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Prophylactic endocardial lead extraction in pediatric patient

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INTRODUCTION

The rate of failing endocardial leads in the pediatric population is high (18% to 30%), and abandoned endocardial lead has its own burden. In another hand, safety of leads extraction in pediatric patients with or without CHD have been reported. Because of those "pediatric" specificities, our institution decided to systematically consider prophylactic extraction of endocardial leads in pediatric patients at device replacement time, or during follow up if lead function trouble appeared. We report here the results of this management.

PATIENTS and METHODS

Between July 2011 and October 2016, lead extraction was considered for all patient with a transvenous pacemaker with either dysfunctional lead or growth related stretching of the lead on the chest X-rays. All extraction indications were Class IIb, none extraction was performed because active infection.

In 5 years, 24 patients underwent 25 extraction procedures of 27 pacing leads. At implantation, mean patient age was 6 years old (range 2 to 9.5 years), mean weight was 23.6 kgs (range 9.9 to 25) and mean height 123 cm (range 80 to 127). Mean duration of lead implantation was 7.9 years.

RESULTS

Complete lead extraction was achieved in 16 procedures (64%), for 5 patients the very distal tip of the lead remained included in the myocardium (20%). So, clinical success reaches 84%. Extraction procedure was aborted for 4 patients (16%) because of intense fibrotic binding site along the vascular access or within the heart making the risk of those extraction overweighting the expected benefit.

Statistically significant risk factor of complete lead extraction failure were age of implanted lead over 8 years and vicious reserve loop (fig 1).

No major complication occurred.

CONCLUSION

Transvenous pediatric pacing systems are under great stress du to linear growing and active carriers. Reserve loop which are supposed to allow patient's growth can also jeopardized the extraction feasibility by hinder the stylet placement. Prophylactic lead extraction should be considered before or at the time of battery depletion, as the older the lead, the more hazardous the extraction procedure gets.

Figure 1: exemple of vicious reserve loop

