

CARDIAC STENTS AND PERI-OPERATIVE MANAGEMENT

“Will my patient’s pre-existing stent pose problems?”

“Will placing a new stent reduce perioperative cardiovascular risk?”

BACKGROUND

Benefits:

Drug-eluting stents (DES):

- Sirolimus, paclitaxel, and newer drugs
- Decreased risk of revascularization (4.2 vs. 13.2%) and restenosis (8.9% vs. 29.3%) at 6-12 months compared with bare metal stents (BMS).
- No difference in total mortality or MI.¹

In-Stent Thrombosis:

- Represents an *acute* event, unlike restenosis.
- In clinical trials, no significant difference between DES and BMS, although the incidence was rare (0.5 to 0.7%) and therefore underpowered.¹
- “Real-world” cohorts of patients with drug-eluting stents have a higher incidence (1.3%), and suggest that discontinuation of antiplatelet therapy is a risk factor (hazard ratio = 90) for thrombosis.²
- When it does occur, outcomes are serious: Case fatality rate 45%; MI ~70% for drug eluting stents.²

PERI-OPERATIVE ISSUES:

Pre-Existing Stents

For patients seen preoperatively who have had a cardiac stent placed, there are several questions to address:

1. What type? (bare metal, drug eluting)
 2. How long ago was it placed?
 3. Why was it placed?
 4. How long ideally should the patient be on dual antiplatelet therapy (aspirin + clopidogrel)?
- AHA/ACC guidelines³:

Stent	Aspirin	Clopidogrel
Bare metal	162-325 mg daily for at least 1 month , then Aspirin 75-162 mg daily indefinitely	75 mg daily for at least 1 month Extend to 1 year if no bleeding complications
Sirolimus	162-325 mg daily for at least 3 months , then Aspirin 75-162 mg daily indefinitely	75 mg daily for at least 12 months
Paclitaxel	162-325 mg daily for at least 6 months , then Aspirin 75-162 mg daily indefinitely	75 mg daily for at least 12 months
May extend dual antiplatelet therapy past 12 months for high risk cases.		

Our current practice at UWMC is to continue dual antiplatelet therapy (aspirin and clopidogrel) for one year, and after one year continue aspirin indefinitely. No elective procedures should be done during the first year unless they can be done without stopping aspirin and clopidogrel.

5. How urgent is the surgery?
6. Is the patient having symptoms?

Potential strategies:

Type of surgery	Example	Strategy
Purely elective	TKA	Postpone surgery for one year post stent placement, especially drug-eluting stents. Reassess patient at that time.
Urgent, low bleeding risk	Minor ENT procedure for cancer	Determine if the operation can be done without stopping aspirin and/or clopidogrel.
Urgent, high bleeding risk	Obstructing colon cancer	Withhold antiplatelet agents in the narrowest time frame acceptable with regard to surgical bleeding risk. Aggressively manage heart rate, blood pressure, and other risk factors.

In all cases, re-start antiplatelet therapy as soon as possible post-procedure.

Discussion with the patient, the patient’s cardiologist, and the surgical team is essential. In some cases the procedure may be performed with continuation of aspirin.

Preoperative stents placed to reduce cardiovascular risk:

For patients with a positive stress test and/or active symptoms of ischemic heart disease for whom you are considering revascularization, please see section on “What to do with a positive stress test”. Additionally, consider that by placing a stent and subsequently withholding dual antiplatelet therapy for a procedure, *additional* risk is introduced (risk of acute in-stent thrombosis) because of the presence of the stent.

References

1. Babapulle MN, Joseph L, Belisle P, et al. A hierarchical Bayesian meta-analysis of randomised clinical trials of drug-eluting stents. *Lancet*. 2004;364:583-591.
2. Iakovou I, Schmidt T, Bonizzoni E, et al. Incidence, predictors, and outcome of thrombosis after successful implantation of drug-eluting stents. *JAMA*. 2005;293:2126-2130.
3. King SB, Smith SC, Hirshfeld JW, et al. 2007 Focused Update of the ACC/AHA/SCAI 2005 Guideline Update for Percutaneous Coronary Intervention. *Circulation*. 2008;117:261-295. (AHA/ACC guidelines update)