

# Unexpected cause of involuntary muscle movements: Reel syndrome

Görkem Kuş , Göksel Çağırıcı , Çağın Mustafa Üreyen , Nermin Bayar , Şakir Arslan 

Department of Cardiology, Antalya Training and Research Hospital; Antalya-Turkey

## Introduction

Reel syndrome is an uncommon condition in which a pacemaker malfunctions owing to transverse rotation of the pulse generator and resultant lead displacement. In this case report, we present a patient complaining about reflex involuntary left upper extremity jerks, which is consistent with Reel syndrome. As the number of implantable devices increases in the population, cardiologists should be aware of this complication.

## Case Report

A 77-year-old male patient with a history of hypertension and coronary artery disease was admitted to the cardiology department with a history of involuntary rhythmic left arm movements for two days (Video 1). His medical history revealed dual-chamber pacemaker implantation in 2016 owing to sick sinus syndrome. Physical cardiac examination was unremarkable with a heart rate of 84 bpm. Laboratory findings of the patient were normal. Urgent pacemaker control was executed. Pacemaker interrogation revealed a loss of capture and undersensing.

Furthermore, chest fluoroscopy was urgently performed and it showed straightening of the atrial lead in the right atrium and dislodgement of the ventricular lead tip into the innominate vein secondary to the rotation of the pulse generator on its transverse axis with consecutive coiling of the lead (Fig. 1). These findings were consistent with Reel syndrome. The patient underwent a surgical procedure. When the pacemaker pocket was explored, a purulent fluid was detected. Atrial and ventricular leads were retracted by manual traction and the pulse generator was removed. Bacterial culture of the purulent fluid was obtained from the pacemaker pocket in the operation room. Three sets of blood cultures were taken. The patient was consulted to the department of infectious diseases. Empiric antibiotic therapy was intravenously administered to the patient. Two days later, culture from the pocket pus grew *Candida albicans*. We switched our antibiotic therapy with intravenous fluconazole. After 14 days, repeated routine blood workup and blood cultures were negative. The patient had a complete recovery at the end of the treatment. A new device was reimplanted into the contralateral side and the pulse generator was sutured to pectoralis major muscles without any complications.

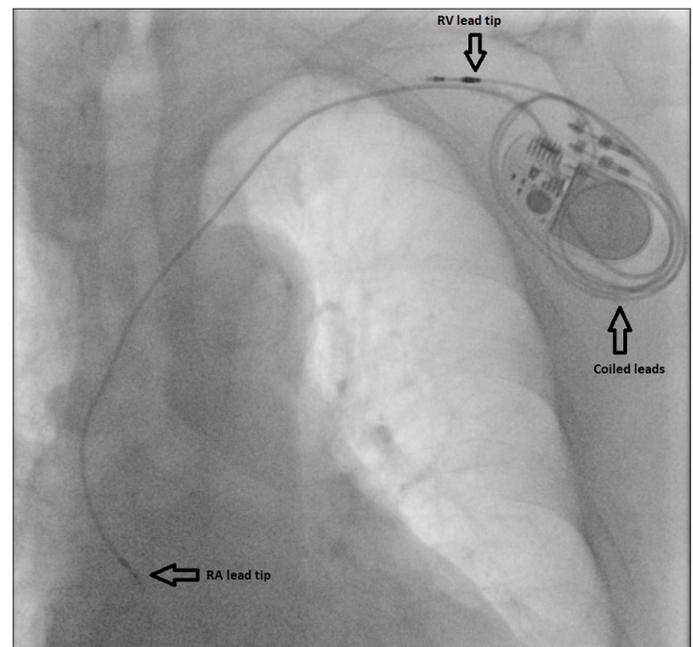
## Discussion

Reel syndrome is a rare complication of implantable cardiac devices (1). This syndrome usually occurs in the first month of implantation and normally, there is no obvious damage to the leads. Reel syndrome is characterized by transverse rotation of a pulse generator and subsequent movements of the leads towards the pacemaker pocket (2). Rarely, it may cause abdominal pulsations owing to diaphragmatic stimulation and involuntary upper extremity muscle movements owing to brachial plexus stimulations (3). High-risk parameters for the development of Reel syndrome are female sex, obesity, advanced age and dementia.

Although Twiddler's and Reel syndromes have similar etiologies such as dementia, female sex, obesity; their mechanisms are different. Twiddler's syndrome is characterized by rotation of the pacemaker generator on its long axis, whereas the pacemaker generator rotates around its transverse axis in Reel syndrome (4). In Twiddler's syndrome, lead damage is usually present owing to the tangling of the leads around the pacemaker generator. However, in Reel syndrome, the leads are normal. Moreover, Reel syndrome commonly occurs within a month after implantation, but Twiddler's syndrome usually occurs years after implantation. In our case, Reel syndrome was ascertained after four years of the pacemaker implantation. Fluoroscopy is the best method for diagnosis of Reel syndrome and differentiation from Twiddler's syndrome.

## Conclusion

We presented a case of Reel syndrome that is unique because it occurred four years after the device implantation. It



**Figure 1.** Chest fluoroscopy. Dislocation of the RV lead and straightening of the RA lead. In addition, the leads coiled around the generator  
RA - right atrium; RV- right ventricle

is extremely important to consider Reel syndrome when a patient with a pacemaker complains about reflex regular arm motions.

**Informed consent** A written informed consent was acquired from the patient.

**Video 1.** Involuntary rhythmic left arm movements

## References

1. Carnero-Varo A, Pérez-Paredes M, Ruiz-Ros JA, Giménez-Cervantes D, Martínez-Corbalán FR, Cubero-López T, et al. "Reel Syndrome": a new form of Twiddler's syndrome? *Circulation* 1999; 100: e45–6. [\[Crossref\]](#)
2. Alvarez-Acosta L, Romero Garrido R, Farrais-Villalba M, Hernández Afonso J. Reel syndrome: a rare cause of pacemaker malfunction. *BMJ Case Rep* 2014; 2014: bcr2014204545. [\[Crossref\]](#)
3. Bayliss CE, Beanlands DS, Baird RJ. The pacemaker-twiddler's syndrome: a new complication of implantable transvenous pace-makers. *Can Med Assoc J* 1968; 99: 371–3.
4. Munawar M, Munawar DA, Basalamah, F, Pambudi J. Reel Syndrome: A Variant Form of Twiddler's Syndrome. *Journal of Arrhythmia* 2011; 27: 338–42. [\[Crossref\]](#)

**Address for Correspondence:** Dr. Görkem Kuş,  
Antalya Eğitim ve Araştırma Hastanesi, Kardiyoloji Kliniği,  
Antalya-Türkiye  
Phone: +90 242 249 44 00  
E-mail: grk1628@hotmail.com

©Copyright 2021 by Turkish Society of Cardiology -  
Available online at [www.anatoljcardiol.com](http://www.anatoljcardiol.com)  
DOI:10.5152/AnatolJCardiol.2021.38445

