Supplemental Material

Content

Table S1. Univariable and multivariable predictors of inappropriate therapy

Predictors of inappropriate therapy						
A						
Univariable analysis	**S-ICD**			**TV-ICD**		
Variables	HR	CI	P-value	HR	CI	P-value
Age, >65	**1.76**	**0.96-3.23**	**0.07**	0.83	0.44-1.55	0.56
BMI	1.02	0.96-1.08	0.50	0.99	0.93-1.05	0.76
Male	**2.62**	**0.94-7.34**	**0.07**	1.40	0.59-3.32	0.45
NYHA class 3 vs. NYHA class 1	1.75	0.71-4.31	0.22	**2.09**	**0.86-5.06**	**0.10**
History of atrial fibrillation	**1.52**	**0.80-2.89**	**0.20**	**2.70**	**1.46-5.00**	**0.002**
Ischemic CMP	0.84	0.45-1.58	0.59	**0.50**	**0.27-0.92**	**0.03**
Baseline heart rate >80 beats per minute	**1.76**	**0.93-3.34**	**0.08**	**2.34**	**1.25-4.39**	**0.008**
QRS>120ms	**1.93**	**0.97-3.85**	**0.06**	0.82	0.35-1.96	0.66
Secondary prevention	0.80	0.36-1.81	0.60	0.81	0.36-1.83	0.62
Smoking	0.67	0.32-1.38	0.27	**2.12**	**1.15-4.09**	**0.02**
Dual chamber vs. Single chamber ICD baseline				1.07	0.42-2.71	0.89

B						
Multivariable analysis*	**S-ICD**			**TV-ICD**		
Variables	HR	CI	P-value	HR	CI	P-value
Age, >65	1.60	0.85-3.03	0.15			
Male	2.29	0.81-6.48	0.12			
NYHA class 3 vs. NYHA class 1				1.33	0.54-3.28	0.54
History of atrial fibrillation	1.08	0.54-2.14	0.84	**2.66**	**1.41-5.02**	**0.003**
Ischemic CMP				0.56	0.30-1.06	0.07
QRS>120ms	1.72	0.85-3.45	0.13			
Baseline heart rate >80 beats per minute	1.76	0.91-3.38	0.09	**1.99**	**1.05-3.76**	**0.03**
Smoking				**2.46**	**1.31-4.64**	**0.005**

Predictors of inappropriate therapy - cardiac oversensing				
A				
Univariable analysis	**S-ICD**			
Variables	HR	CI	P-value	
Age, >65	**2.23**	**0.97-5.08**	**0.06**	
BMI	1.02	0.90-1.06	0.59	
Male	1.79	0.53-6.02	0.35	
NYHA class 3 vs. NYHA class 1	1.87	0.64-5.42	0.25	
History of atrial fibrillation	1.55	0.66-3.66	0.32	
Ischemic CMP	1.06	0.44-2.58	0.89	
Hypertrophic cardiomyopathy	**2.57**	**0.60-11.0**	**0.20**	
Baseline heart rate >80 beats per minute	1.51	0.62-3.68	0.36	
QRS>120ms	**3.52**	**1.52-8.14**	**0.003**	
Secondary prevention	1.15	0.43-3.11	0.78	
Smoking	**0.36**	**0.11-1.21**	**0.10**	
Primary vector	1.47	0.60-3.60	0.40	

B			
Multivariable analysis*	**S-ICD**		
Variables	HR	CI	P-value
Age, >65	2.19	0.92-5.20	0.08
Hypertrophic cardiomyopathy	2.50	0.54-11.5	0.24
QRS>120ms	**3.13**	**1.34-7.31**	**0.008**
Smoking	0.49	0.13-1.56	0.21

BMI: body mass index, CI: confidence interval, CMP: cardiomyopathy, HR: hazard ratio, NYHA: New York Heart Association classification, S-ICD: subcutaneous implantable cardioverter defibrillator, TV-ICD: transvenous implantable cardioverter defibrillator,

* Predictors were included in the multivariable analysis when a P-value ≤ 0.20 was observed in the univariable analysis.

Table S2. Overview of recurrence of inappropriate shocks and inappropriate ATP and combined episodes

	S-ICD	TV-ICD
Total inappropriate shocks	**124**	**130**
Total patients receiving an IAS	41	29
1 inappropriate shock	22	13
2–4 inappropriate shocks	13	11
≥5 inappropriate shocks	6*	5†
Patients with both inappropriate and appropriate shocks in one episode	2	2
Time between first and second IAS episode, months (IQR)	5.5 (0-11)	2.6 (0.2-4.4)
Total patients receiving a 2nd IAS within 6 months (%)	9 (22)	9 (31)
Total inappropriate ATP	**1**	**124**
Total patients receiving ATP	1	35
1 inappropriate ATP	1	15
2–4 inappropriate ATP	0	13
≥5 inappropriate ATP	0	7
Patients with both IAS and inappropriate ATP in one episode	0	22

ATP: antitachycardia pacing, IAS: inappropriate shock, S-ICD: subcutaneous implantable cardioverter defibrillator, TV-ICD: transvenous implantable cardioverter defibrillator.
* Two patients with an SVT in the therapy zone (10 and 18 shocks), 2 patients with non-cardiac oversensing (6 and 7 shocks) and two patients with cardiac oversensing (11 and 13 shocks).
† Four patients with an SVT in the therapy zone (6,7,9 and 12 shocks), 1 patient with a lead dislocation (54 shocks).

