



Safety of same-day discharge percutaneous coronary intervention access

Evaluation of: Antonsen L, Jensen LO, Thayssen P. Outcome and safety of same-day discharge percutaneous coronary intervention with femoral access: a single center study. *Am. Heart J.* 165, 393–399 (2013).

In this time of economic containment in medicine, multiple strategies have been proposed to limit the length of hospital stays. Same-day discharge has been discussed in order to increase bed availability and reduce hospital observations. In addition, with many free-standing centers providing interventional procedures, the safety of same-day discharge has been a topic of interest. Currently, the primary reason for observation after elective coronary revascularization is secondary to concerns of access-related complications.

Antonsen *et al.* reported a single-center experience of 355 patients with same-day discharge after percutaneous coronary intervention (PCI). This population accounted for approximately 20% of the total PCI performed during a 12-month period. A comprehensive assessment for same-day discharge was made by the investigators, resulting in the development of exclusion criteria for same-day discharge. All patients who had a planned discharge had deployment of an Angio-Seal™ (St Jude Medical, MN, USA) closure device in the femoral artery.

Patients were transferred to an outpatient clinic for 4 h of cardiac monitoring and strict bed rest for 2 h. Ambulation was then allowed and the access site was assessed for complications. Exclusion criteria included clinical, angiographic or

social criteria. A statistical analysis demonstrated statistical differences between same-day discharge patients and those kept overnight in the hospital. The major differences included: shorter lesions, a fewer number of stents, shorter stent lengths, fewer bare-metal stents, lower contrast volumes and shorter procedures than those that were discharged on the same day.

No major adverse cardiac or cerebral events were seen in patients discharged on the same-day of their PCI. Access-related complications were reported in three patients within 24 h and required observation. Two of the complications were hematomas less than 5 cm in diameter and one pseudoaneurysm that was treated with an ultrasound-guided thrombin injection. The authors concluded that in carefully selected patients, same-day discharge after PCI provides an alternative to overnight observation. "Same-day discharge following PCI is safe in carefully selected cases."

Although this single-center experience shows promising results with PCI and same-day discharge, careful selection is paramount in achieving the results demonstrated. The potential candidates accounted for 20% of the center's PCI patients. With all complications, including access-related and cardiac/neurologic events, occurring in <1% of discharges, many centers could benefit from this model. Currently at the West Virginia University (WV, USA), <20% of patients are discharged home following peripheral interventions; therefore, observation bed waiting lists and staff time could be reduced if a protocol similar to the one used in this study could be initiated.

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Surgical cutdown versus percutaneous access in transfemoral transcatheter aortic valve repair

Evaluation of: Holper EM, Kim RJ, Mack M *et al.* Randomized trial of surgical cut down versus percutaneous access in transfemoral TAVR. *Catheter. Cardiovasc. Interv.* doi:10.1002/ccd.25002 (2013) (Epub ahead of print).

Since the introduction of catheter-based aortic valve replacement, vascular access has been one of the major complications associated with this procedure. There have been no previous randomized trials comparing access techniques for transfemoral transcatheter aortic valve repair (TF-TAVR). In this small randomized trial by Holper and colleagues, access-related complications were evaluated. Iliofemoral complications of surgical exposure of femoral arteries versus percutaneous access with suture-mediated closure devices were compared. From

June to December 2011, 30 consecutive patients underwent TF-TAVR and were randomized to surgical cutdown versus percutaneous access. Patients had preoperative computed tomography of the abdomen and pelvis, and postoperative angiography and femoral artery duplex ultrasound. The primary end point was a composite of major and minor vascular complications at 30 days, as defined by the valve academic research consortium.

After randomization, 27 of the 30 patients were included and iliofemoral complications were observed in eight patients (26%), all of which were dissections or stenoses that required surgical or percutaneous intervention, with an equal number of complications in both groups (two major and two minor complications). Female sex and baseline femoral artery velocity were associated with vascular complications. This study concluded that, with regard to safety, a less invasive

percutaneous-based method in an experienced center is equivalent to the surgical method.

Although this small, single-center randomized trial sheds some light on one of the major issues, for example, access-related complications in TF-TAVR, one of the main limitations of this study is the small sample size. One patient in the percutaneous group required a surgical cutdown due to failure of the closure device, and one patient in the surgical arm had dissection and stenosis of the superficial femoral artery, requiring patch angioplasty, which is a technical issue rather than an access-related failure. Even though the present study is the only randomized trial for the mode of access in TF-TAVR, a multicenter prospective randomized trial needs to be conducted to identify the choice of access in a patient population at risk for access-related complications.

Comparison in surgical cutdown and percutaneous approach in TF-TAVR

Evaluation of: Nakamura M, Chakravarty T, Jilaihawi H *et al.* Complete percutaneous approach for arterial access in transfemoral transcatheter aortic valve replacement: a comparison with surgical cut down and closure. *Catheter. Cardiovasc. Interv.* doi:10.1002/ccd.25130 (2013) (Epub ahead of print).

TAVR has recently emerged as an effective therapeutic alternative to conventional aortic valve replacement for high-risk patients with aortic stenosis. The percutaneous TF-TAVR is a potential alternative to the open common femoral artery cutdown approach.

Nakamura and colleagues presented the results of a retrospective study of a single-center experience in TF-TAVR, using the Edwards SAPIEN (Edwards Lifesciences Corporation, CA, USA) heart valve that requires large caliber 22- or 24-Fr sheaths. The study was comprised of 274 patients who underwent TF-TAVR: 140 patients had a complete percutaneous approach using the Prostar and Perclose Proglide devices (Abbott Laboratories, IL, USA); and 134 patients had surgical cutdowns and repair of the common femoral artery. After closure of the arteriotomy, all patients underwent an iliofemoral angiogram via a crossover catheter to ensure acceptable hemostasis. Overall, the acute

success rates of both access and closure were similar between the percutaneous and surgical groups. There was no significant difference in major vascular complications, including thoracic aortic dissection, major bleeding, distal embolization and left ventricular perforation between the two groups. Although overall access-site events were similar, significant stenosis and dissection at the access site of the common femoral artery occurred more frequently in the percutaneous group compared with the surgical group (7.1 vs 0.7%; $p = 0.007$). Wound infections requiring prolonged antibiotic use or surgical debridement occurred more frequently in the surgical group (0.7 vs 6.7%; $p = 0.007$).

The surgical group developed minor bleeding more frequently (27.1 vs 38.3%; $p = 0.04$) and underwent transfusion of packed red blood cells of ≤ 3 units (25.7 vs 43.3%; $p = 0.002$). The median hospital stay was shorter in the percutaneous group (3 vs 4 days; $p = 0.002$).

The data from this study suggest that percutaneous transfemoral TAVR is feasible with acceptable safety. The anatomic characteristics of the iliofemoral artery,

including the diameter and degree of calcification, are major confounders that were not addressed in this study. These characteristics are associated with access site complications and may have contributed to the higher incidence of stenosis and dissection in the percutaneous group. A retrospective randomized study to compare both approaches is required to establish guidelines for choosing the suitable approach.

