

Safety and efficacy of simplified femoral approach with Gold Tip Electrodes for RFCA on paroxysmal SVTs in children

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Background: Radiofrequency catheter ablation (RFCA) in children has been widely used for treatment of supraventricular arrhythmias (SVT). Gold-tip electrodes, with higher conductivity, less risk of thrombus and charring formation have not been widely evaluated in children. A simplified approach with the use of two catheters has not been reported in pediatric population. The aim of the present study was to evaluate a short and long-term safety and efficacy of RFCA for SVT with minimal approach with Gold-tip ablation electrodes.

Methods: The studied group consisted of consecutive patients aged < 19 years referred for the first RFCA of SVT. A standard 2-catheter approach with femoral vascular approach was used. A standard decapolar catheter introduced in the coronary sinus and mapping/ablation Gold-tip catheter for dynamic mapping and ablation were used.

Results: Between January 2007 and May 2010, 104 children were referred for the first RFCA of SVT. There were 52 cases of atrioventricular nodal reentry tachycardia, 54 cases of accessory pathways or accessory pathways dependent tachycardias including 4 atriofascicular pathways and 5 cases with atrial tachycardias. In 7 cases coincidence of 2 arrhythmias was recognized. Standard simplified 2-catheter femoral approach was performed in 93/104 (90%), but in further 10 procedures its modification was used (additional subclavian vein access (n=1), 3rd catheter (n=2), intracardiac echocardiography (n=2) or single catheter approach (n=7). A mean number of catheters used simultaneously during mapping and ablation were 1.9±0.3. In 2 procedures a cross over to Gold cooled tip catheter were used. Total procedure, observation and X-ray exposure time of RF application was 65±29 min, 18±10 min and 129 min, respectively. Using a 50-60 Watt/ 50- 60°C generator setting a mean 36±13 maximal Watt and 54±7°C maximal temperature were achieved. A mean 15±15 of RF applications were performed with a mean application time of 340±272 sec. Intraprocedural efficacy was 97% without significant complications. Steam pops phenomenon, thrombi and charring formations on tips of ablation catheters were not recorded. No late complications were recorded.

Conclusions: Simplified femoral approach with Gold-tip electrodes for RFCA is a safe and efficient method for treatment of supraventricular arrhythmias and accessory pathways in children.