



TEMPORARY EPICARDIAL PACING WIRE IN POSTOPERATIVE CARDIAC SURGICAL PATIENTS - REMOVE COMPLETELY OR CUT-FLUSH? A COMPARATIVE STUDY

Surgery

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ABSTRACT

Temporary epicardial pacing wire usage in cardiac surgery has been a common procedure. Various literatures have shown contradictory results regarding its removal either by cutting it flushed with its exit point at skin or by completely removing it by pulling. Following study was done to compare both the techniques and did not show any significant difference among these 2 techniques.

KEYWORDS

Temporary epicardial pacing wire, cardiac surgery

INTRODUCTION

Temporary epicardial pacing wire (TEPW) placement has been an integral part of cardiac surgery^(1,2). It is usually removed either by pulling it completely or by cutting flush with its exit point in skin. Various studies and case reports are there which shows both have their own pros & cons. The following study is aimed at comparing both the techniques with their outcome.

MATERIALS AND METHODS

This retrospective study is conducted in CTVS department in RGKar Medical College and Hospital. Patients who underwent cardiac surgery by a single cardiac surgeon (author himself) from January 2016 to January 2018 were included in the study. Their follow up was searched till January 2020. Patients who developed mediastinitis/ sternal dehiscence, whose TEPW was fixed/tied with epicardium by surgical knot to prevent bleeding and who expired in postoperative period were excluded from the study. With this inclusion and exclusion criteria total 102 patients were included in study. Patients were divided in 2 groups – group 1 (whose TEPW were removed completely by pulling)-43 patients, group 2 (whose TEPW were cut-flushed with skin)-59 patients. Data were collected from ICU chart, OT register, OPD register, patient documents and analysed using SPSS 28.

RESULTS

Table 1 summarises the result of methods of TEPW removal as compared to attachment with different cardiac chambers. From the table it is evident that fixation at different chambers does not carry statistically significant difference among them.

Table 1

Total n=102	Group 1 (complete removal) n=43	Group 2 (cut flush) n=59	P value
Ventricular pacing	29	47	0.16
Atrial pacing	10	7	0.13
Dual chamber pacing	4	5	0.88

Table 2 Summaries The Methods Of TEPW Removal On Different Post Operative Days(POD). No Significant Relation Is Found Between Method Of Removal Of TEPW On Post Operative Days(POD).

Table 2

Total n-102	Group 1 (complete removal) n=43	Group 2 (cut flush) n=59	P value
POD4	5	3	0.22
POD5	9	5	0.07
POD6	6	6	0.56
POD7	5	7	0.97
POD8	3	9	0.20
POD9	2	8	0.14
POD10	4	7	0.68
POD11	2	5	0.45
POD12	7	9	0.89

One patient had sinus tachycardia in group 1 after pulling TEPW. No other complication noted for both the groups. 2 patients underwent MRI during follow up for cerebrovascular accident without any problem. These are not statistically significant.

DISCUSSION

Despite widespread use of TEPW in cardiac surgery, the natural

history of TEPW is still not clear⁽²⁾. Various complications of retained TEPW has been elaborated like^(3,4,5,6,7,8)

- 1) Herniation of intra-abdominal contents through a diaphragmatic defect created by the TEPW
- 2) para-cardiac mass compressing the right atrium
- 3) features of DVT & PE due to TEPW in the right ventricle extending to the left pulmonary artery
- 4) severe Tricuspid Regurgitation caused by retained TEPW entering in RV
- 5) migration into the bronchial tree may cause bronchocutaneous fistula or lobe consolidation and bronchiectasis
- 6) migration into aorta or right carotid artery or into an AAA
- 7) intraperitoneal free migration (extra vascular) or colonic migration
- 8) formation of cutaneous abscess/pustule
- 9) can give rise to bacterial endocarditis
- 10) migration to jaw
- 11) can give rise to hemopericardium

Though removal of TEPW is thought to be an innocuous procedure⁽⁹⁾ but it also carries risks like^(1,10,11)

- 1) injury to vein graft
- 2) arrhythmia
- 3) hemorrhage causing hemopericardium

To negate the complication associated with fixation and removal of TEPW a novel TEPW using biodegradable film to fix the electrode to the epicardium may be used⁽¹²⁾.

There are concerns over performing an MRI in patients having retained TEPW⁽¹³⁾ though recent studies suggest that retained TEPW is not a contraindication for MRI^(14,15,16).

From the study results, it is evident that neither TEPW removal by pulling it completely nor cut-flush depend on chamber fixation nor they depend upon removal on post operative days. Also if, meticulously performed, complete removal of TEPW does not imper extra risk as compared to cut-flushing of TEPW. Last but not the least, retained TEPW does not interfere with MRI, nor they cause serious problem if they were properly fixed on epicardium/cutflushed with proper technique.

CONCLUSION

Even though, TEPW removal by pulling it completely or by cut-flush both have their own pros and cons, if properly performed- both are equally safe for patients.

Limitation of the study

This study was retrospective in nature. Prospective randomized controlled trials are required for further analysis.

Conflict of interest

None declared.

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