Safe and Feasible Mobility Strategies in Complex Cardiac Surgery with Impella 5.5 and Invasive Hemodynamic Monitoring

critical care canada FORUM

Hackensack Meridian *Health*

INTRODUCTION

Implanting devices like the Impella 5.5 in the axillary artery empowers cardiogenic shock patients to participate in physical therapy. Typically, patients require an arterial line, central line, and Foley catheter. Swan-Ganz catheters are vital for adjusting inotropes and diuretics, and gradually weaning the Impella device as the condition improves. Provider reluctance to mobilize often stems from concerns about complications especially the device or catheter dislodgement.

Our established procedure delegates tasks for early mobilization, commencing as early as day 1 post-implantation. With a streamlined approach, we successfully mobilized 26 patients with Impella 5.5 and multiple catheters, seamlessly integrating the process without major complications or disruptions to the ICU staff's workflow.

OBJECTIVES

Implementing a streamlined approach for ambulating patients with the Impella 5.5 device and multiple catheters in the hallway while ensuring catheter stability and maintaining vital signs.

Initiating ambulation once cardiogenic shock stabilizes, evidenced by consistent pressor and inotrope doses and no increase in Impella P level for at least 12 hours.

Prioritizing improved patient endurance and fitness to enhance recovery and potentially broaden eligibility for advanced heart failure treatments.

Forming a daily ICU multidisciplinary team for patient ambulation to optimize care without overwhelming staff.

METHOD

Patient readiness for ambulation is assessed in daily ICU rounds.
The physical therapist sets daily goals, involving the patient and encouraging family participation.
The bedside nurse records Impella and PA catheter positions, vital signs, and oxygen levels.
A team comprising the bedside nurse, charge nurse, and physical therapist guides the patient through hallway ambulation.
The Physical Therapist will be monitoring endurance and vital signs. The bedside nurse oversees drips and catheters, and the charge nurse manages the Impella device. Family members provide emotional support.
Ambulation stops for complications like Impella device issues, alarms, flow decrease > 0.5 L/min, MAP < 60, unstable arrhythmia, bleeding, or specific patient symptoms (fatigue, syncope, chest pain, or shortness of breath).

AUTHORS

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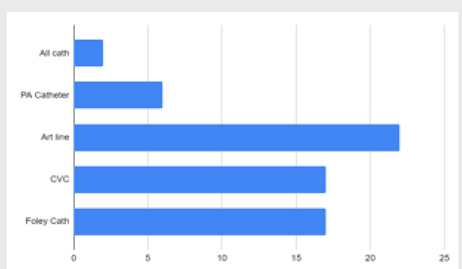
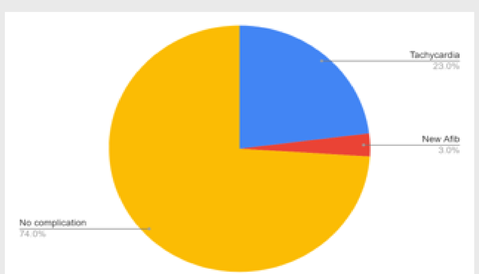
RESULTS

Data from 1/1/2022 to 12/1/2022 was analyzed for 58 Impella 5.5 patients, with 26 of them ambulating alongside one or more catheters.
Indications: cardiogenic shock (73%), CHF exacerbation (23%), post-MVR (3.8%).
Demographics: Age spanned 49 to 76 years, 6 females (23%), 20 males (76%).
Days to ambulation: 1-14 (range), notably, 22 within 5 days (84.6%).
Catheters: PA catheter (23%), arterial line (84.6%), central line (65.4%), Foley catheter (65.4%), all catheters (7.7%).
Complications: post-ambulation tachycardia (23%), new-onset atrial fibrillation (3%), neither associated with hemodynamic instability. No respiratory issues, desaturation, bleeding, catheter/Impella dislodgment, or hemolysis post-ambulation.





