

October  
17-18  
NICE



# Implantation de défibrillateur sous-cutané

Dr Rim EL BOUAZZAOUI

**Disclosure**

Speaker name:

ELBOUAZZAOUI.....

..

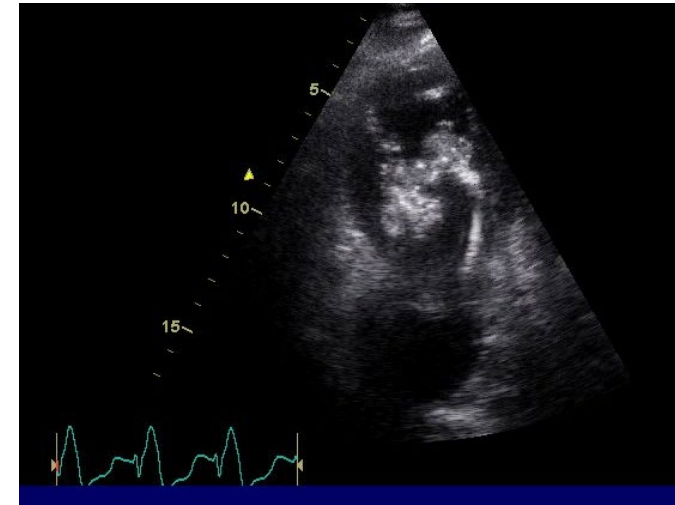
I have the following potential conflicts of interest to report:

Consulting for BOSTON SCIENTIFIC

## Incidence des infections

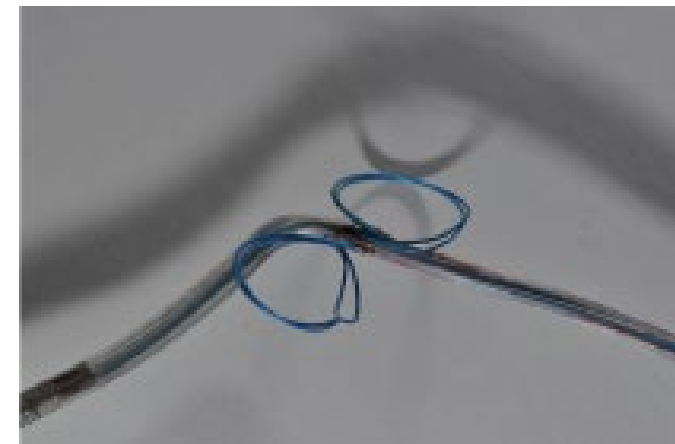
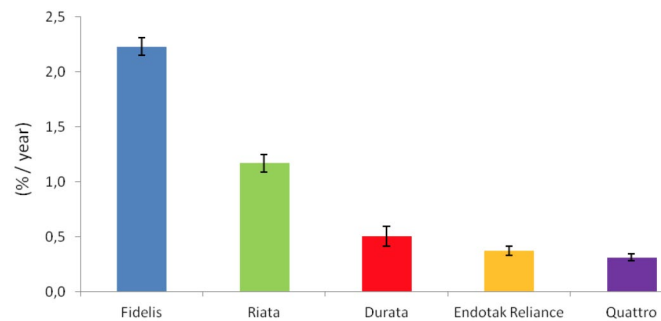
**Table 2** Incidence and incidence rate of device-related infection in the Danish CIED population 1982–2018

Variable	Devices	Device years	Events	Overall incidence	95% CI		Incidence rate /1000 DY		
<b>Total</b>	128 045	566 275	1827	<b>1.43%</b>	1.36	1.49	3.23	3.08	3.38
Sex									
Female	51 484	241 524	505	0.98%	0.90	1.07	2.09	1.92	2.28
Male	76 561	324 750	1322	1.73%	1.64	1.82	4.07	3.86	4.30
Operation & Device Type									
Pacemaker									
Total	100 374	460 196	1194	1.19%	1.12	1.26	2.59	2.45	2.75
First	79 318	364 744	744	0.94%	0.87	1.01	2.04	1.90	2.19
Replacement	17 265	77 742	359	2.08%	1.87	2.30	4.62	4.16	5.12
Up-/downgrade	3791	17 708	91	2.40%	1.94	2.94	5.14	4.18	6.31
ICD									
<b>Total</b>	<b>16 718</b>	<b>69 766</b>	<b>320</b>	<b>1.91%</b>	1.71	2.13	4.59	4.11	5.12
First	12 057	52 610	200	1.66%	1.44	1.91	3.84	3.35	4.41
Replacement	3959	15 015	92	2.32%	1.88	2.84	6.13	4.99	7.52
Up-/downgrade	722	2711	28	3.88%	2.59	5.56	10.33	7.13	14.96



