Introduction: Leadless cardiac pacemakers (LCP) have an effective clinical benefit and a safety profile that allow alternative use to transvenous pacemakers for patients indicated for single-chamber ventricular pacing. However, much remains to be clarified about the exchange of chronically implanted LCP and there are limited reports about elective retrieval of LCP. Herein, we report our single center experience with chronically implanted LCP retrieval and investigate the factors which contribute to the challenging procedures.

Methods: The present study included 33 patients with already implanted LCP (Nanostim) device in right ventricular active fixation LCP as a clinical trial conducted at our institution from December 2012 to January 2014. The presence of any serious adverse device effects up to 30 days after the LP extraction was documented.

Result: This study included 33 patients who were implanted LCP chronically (1570±479 days) and who subsequently received a device retrieval in our institution. The success rate of LP retrieval was 85% (n=28/33). In 25 patients, new LCP device was implanted immediately right after the previous LCP retrieval. There were no procedure-related adverse events at 30 days after retrieval and replacement. By fluoroscopic imaging, we divided the patients with the LCP into 2 groups: those LCP with remarkable swing movement of the docking button part (SM group) and those LCP without swinging movement (No-SM group). Successful LCP retrieval rate was significantly higher in the SM group than the No-SM group. (24/24, 100%, vs 4/9, 56%, n<0.001) In the SM group, the LCPs implanted at the RV apex were significantly observed than the No-SM group. (n=19, 79% vs n=1, 11%, n=0.0016)

Conclusion: This study demonstrated the feasibility and safety of percutaneous retrieval of chronically implanted LCP, which indicates possibility of safe elective replacement to a new LCP. LCP retrieval can be considered as an effective option for the LCP with swinging movement of the docking part and located in right ventricular apex.