Introduction

A permanent pacemaker (PPM) is an electrical device that is utilized to sustain an appropriate heart rate in individuals who have symptoms, due to bradyarrhythmias, ranging from dizziness, syncope, lightheadness, fatigue, poor exercise tolerance to even death.

It is commonly implanted in the pre-pectoral position and connected to one or two transvenous leads through the subclavian vein. However, in patients with contraindications to traditional implantation, an alternate method of implanting a PPM may be warranted.

Below, we present such a case of a patient with poliomyelitis requiring crutches to ambulate.

Case Presentation

A 72-year old female with a past medical history of paroxysmal atrial fibrillation on rivaroxaban, mitral regurgitation, mitral valve repair and poliomyelitis had been admitted to the hospital for symptomatic bradycardia, with a heart rate of 36 beats per minute (bpm). She reported having episodes of dizziness, lightheadedness, fatigue and exertional chest pain. During her hospital stay, she underwent a cardiac stress test which revealed inferior wall ischemia. However her subsequent cardiac catheterization did not show any significant coronary artery disease. Once she was asymptomatic, she was discharged home on a significantly reduced dose of Carvedilol from 12.5 mg twice a day to 3.125 mg twice a day. Upon follow up with a cardiac electrophysiologist (EP) three months post hospitalization, her heart rate was still noted to have 40 to 42 bpm in the office. She also reported mild exertional dyspnea, so her carvedilol was discontinued and it was recommended that she have a PPM implanted. The patient had concerns in regards to having a pectoral PPM placed as she relied on crutches to support her during ambulation due to her history of poliomyelitis. The option of having a PPM placed via the femoral vein was discussed and a detailed conversation took place regarding rarity of the procedure along with the risks and benefits. Case reports demonstrating the safety of the procedure were also discussed with her and the patient consented to have this procedure done after all her questions were answered appropriately. Soon, the patient underwent femoral dual chamber (DDDR) device implantation via the right femoral vein and the PPM was placed above the right groin crease down to the pre-external oblique fascia. It was programmed with a lower heart rate limitation of 60 bpm and an upper heart rate limitation of 120 bpm. The patient was discharged after successful assessment and interrogation of the device. Approximately one month later, she followed up with the EP outpatient and reported improvement in her symptoms. Her pacemaker was interrogated and noted to have 98% atrial pacing.

Discussion

- Permanent PM is conventionally placed via pectoral approach in approximately 94-99% times with contraindications in a bout 1-6% cases.
- Alternative approach via femoral approach is an viable option at that time.
- Some of the advantages would be site availability, lower bleeding risk, ability to perform under local anesthesia.
- Disadvantages of femoral approach is risk of retroperitoneal hematoma due to erroneous arterial puncture, atrial lead dislodgement.

Conclusion

- This case highlights the advantages of PPM placed via femoral vein as it provides an alternate method for individuals who have contraindications to having PPM placed using the traditional route via the subclavian vein.
- The concern of using crutches and its proximity of the PPM was thus resolved with using this methodology.
- With the emergence of more case reports highlighting the advantages and success rates of this procedure, PPM placement via the femoral vein may soon become routine practice.

Reference


(images from google)