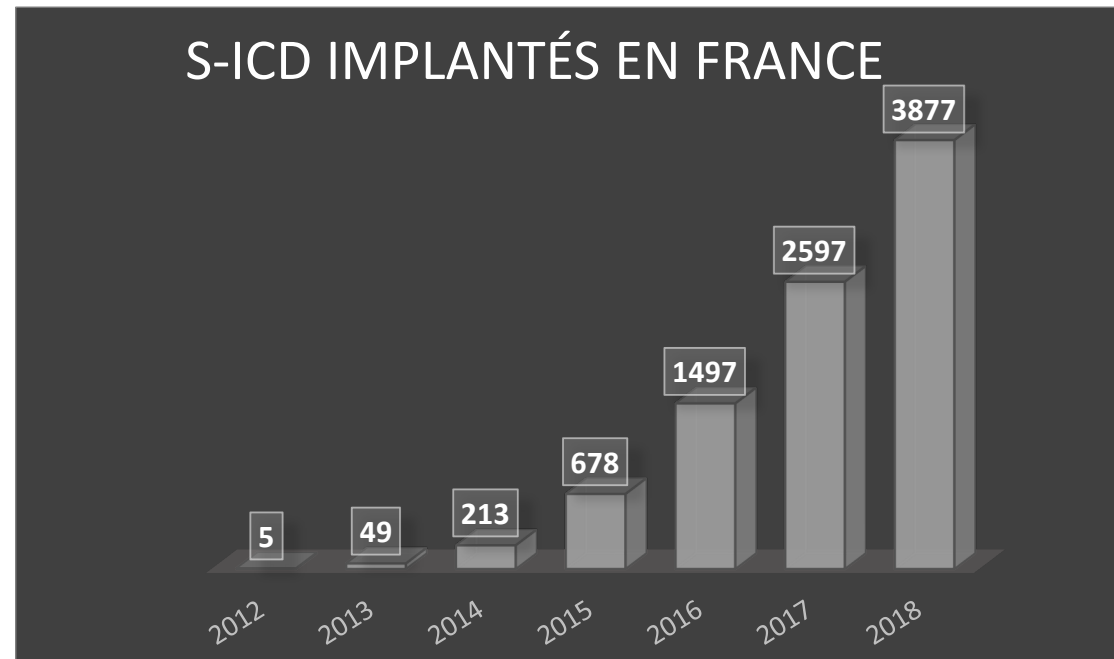
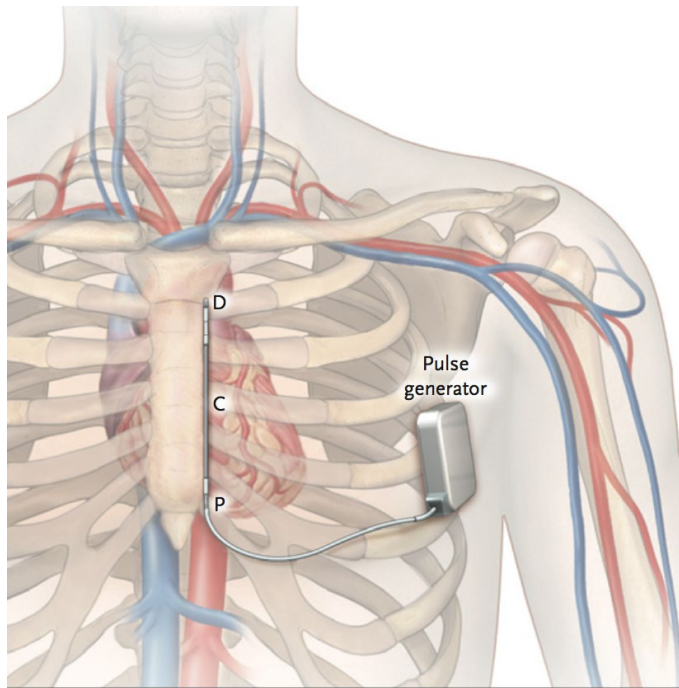
Olsen et al Eur Heart J 2019 Jun 14;40(23):1862-1869

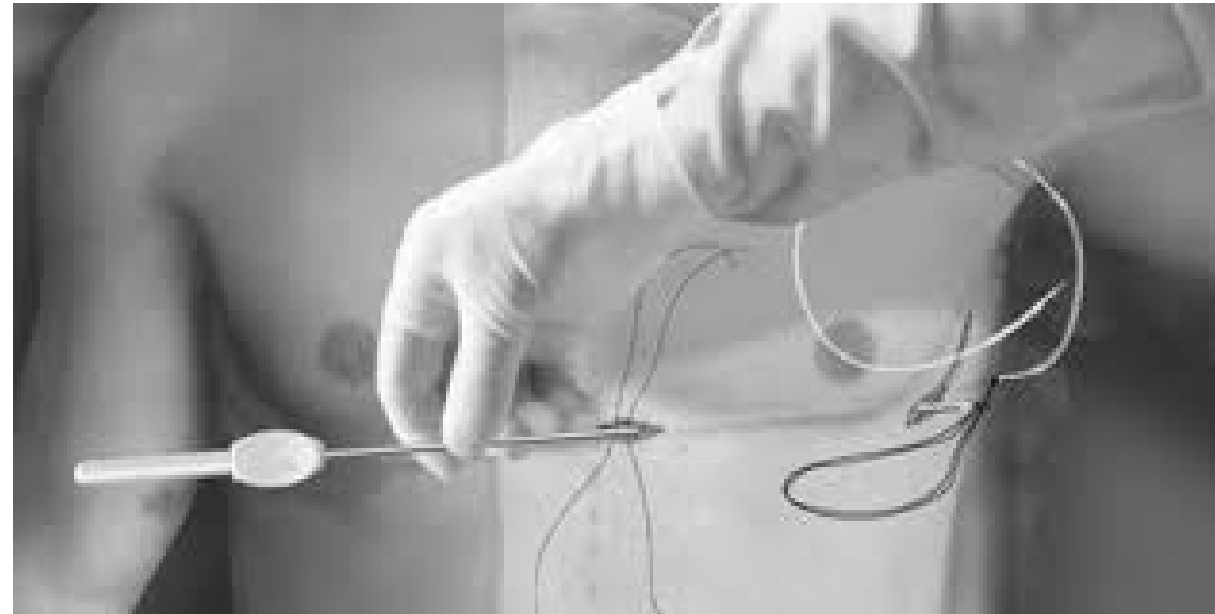
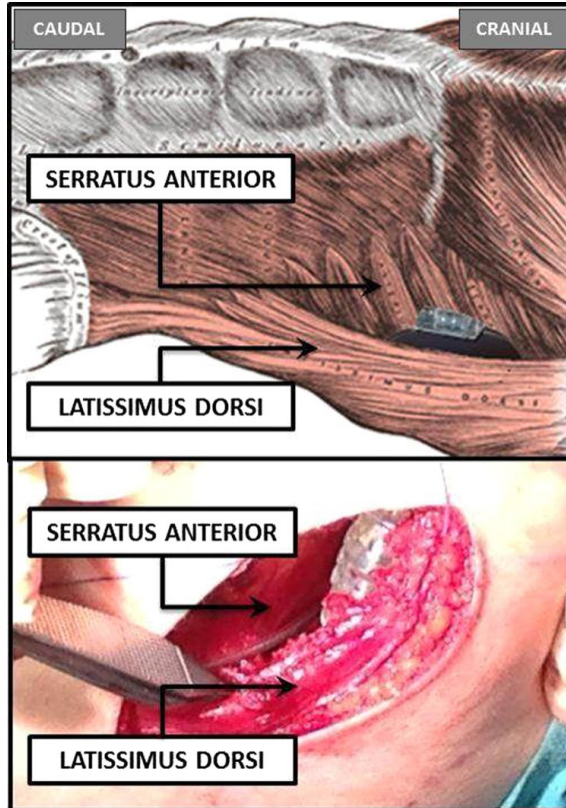
## Incidence des dysfonctions de sonde



Providencia et al J Am Heart Assoc. 2015 Oct 30;4(11)

