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Bare Metal Stents Versus Drug Eluting Stents - How do we Choose?

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BARE METAL STENTS VERSUS DRUG ELUTING STENTS

Percutaneous coronary intervention (PCI) with stent placement has been proven a very effective way to treat patients with significant coronary artery disease (CAD) with acute and chronic clinical coronary syndromes. Over the last 8 years drug-eluting stent (DES) use has surpassed bare metal stent (BMS) use, mainly because DES reduce significantly the in-stent restenosis and decrease future major adverse cardiac events. The use of DES has expanded the application of PCI to more complex CAD patients.

The only major, infrequent but critically important, problem with at least the first generation DES use is the *late stent thrombosis* and the required *long term dual anti-platelet treatment*, which is probably due to endothelial dysfunction. In real life, although a great deal of discussion on on-label and off-label indications has taken place, DES are used for all indications except perhaps for simple-short lesions in vessels >3 mm in diameter, where BMS use is still acceptable. However, before the decision for DES or BMS is made, two things should be considered carefully. Both problems have to do with safety, since the effectiveness issue has been resolved.

First, the *risk of bleeding* inherent to the patient to be treated remains a major issue. This should be classified as low, medium or high. The criteria for high bleeding risk are shown in Table 1.

Second, the risk of thromboembolic complications, including stent thrombosis, and associated anticoagulant treatment, should be considered when choosing the

TABLE 1. Some diagnostic and surgical procedures with a high bleeding risk

Extracorporeal surgery
Intracranial and spinal cord surgery
Abdominal aneurysm resection
Major peripheral vascular surgery
Extensive cancer surgery (neural, urogenital, cervical, abdominal, breast)
Major orthopaedic surgery (hip and knee replacement, laminectomy)
Extensive reconstructive plastic surgery
Transurethral resection and bladder interventions
Solid organ biopsy
Intestinal polipectomy

appropriate type of stent. Estimated risk <3% is considered low. The clinical scenarios for high thromboembolic risk requiring oral anticoagulation therapy, which in case of DES placement dictates triple therapy (ASA, clopidogrel and oral anticoagulation agent), is shown in Table 2. Stent thrombosis does not require triple therapy but it should be considered carefully in low responders to ASA and clopidogrel.

UNANSWERED QUESTIONS

There are some remaining questions that will hopefully be answered in future studies:

- Which patients should undergo dual antiplatelet therapy beyond the usual 6-12 month period because of a permanent stent thrombosis risk?
- Which scores better predict further benefits in real-life from DES? Do scores obtained from clinical studies represent real-life patients?

Future techniques analyzing the effect of antiplatelet agents, safer DES, better antiplatelet regimens and better medical knowledge will help reduce thrombotic and bleeding complications resulting from coronary artery revascularization.

TABLE 2. Some clinical scenarios with a high thromboembolic risk

Previous venous thromboembolic event (<3 months)
Atrial fibrillation with a previous embolic event
Mechanical cardiac prosthesis
Thrombophylic disease (congenital or acquired)
Acute myocardial infarction (<3 months)
Ischemic stroke (<1 month)

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