Table S3. Programmed zones during inappropriate shocks.

	S-ICD	TV-ICD
Total inappropriate shocks	124	130
VT zone		
<180 – n (%)	1 (0.8)	4 (3.1)
180-185 – n (%)	115 (92.7)	113 (86.9)
186-200 – n (%)	7 (5.6)	7 (5.4)
201-250 – n (%)	1 (0.8)	6 (4.6)
VF zone		
200-249 – n (%)	0	35 (26.9)
250 – n (%)	124 (100)	95 (73.1)
First inappropriate shock	41	29
VT zone		
<180 – n (%)	1 (2.4)	2 (6.9)
180-185 – n (%)	38 (92.7)	25 (86.2)
186-200 – n (%)	2 (4.9)	2 (6.9)
201-250 – n (%)	0	0
VF zone		
200-249 – n (%)	0	8 (27.6)
250 – n (%)	41 (100)	21 (72.4)

S-ICD: subcutaneous implantable cardioverter defibrillator, TV-ICD: transvenous implantable cardioverter defibrillator, VT zone: ventricular tachycardia zone, VF zone: Ventricular fibrillation zone.

Table S4. Specific programming of the patients receiving an IAS in the S-ICD group

	S-ICD with IAS* (n=41)	Total S-ICDs† (n=426)
Gain		
1x – n (%)	34 (82.9)	403 (94.6)
2x – n (%)	7 (17.1)	18 (4.2)
NA – n (%)	-	5 (1.2)
Sensing Vector		
Primary – n (%)	27 (65.9)	265 (62.2)
Secondary – n (%)	10 (24.4)	126 (29.6)
Alternate – n (%)	4 (9.8)	26 (6.1)
NA	-	9 (2.1)
Smartpass		
On – n (%)	11 (26.8)	79 (18.5)
Off – n (%)	1 (2.4)	5 (1.2)
NA – n (%)	29 (70.7)	342 (80.3)

IAS: inappropriate shock, S-ICD: subcutaneous implantable cardioverter defibrillator, TV-ICD: transvenous implantable cardioverter defibrillator.
*settings during first IAS
† settings at discharge