## Le premier système dédié à la défibrillation sous-cutané

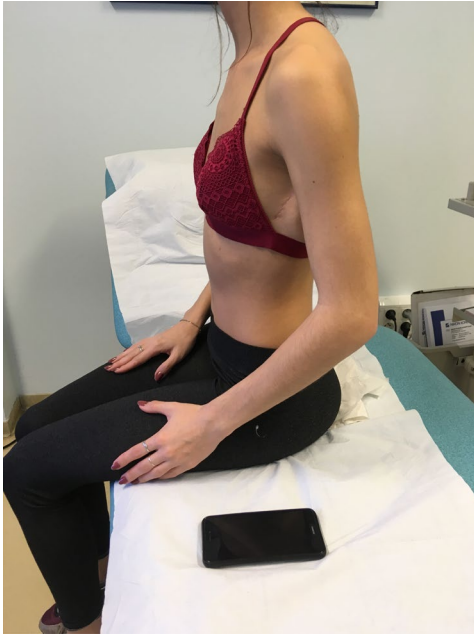




Une loge intermusculaire (entre le muscle serratus et le muscle grand dorsal)



# Exemples



## 2015 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death

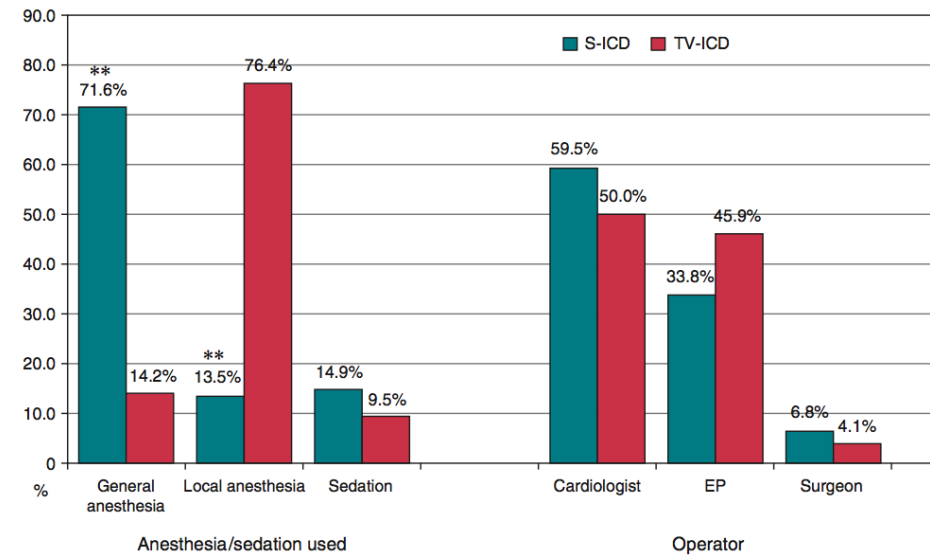
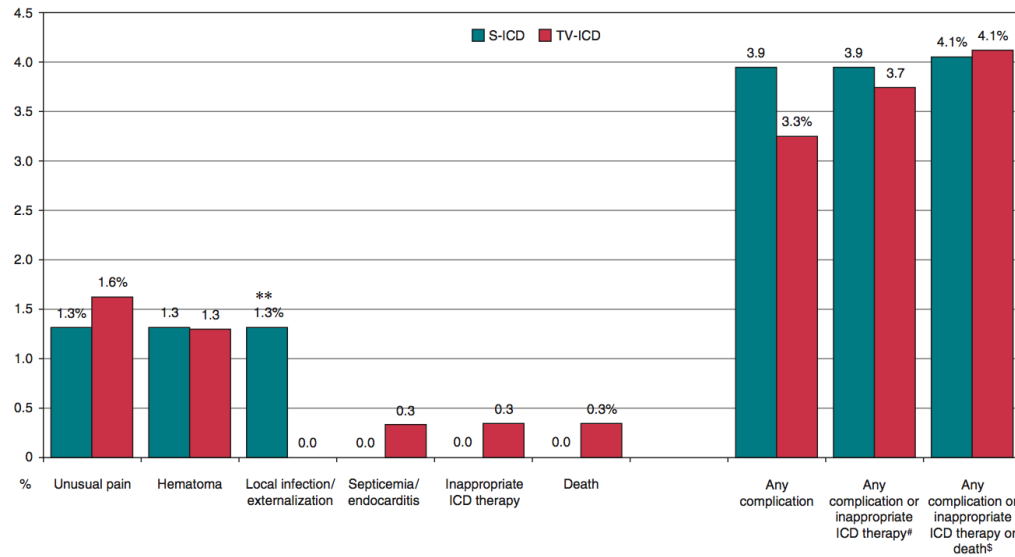
The Task Force for the Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death of the European Society of Cardiology (ESC)

### Subcutaneous implantable cardioverter defibrillator

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>	Ref. <sup>c</sup>
Subcutaneous defibrillators should be considered as an alternative to transvenous defibrillators in patients with an indication for an ICD when pacing therapy for bradycardia support, cardiac resynchronization or antitachycardia pacing is not needed.	<b>IIa</b>	<b>C</b>	157, 158
The subcutaneous ICD may be considered as a useful alternative to the transvenous ICD system when venous access is difficult, after the removal of a transvenous ICD for infections or in young patients with a long-term need for ICD therapy.	<b>IIb</b>	<b>C</b>	This panel of experts

- Pas d'indication de stimulation (antibradycardie, CRT, antitachycardie) IIa
- Sans accès veineux IIb
- Après explantation d'un défibrillateur endocavitaire IIb
- Chez les patients jeunes IIb

Radostaw Lenarczyk<sup>1\*</sup>, Serge Boveda<sup>2</sup>, Kristina H. Haugaa<sup>3,4</sup>, Tatjana S. Potpara<sup>5,6</sup>, Paweł Syska<sup>7</sup>, Ewa Jędrzejczyk-Patej<sup>1</sup>, Michel Chauvin<sup>8</sup>, Nicolas Sadoul<sup>9</sup>, and Nikolaos Dagres<sup>10</sup>



