

## Improper Implantable Cardioverter Defibrillator Shocks

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### Case Report

A 74-year-old male presented with substernal chest pain associated with multiple shocks from his (ICD). A magnet was placed to prevent recurrent ICD shocks. His laboratory findings showed troponin of 0.165 ng per milliliter. The first Electrocardiography (ECG) was indicative of atrial fibrillation (Figure 1A). Medical management initiated which included sotalolol 80 mg and metoprolol 50 mg.

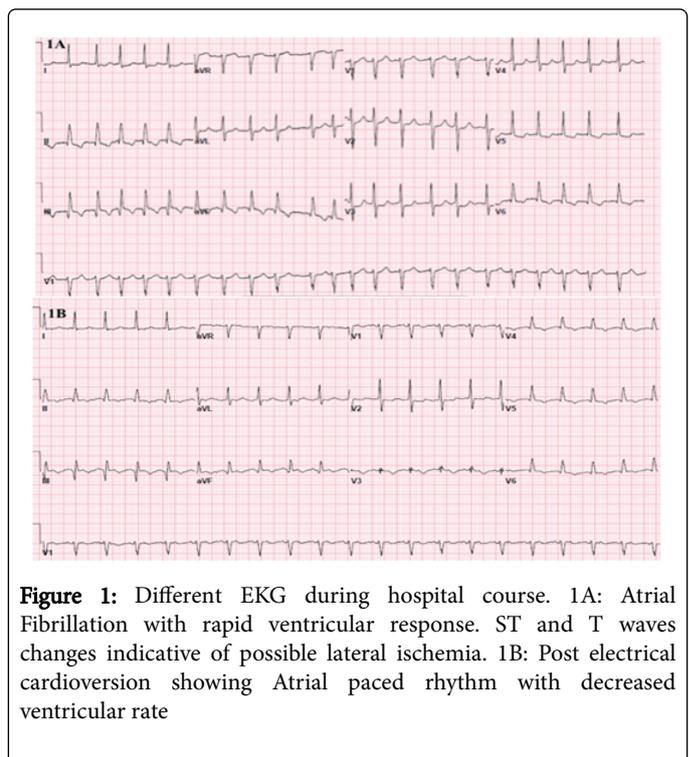
The second ECG recorded supraventricular tachycardia at the time his hemodynamic status deteriorated and decision was made to perform electrical cardioversion with 120 Joules of biphasic synchronized direct current with follow up ECG that showed atrial paced rhythm (Figure 1B). His condition improved and started on amiodarone 200 mg, anticoagulation, and subsequent follow up for ICD reprogramming with no recurrent episodes.

ICD shocks can be provoked by improper rhythm and heart rate not initially programmed, however further investigation for life threatening arrhythmia is important as it demands different treatment options.

Multicenter Automatic Defibrillator Implantation Trial II, showed association between proarrhythmic effect of the shock itself inducing hemodynamic deterioration [1]. Van Rees et al. [2] also demonstrated that the all-cause mortality increased after 5 inappropriate shocks.

Other theory might explain increased mortality is actual myocardial injury affecting the left ventricular function, increased psychological events, and indirect result of the atrial fibrillation itself [2]. There is no clear explanation regarding the increased mortality secondary to inappropriate ICD shocks, however major trials including Sudden Cardiac Death in Heart Failure showed adverse relationship [1-3].

ICD shocks are designed for certain arrhythmia such as ventricular tachycardia or fibrillation in certain group of patients. Improper shocking from ICD has been reported in clinical practice, however it can cause clinical deterioration in hemodynamic status. Recognition of life threatening arrhythmia is important in the setting of ICD as it determines different treatment strategies.



**Figure 1:** Different EKG during hospital course. 1A: Atrial Fibrillation with rapid ventricular response. ST and T waves changes indicative of possible lateral ischemia. 1B: Post electrical cardioversion showing Atrial paced rhythm with decreased ventricular rate

### References

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