

## **Use of Force Sensing Catheters During Pediatric Radiofrequency Ablation: The FEDERATION Study**

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### Background:

Based on data from studies of atrial fibrillation (AF) ablations, optimal parameters for the TactiCath (TC; St. Jude Medical, Inc.) force-sensing ablation catheter are a contact force (CF) of 20g and force-time integral (FTI) of 400gms-s for the creating of transmural lesions. We aim to evaluate TC in pediatric and congenital heart disease patients undergoing ablation.

### Methods:

Comprehensive chart review and case reviews were performed from June 2015 to March 2016.

### Results:

Of the 102 patients undergoing electrophysiology study plus ablation, 58 (57%) underwent ablation initially with a force-sensing catheter. Patients had an average of 14 (2.4-23) years and weight of 58 (18-195) kg with 15 patients having abnormal cardiac anatomy.

Electrophysiology diagnoses for the +TC group included 30 accessory pathway-mediated tachycardia (AVRT), 24 atrioventricular nodal reentrant tachycardia (AVNRT), and 7 other. Baseline generator settings included a power of 20W, temperature of 40°C, and 6 cc/min flow during lesion creation with 11 patients (19%) having alterations to parameters. Seventeen patients (30%) converted to an alternate ablation source. A total of 516 lesions were performed using the TC with a median CF of 6g, FTI of 146gms-s, and lesion size index of 3.3. Median-term follow up demonstrated 5 (10%) recurrence with no acute or median-term complications.

### Conclusions:

TactiCath can be effectively employed in the treatment of pediatric patients with congenital heart disease with lower forces than previously described in the AF literature. Patients with AVNRT or AVRT may not require transmural lesions and the TC may provide surrogate markers for success during slow pathway ablation.

Figure: Box whisker plots for all lesions placed with the TactiCath. Panel A demonstrates that lesions placed during accessory pathway ablations had significantly higher contact force than lesions placed for atrioventricular nodal reentrant tachycardia ( $P < 0.01$ ). Panels B and C iterate that finding for force-time integral and lesion size index.  $P < 0.01$  for each.