Plus de 71% patients implantés sous anesthésie générale



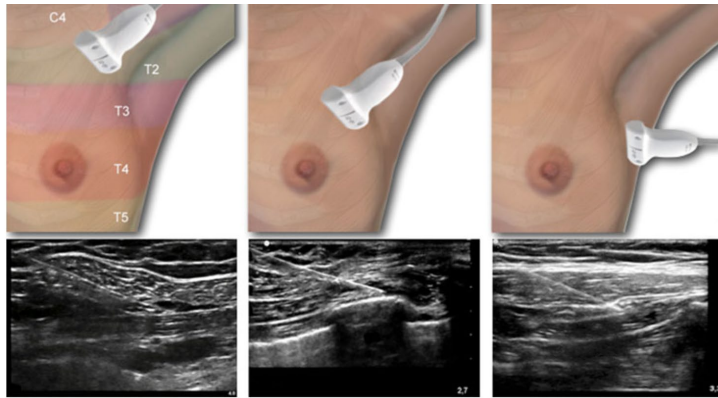
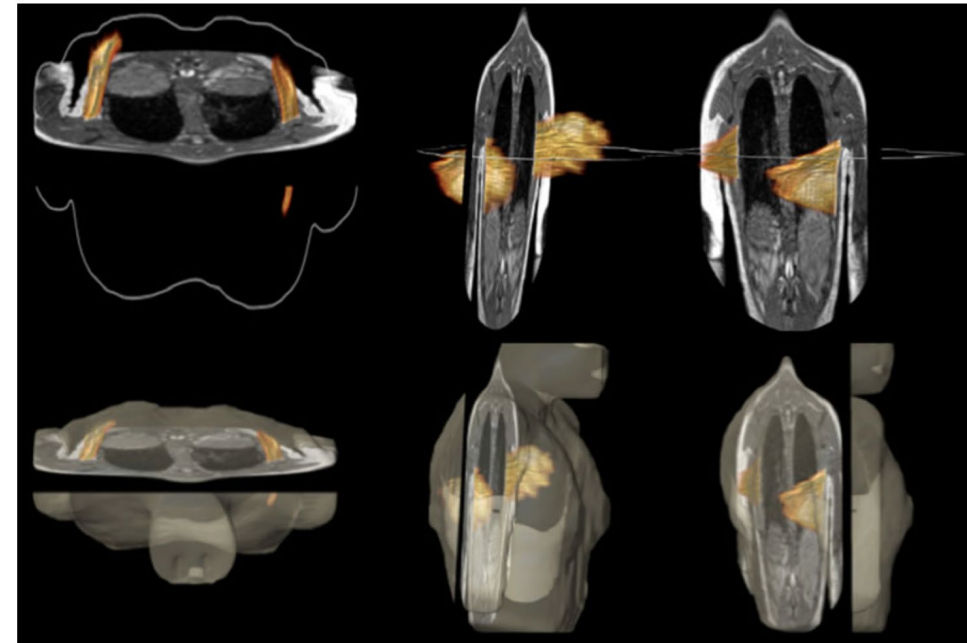
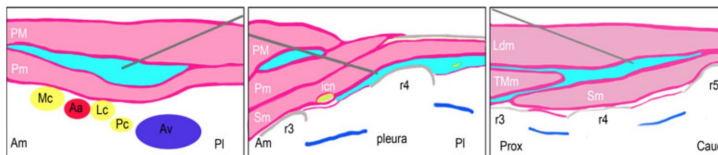
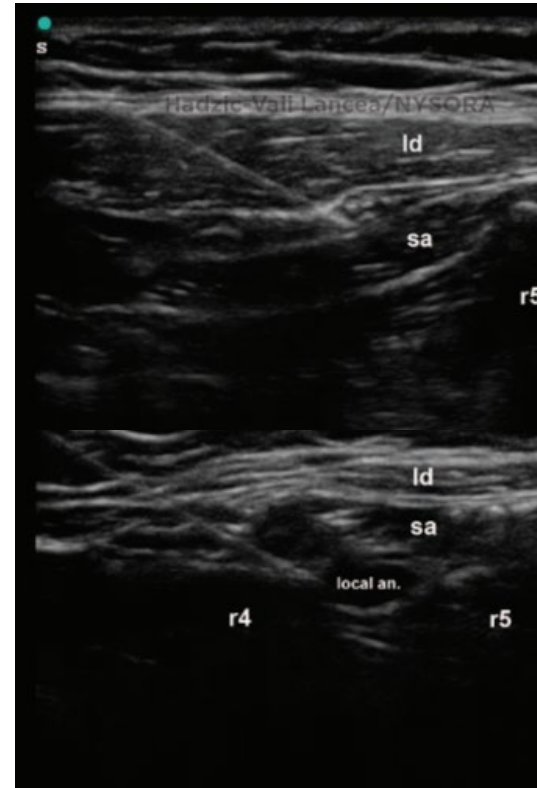


Figure 2 Graphic representing probe position and ultrasound image obtained during a Pecs I block (left), Pecs II block (middle) or a serratus plane block (right).



