Paediatric Intensive Care Unit

Removal of temporary epicardial pacing wires

Staff relevant to:	Medical, nursing and allied health professional staff in EMCHC and Leicester Childrens Hospital
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Contents

1. Introduction & who this guideline applies to

The need for temporary cardiac pacing is not uncommon in the immediate post-operative period following open heart surgery. Cardiac pacing may be needed to treat a brady-dysrhythmia or asystole; or to increase heart rate to suppress arrhythmias or increase cardiac output. In some cases synchronized pacing of both the atria and ventricles may be required to maximize cardiac output. Atrial epicardial wires may also be used to record an atrial electrocardiogram

This guideline is intended for use by medical, nursing and allied health professional staff in EMCHC and Leicester Childrens Hospital to facilitate the safe and appropriate removal of temporary pacing wires from paediatric patients post cardiac surgery

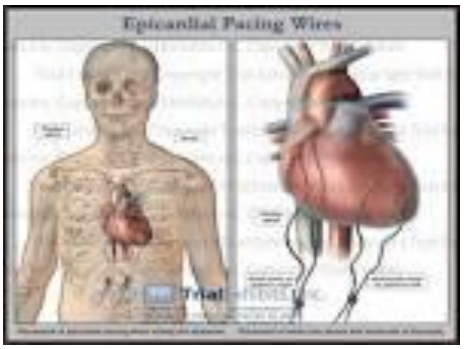
Related Documents:

UHL A guide to Atrial ECGs C60/2016
UHL Aseptic non-touch technique policy B20/2013
UHL Infection Prevention Policy B4/2005
UHL Policy for Consent to Examination or Treatment A16/2002

2. Clinical Procedure

Background

Temporary epicardial pacing wires are small Teflon coated wires which are inserted at the end of surgery by loosely suturing them to the epicardial surface of the right ventricle or the right atrium or both, and then tunnelling them out to the skin surface. Conventionally atrial wires are brought out on the right of the patient and ventricular wires on the left (Figure 1)



Epicardial pacing wires are usually removed within the first week post-op, but may be in place longer if prolonged pacing is required. Prolonged presence of foreign materials in the body is associated with development of a fibrin tissue sheath, which may make removal more difficult and increases the risk of tearing the epicardial surface with removal.

Procedure for removal temporary epicardial pacing wires

If patient is dependent on cardiac pacing then pacing must be maintained through temporary pacing wires until the need for pacing no longer exists or a permanent device is placed.

Temporary epicardial pacing wires can be removed by nursing staff.

Temporary epicardial pacing wires should only be removed if it has been specifically requested and agreed by medical and surgical consultants.

Always inform medical and surgical teams of when you plan to remove pacing wires. Ideally planned removal of pacing wires should occur during weekday mornings when surgical and theatre teams are available in the event of an emergency. Out of this time, always check with

the Consultant Paediatric Cardiothoracic Surgeon that they are happy for wires to be removed, and available in the event of an emergency.

- Check for normal platelet count and coagulation studies, as well as review routine 12 lead ECG prior to removal.

- Stop Heparin infusion at least 2 hours prior to removal (there is no need to stop Aspirin or drugs given for 'thromboprophylaxis').

- Have a Group and Save sample in lab in case of urgent need for blood (and check with blood bank that in the event of an emergency, blood could be available at short notice, i.e. not rare blood type that has to be brought in from BTS in Sheffield).

- Patient should at least have continuous monitoring of ECG and Oxygen Saturations during wire removal. Record a blood pressure prior to removal of wires.

- Use ANTT.

- When both atrial and ventricular wires are present, atrial wires are removed first and ventricular wires last.

- Wires may be held to the skin with a 'stay' suture. Sutures will need to be removed prior to the removal of the wires. Occasionally the wire itself will be looped though the skin to hold it in place. In this circumstance it will be necessary to cut the pacing wire (cut through the loop).

- Wires are removed by applying gentle traction to the wire (by firm pulling) until it is released from the epicardium and can be pulled free from the body. Examine the removed wire for completeness.

Potential Complications

Entrapment of wire

If the wire cannot be removed with reasonable gentle traction, do not apply excessive force or jerk the wire (the wire may have been trapped by the sternum at chest closure). Consult the Cardiothoracic Surgeons.

Bleeding at the skin exit site. Occasionally a small subcutaneous blood vessel may be damaged by removal of the epicardial wire. Bleeding can usually be controlled with direct pressure over the skin exit site.

Cardiac tamponade is the greatest risk associated with removal of epicardial pacing wires. Tamponade can occur as a result of tearing of the epicardium, tearing an epicardial blood vessel or disruption of surgical intervention. It can occur acutely or gradually over time.

Cardiac arrhythmia is a potential complication that can occur as a result of microshock or mechanical irritation of the epicardium resulting in generation of arrhythmia such as atrial or ventricular fibrillation

Post removal of temporary pacing wires

- Vital observations including blood pressure should continue to be observed regularly until at least 4 hours post wire removal (or until echocardiogram has been performed and excluded pericardial effusion). If patient is on a Children's ward this could be done on the PEWS chart.

- Signs of developing tamponade include increasing heart rate, hypotension, pulsus paradoxus with raised CVP (if monitored). If any suspicion of developing tamponade call immediately for senior medical and surgical review of the patient.

- Patient must have an ECHO performed (usually 4 hrs later, but sooner if signs of patient deterioration) to exclude pericardial effusion post wire removal.

3. Education and Training

All nursing staff removing pacing wires has to be signed off competent for performing the procedure. This will ensure that staff:

- Can remove pacing wires safely
- Is able to recognise for potential complications and adverse effects and is able to deal with them effectively - is able to escalate if the child condition changes
- Can give an explanation to the child and family on risks of the procedure

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Incidence of adverse events after pacing wires removal, i.e. tamponade, clinical deterioration, significant bleeding, arrhythmia	Monitor incident reports	Quality assurance lead	yearly	PICU clinical practice group

5. Supporting Documents and Key References

1. **Capital Health learning module for removal of temporary epicardial pacing wires.** Betty Hodgson, Marta Smith 2012

6. Key Words

Pacing wires, epicardial

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.

As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title) C Westrope – Consultant PICU/ECMO Julia Vujcikova - Consultant Joanne Ennis - Matron	**Executive Lead** **Chief Nurse**
Details of Changes made during review: **No changes**	