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### Mid- and long-term percentage of ventricular pacing in patients implanted with a pacemaker after a transcatheter aortic valve replacement procedure: potential clinical implications

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**Background:** Cardiac conduction disturbances frequently occur following transcatheter aortic valve replacement (TAVR). As this procedure is getting more and more common, more research efforts should focus on post procedural rhythm disturbances and their evolution over time

**Purpose:** To evaluate the percentage of pacing in patients who underwent a TAVR procedure and developed a conduction disturbance requiring a transvenous pacemaker (PM) implantation

**Methods:** We considered all the patients who underwent a TAVR procedure between march 2009 and november 2018 in our centre. Patients implanted with a PM or an ICD before the TAVR procedure or 30 days after the TAVR were not considered eligible for our analysis, because likely not related to TAVR. The percentage of effective right ventricular pacing was assessed both at mid- and long-term follow-up

**Results:** 265 patients underwent TAVR in the study period (45% males, 81±6 years). 20 patients already had a PM and were excluded. 39 of the 245 patients (16%) were implanted with a PM after TAVR, 26 of them were implanted within 30 days (median time TAVR-PM implant: 8±7 days). The rate of PM implant within 30 days after TAVR was 8% (20/246) for patients implanted with an Edward Sapien valve, 25% (4/16) for patients with an Evolute Pro valve and 66% (2/3) in patients with a Lotus Edge valve. The indication for PM implant was a permanent 3rd degree A-V block in

12 patients, a paroxysmal A-V block in 4, a bifascicular A-V block with an infra-hisian disease in 5, a II degree Mobitz II A-V block in 2, an atrial fibrillation with slow A-V conduction in 2 and a 2:1 A-V block with infra-hisian disease in 1. The first follow-up after the PM implantation was available in 24 patients (mean 78±87 days after PM implant) and the second in 15 patients (372±267 days after PM implant). The patients were divided into two groups based on the presence/absence of permanent 3rd degree AV block at the time of implantation. At the first follow-up the percentage of pacing was significantly higher in patients implanted with vs. without a permanent 3rd degree AV block (98.5% vs 11%,  $p<0.001$ ). Notably, in none of the patients without a permanent 3rd AV block at baseline conduction disturbances progressed toward a permanent AV block during long-term follow-up. Accordingly, at the second follow-up patients without permanent 3rd AV block at baseline showed a significantly lower percentage of pacing (1% vs 100%;  $p<0.01$ )

**Conclusion:** Patients implanted with a PM after TAVR in the absence of a permanent 3rd AV block have a very low likelihood of progression to a permanent AV conduction disturbance and show a negligible percentage of pacing during follow-up. Our results may impact the choice of the correct timing of PM implantation after TAVR and the potential indication for a leadless PM.