**Première description du bloc serratus (bloc de diffusion) chez 4 patientes pour chirurgie mammaire**

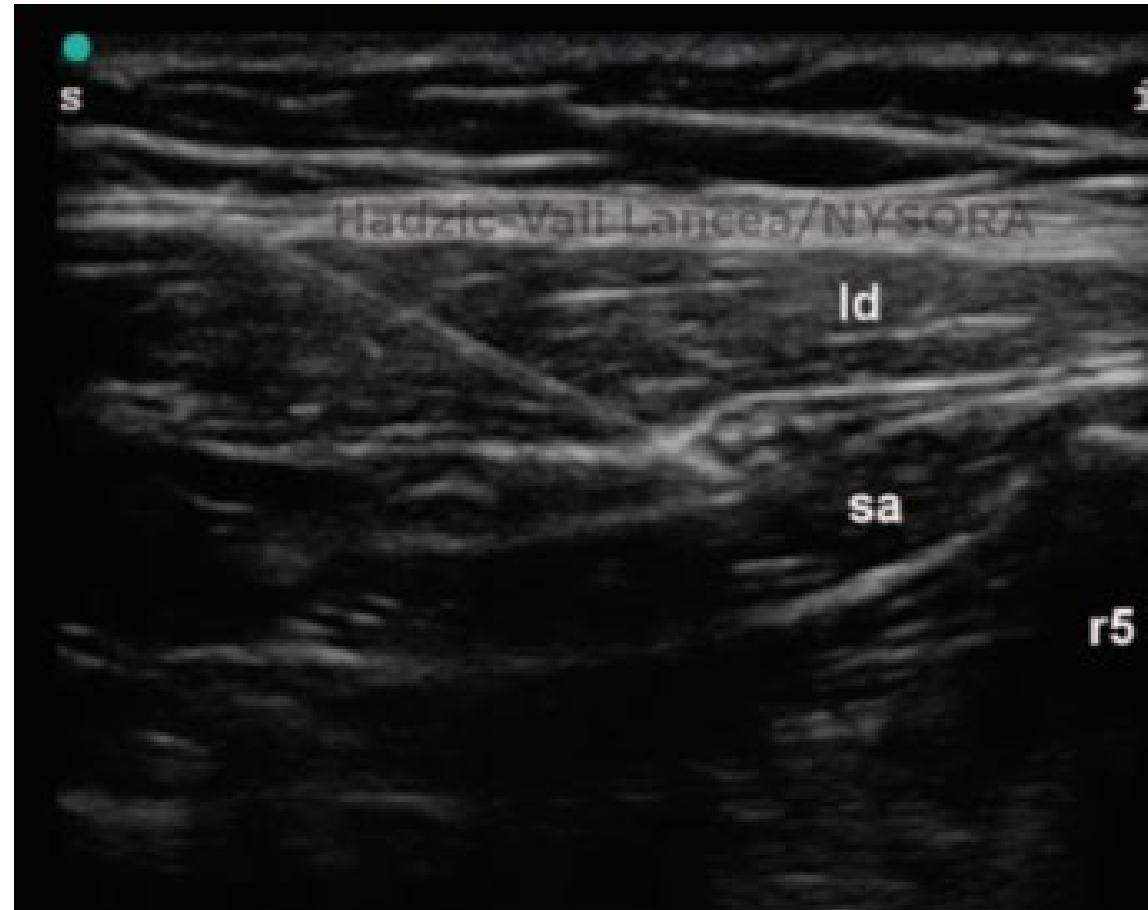


**Injection entre le latissimus dorsi et le serratus**

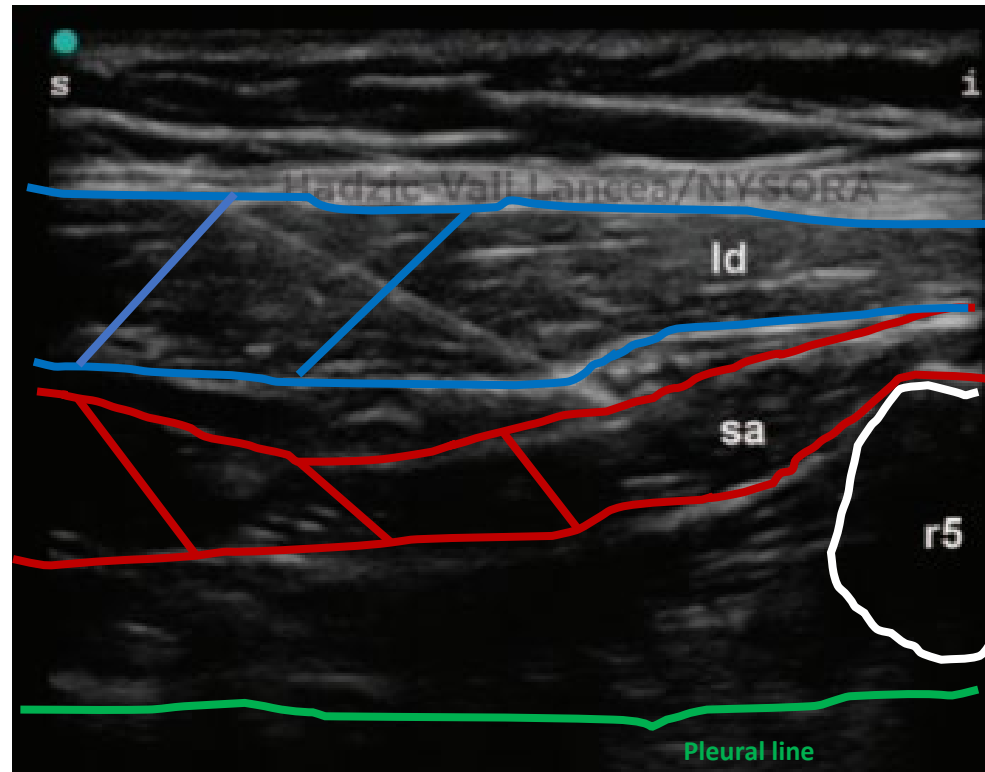
**Injection sous le muscle serratus**

**Hydrodissection** injection de quelques mL de solution saline suivie de **Serratus plane block** injection de 10 à 20 mL d'un anesthésique local

