirin/clopidogrel) prior to revision arthroplasty surgery. There are only two studies in the shoulder literature which can be discussed in association with this question.

Cancienne et al. (2020) identified patients who underwent shoulder arthroplasty with an indication for postoperative therapeutic anticoagulation in the case of atrial fibrillation or acute postoperative venous thromboembolism from national insurance database. Those with a prescription for a therapeutic anticoagulant within 2 weeks of surgery were identified and compared with controls without postoperative therapeutic anticoagulant prescriptions. They found out that wound complications and revision rates in patients undergoing shoulder arthroplasty who require postoperative therapeutic anticoagulation were significantly elevated

compared with controls. However, the study included only the following anticoagulant medications: warfarin (Coumadin), enoxaparin (Lovenox), rivaroxaban (Xarelto), fondaparinux, (Arixtra), apixaban (Eliquis), and dabigatran (Pradaxa) [1].

Cheung et al. (2008) retrospectively identified identified 3541 primary shoulder arthroplasties (3103 patients) and 606 revision shoulder arthroplasties (540 patients). Of these, 12 patients (12 shoulders: 11 primary arthroplasties and one revision arthroplasty) underwent reoperation for hematoma formation.They came to the conclusion that high rate of unsatisfactory results are associated with postoperative hematoma formation requiring operative treatment and the possibility of developing a deep infection requiring additional surgery. However, no relation with anti-platelet medications (aspirin/clopidogrel) can be conducted, which makes the results difficult to intrepret to answer the question.

Because of the lack of data in shoulder literature, expert recommendations will have to be inferred from data from hip/knee arthroplasty as described above.

References:

1. Cancienne JM, Awowale JT, Camp CL, Degen RM, Shiu B, Wang D, et al. Therapeutic postoperative anticoagulation is a risk factor for wound complications, infection, and revision after shoulder arthroplasty. J Shoulder Elbow Surg 2020;29(7s):S67-s72. doi:10.1016/j.jse.2019.11.029
2. Ghanem ES, Richard RD, Wingert NCH, Gotoff JR, Graham JH, Bowen TR. Preoperative Use of Clopidogrel Does Not Affect Outcomes for Femoral Neck Fractures Treated With Hemiarthroplasty. J Arthroplasty 2017;32(7):2171-5. doi:10.1016/j.arth.2017.01.048
3. Hossain FS, Rambani R, Ribee H, Koch L. Is discontinuation of clopidogrel necessary for intracapsular hip fracture surgery? Analysis of 102 hemiarthroplasties. J Orthop Traumatol 2013;14(3):171-7. doi:10.1007/s10195-013-0235-1
4. Lu W, Yon DK, Lee SW, Koyanagi A, Smith L, Shin JI, et al. Safety of Early Surgery in Hip Fracture Patients Taking Clopidogrel and/or Aspirin: A Systematic Review and Meta-Analysis. J Arthroplasty 2024;39(5):1374-83.e3. doi:10.1016/j.arth.2023.11.012
5. Manaqibwala MI, Butler KA, Sagebien CA. Complications of hip fracture surgery on patients receiving clopidogrel therapy. Arch Orthop Trauma Surg 2014;134(6):747-53. doi:10.1007/s00402-014-1981-0
6. Maxfield DG, Bernasek TL, Engel CC, Gill MK. Is it Safe to Continue Clopidogrel in Elective Hip and Knee Arthroplasty? J Arthroplasty 2022;37(9):1726-30. doi:10.1016/j.arth.2022.04.005
7. Pailleret C, Ait Hamou Z, Rosencher N, Samama CM, Eyraud V, Chilot F, et al. A retrospective comparison between delayed and early hip fracture surgery in patients taking clopidogrel: same total bleeding but different timing of blood transfusion. Int Orthop 2017;41(9):1839-44. doi:10.1007/s00264-017-3571-6
8. Wordsworth DR, Halsey T, Griffiths R, Parker MJ. Clopidogrel has no effect on mortality from hip fracture. Injury 2013;44(6):743-6. doi:10.1016/j.injury.2012.11.028