CONCLUSION

Ambulating with the Impella 5.5 is feasible and safe, benefitting from its secure positioning and rapid post-implantation improvement in vitals and cardiac output. The inclusion of Swan-Ganz catheters during ambulation in our patient series did not result in unstable arrhythmia or complications. It played a pivotal role in titrating therapy and assessing the necessity for weaning, LVAD, or heart transplant.
A three-person team efficiently conducted the ambulation without increasing the workload.
The experience was positive for patients, family members, and ICU staff.

ACKNOWLEDGEMENTS

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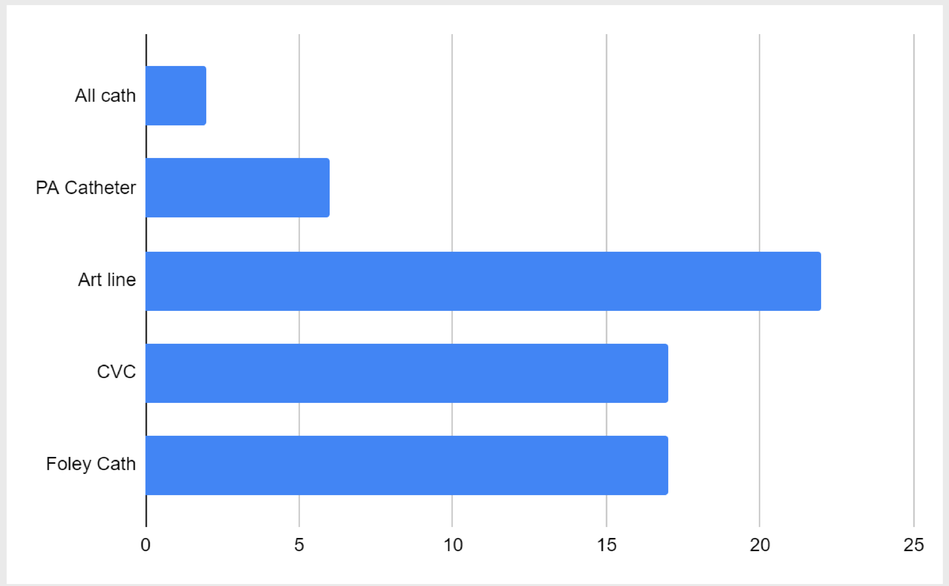

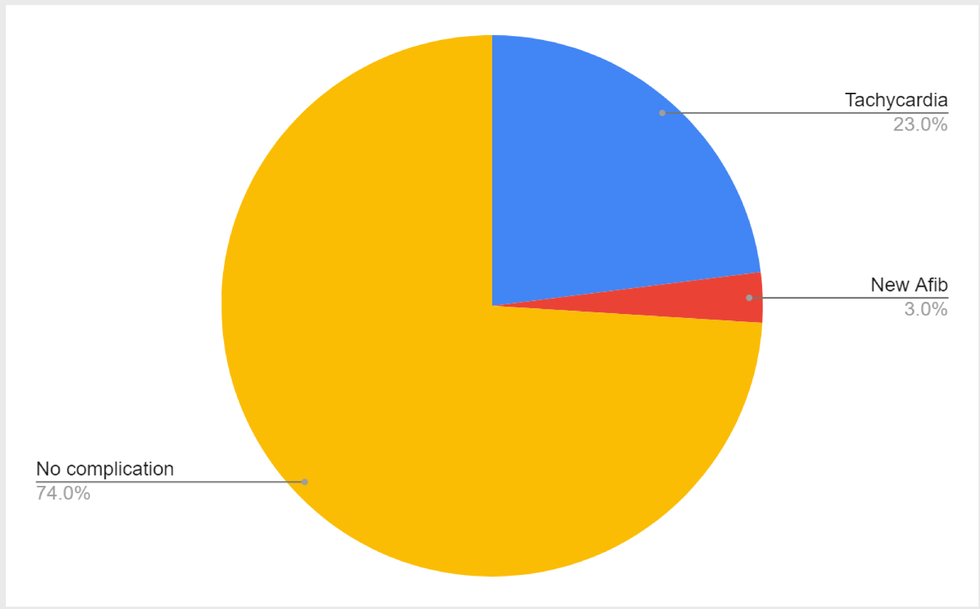

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