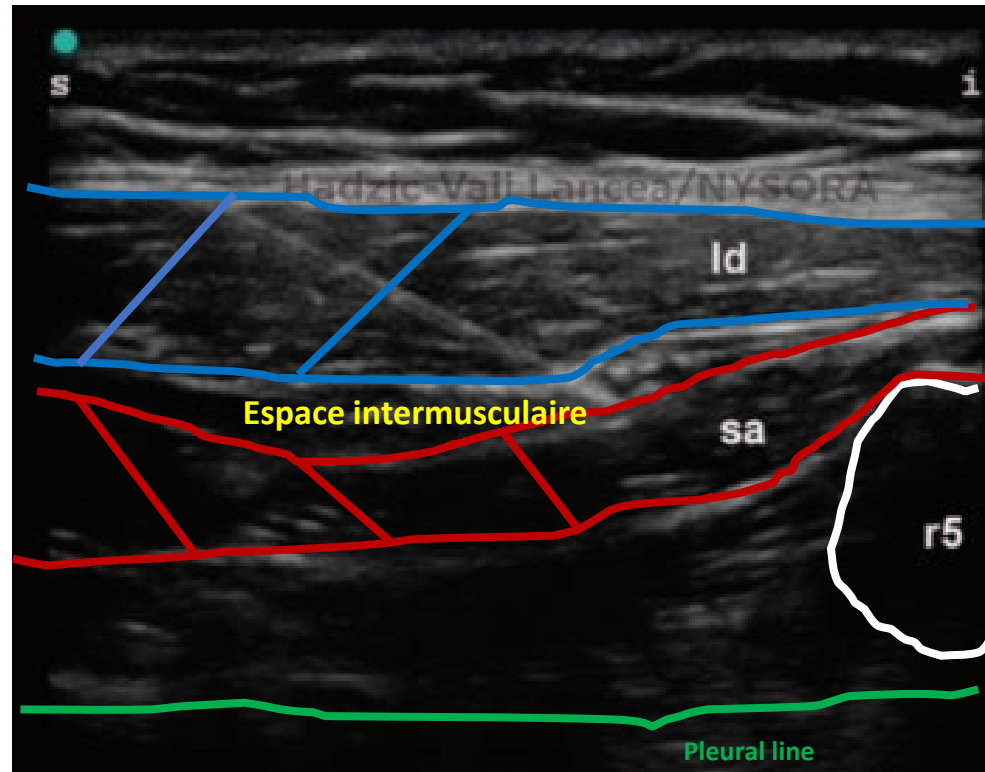
# Anatomical aspects



# Anatomical aspects



# Anatomical aspects



**Block serratus avec** NAROPEINE 10% (3mg/kg)

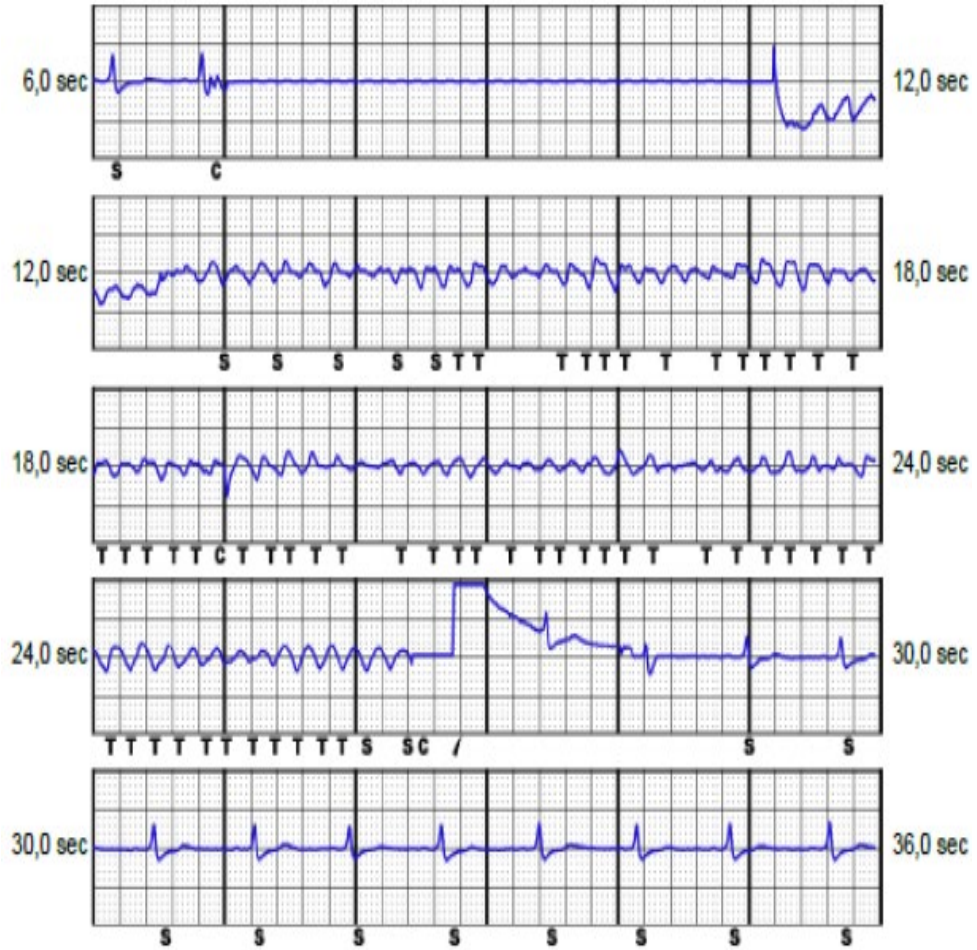
**Infiltration de xylocaïne 1% pour la peau**

**Infiltration de xylocaïne 1% à l'aide de l'aiguille de TUOHY**

**Sedation** à l'aide de midazolam 1 à 3mg



# Réalisation d'un test de défibrillation



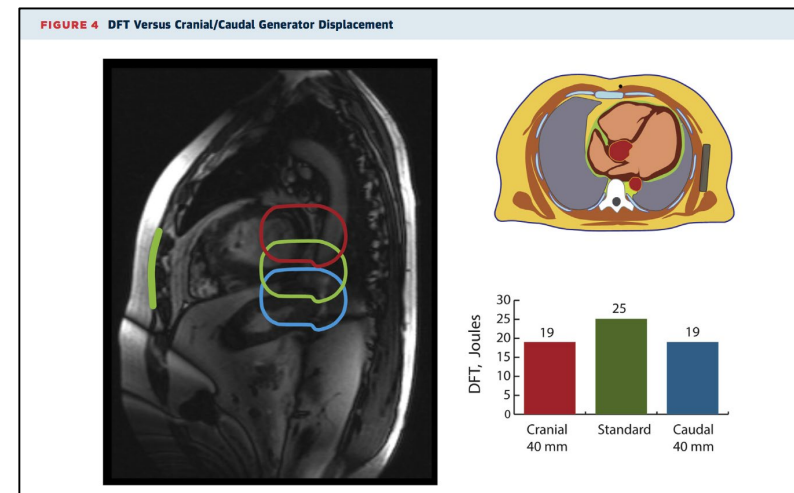
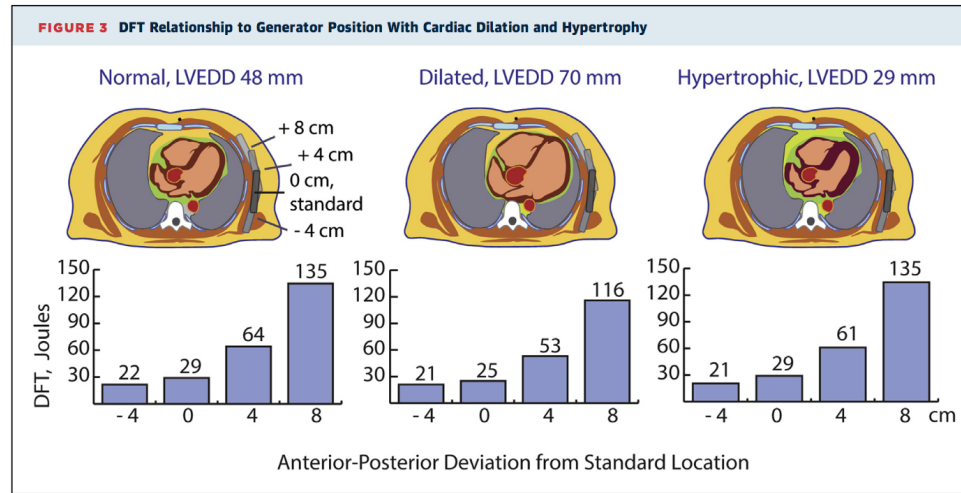
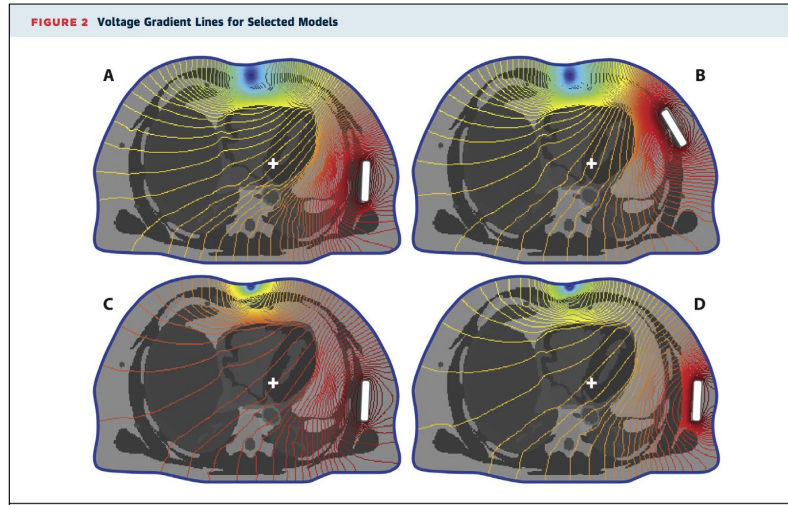
# Critères déterminants pour l'efficacité du choc?