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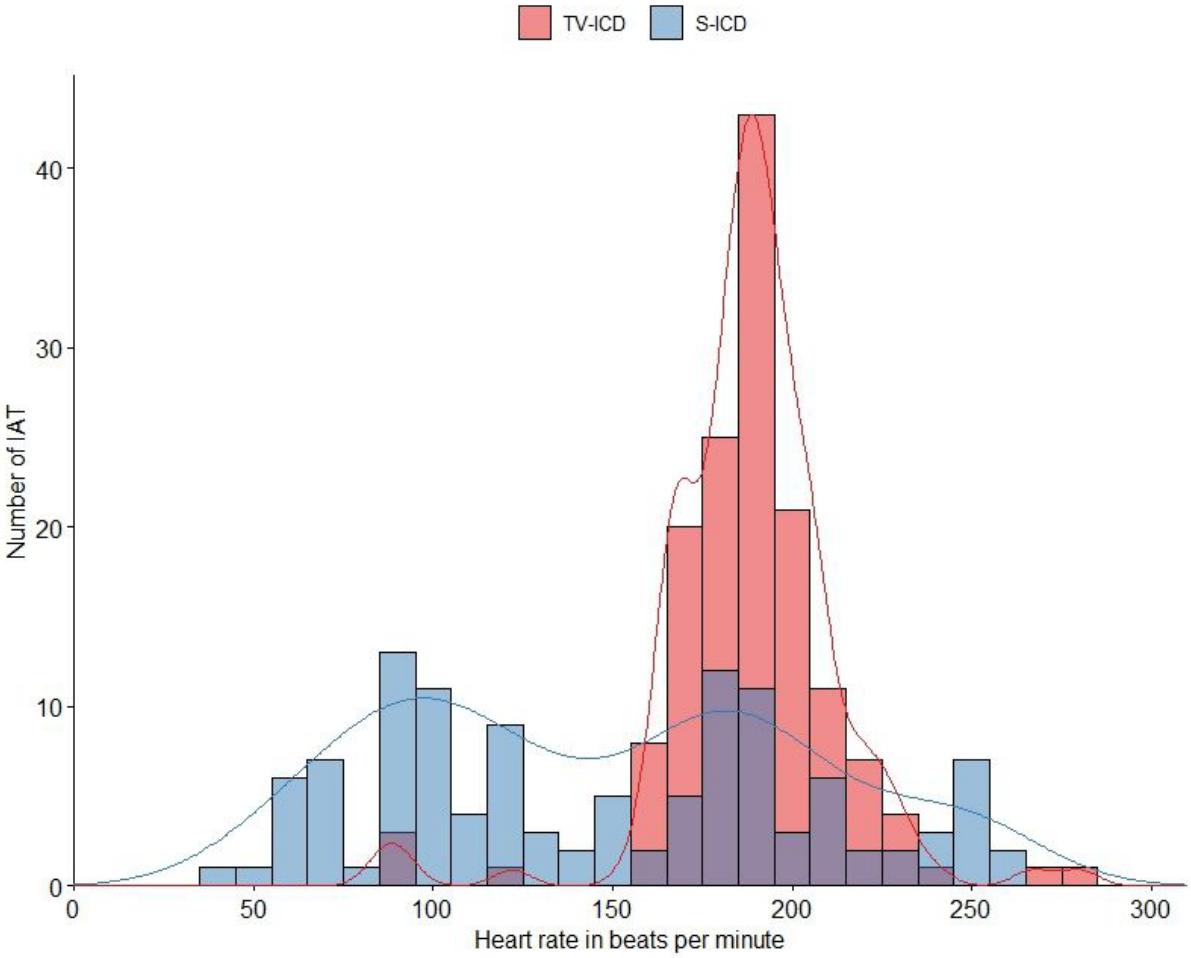
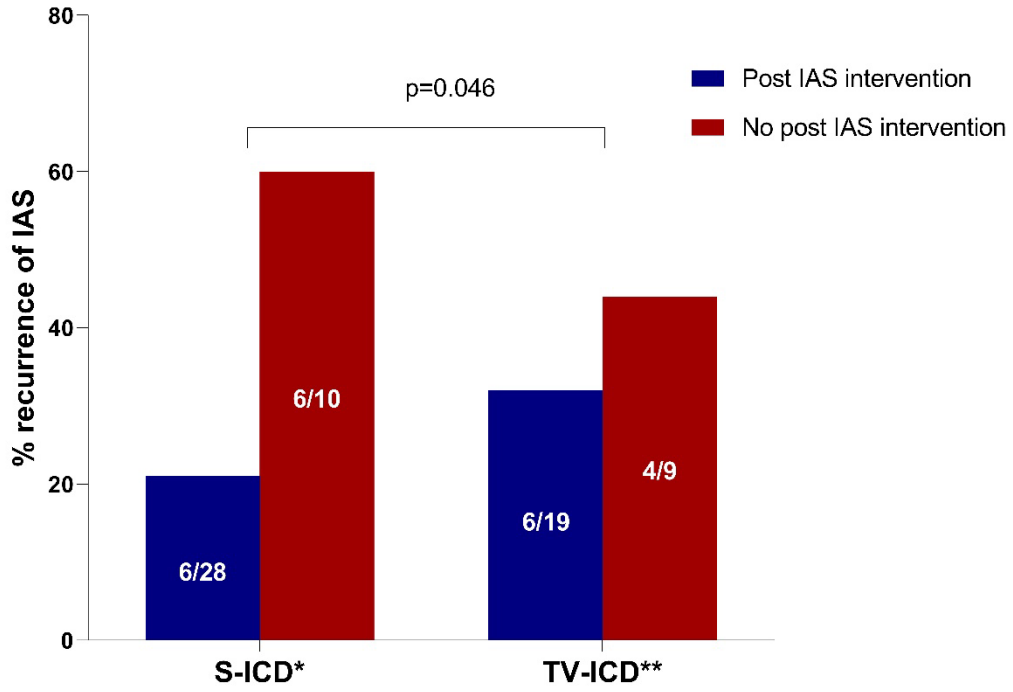
Figure S1. Underlying heart rate during inappropriate therapy in the TV-ICD and S-ICD



IAT: inappropriate therapy, S-ICD: subcutaneous implantable cardioverter defibrillator, TV-ICD: transvenous implantable cardioverter defibrillator

Figure S2. Recurrence rate after first IAS depending on intervention taken versus no intervention taken.



IAS: inappropriate shock, S-ICD: subcutaneous implantable cardioverter defibrillator, TV-ICD: transvenous implantable cardioverter defibrillator

* In the S-ICD in 3 patients it was unknown if an intervention was undertaken to prevent recurrence of IAS.

** In the TV-ICD in 1 patient it was unknown if an intervention was undertaken to prevent recurrence of IAS.