## Determinants of Subcutaneous Implantable Cardioverter-Defibrillator Efficacy

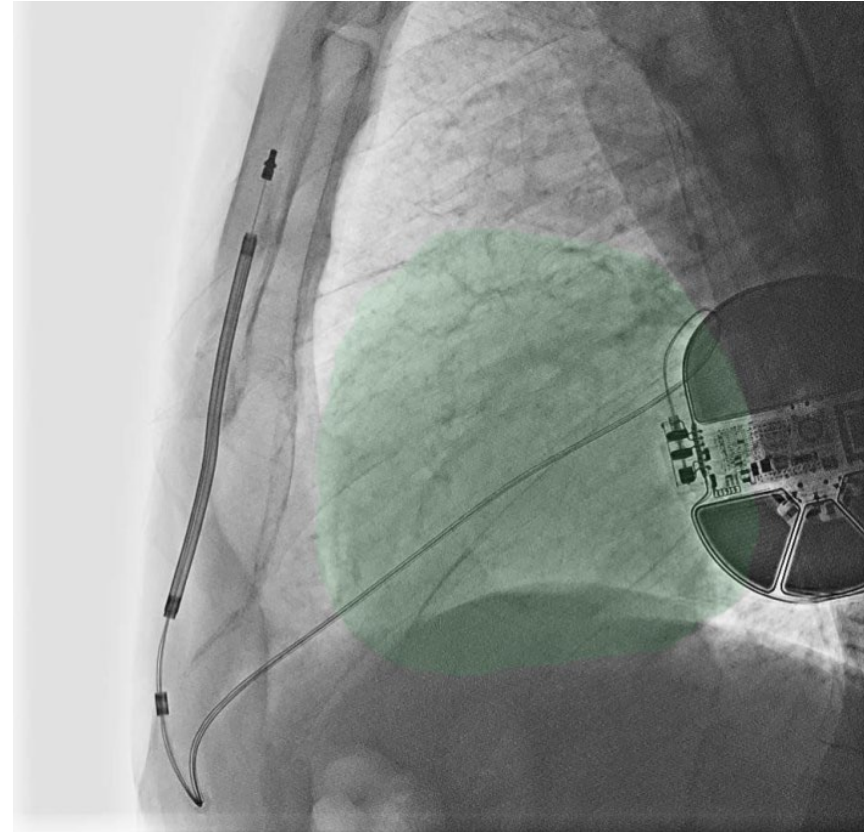
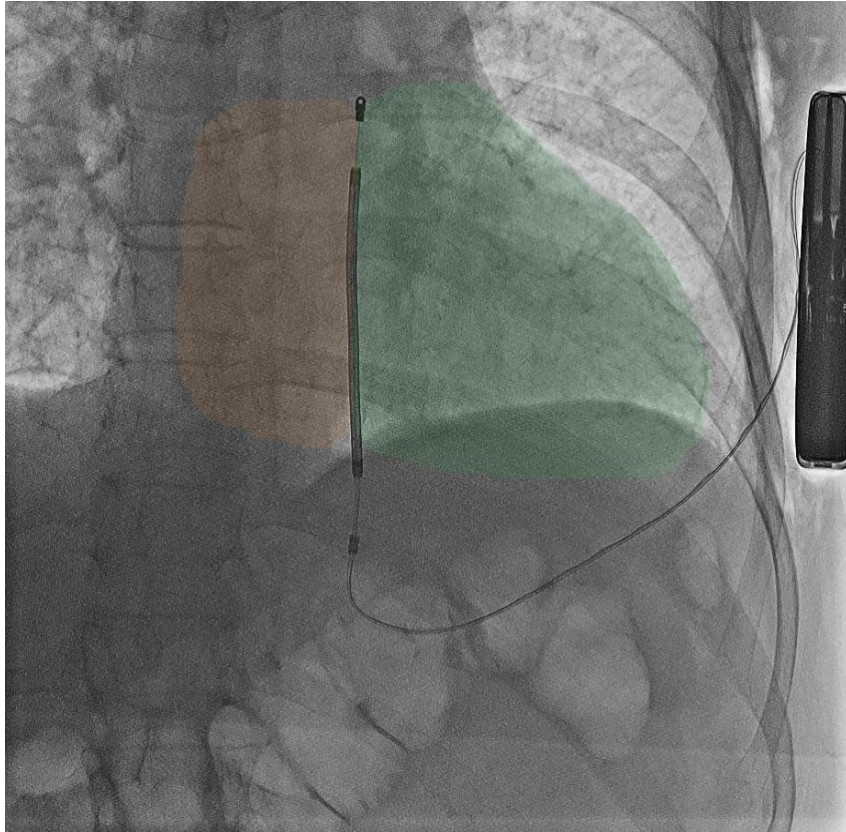
A Computer Modeling Study

E. Kevin Heist, MD, PhD,<sup>a</sup> Andres Belalcazar, PhD,<sup>b</sup> Wyatt Stahl, BS,<sup>c</sup> Tom F. Brouwer, MD, MSc,<sup>d</sup> Reinoud E. Knops, MD<sup>d</sup>



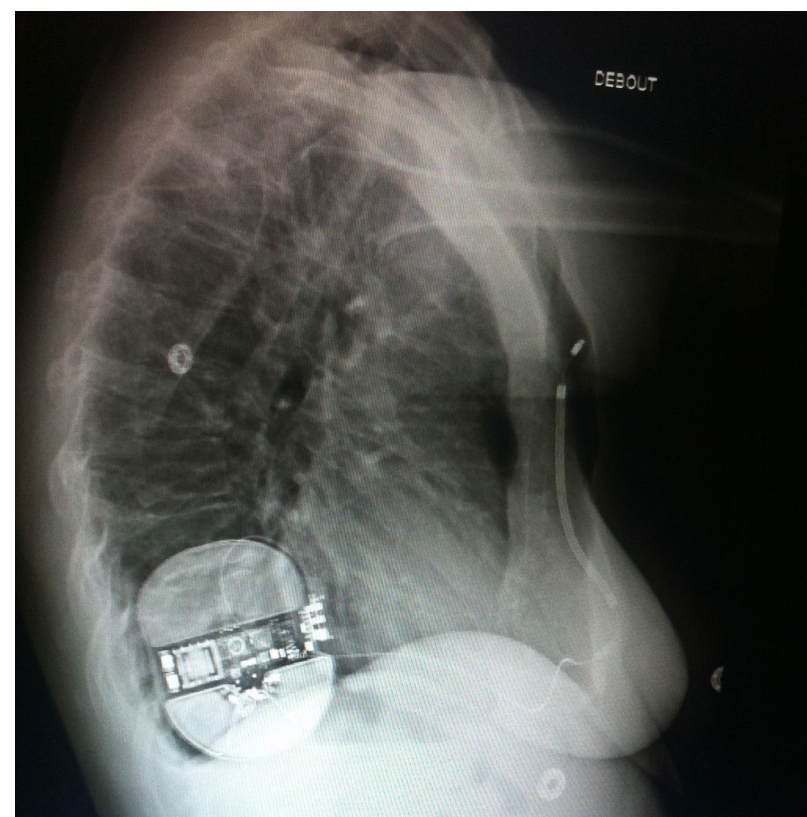
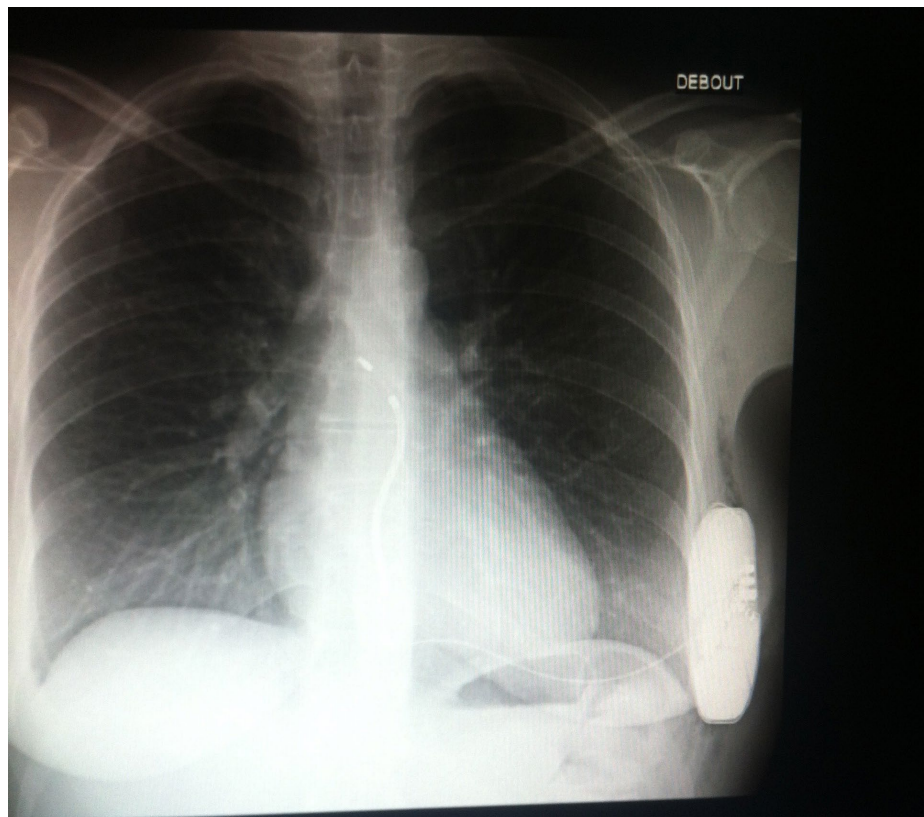
**Interêt du positionnement postérieur du boîtier et de l'absence d'interface grasseux entre le coil et le sternum**

# Contrôle du bon positionnement du boîtier et de la sonde





# Contrôle par radiographie post-opératoire



## Bloc serratus (naropeine 10%) 30 minutes avant l'implantation

D'avril 2018, 29 patients Inclus prospectivement (5 femmes, 24 hommes)

<b>Age (années)</b>	54.3
<b>IMC (kg/m<sup>2</sup>)</b>	25.5 (21-30)
<b>Indication</b>	
prevention primaire	23 (79%)
prevention secondaire	6 ( 21%)
<b>Type de cardiomyopathie</b>	
Cardiomyopathie dilatée	6 (20.6%)
Cardiomyopathie ischémique	20 (69%)
Cardiomyopathie hypertrophique	3 (10.3%)
Absence de cardiopathie	0



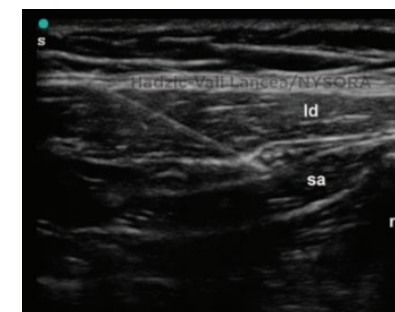
# Implantation de défibrillateur sous-cutané sous ALR



---

<b>Conversion en AG</b>	0
<b>Temps moyen de procédure</b>	45 minutes
<b>EVA pendant la procédure (/10)</b>	2.7 5 (1-3)
<b>EVA le lendemain de la procédure (/10)</b>	3.0 (1.5- 3.8)
<b>Utilisation de morphinique</b>	1 (3.4%)
<b>Complications</b>	
Infections	0
Hématome	1 (3.4%)

---





# Conclusion



Le défibrillateur sous cutané est une nouvelle technique évitant les complications liées aux sondes endovasculaires.

On observe une extension des indications ces dernières années.

Des approches sans anesthésie générale sont possibles

- Bloc serratus
- Sédation consciente
- Hypnose

