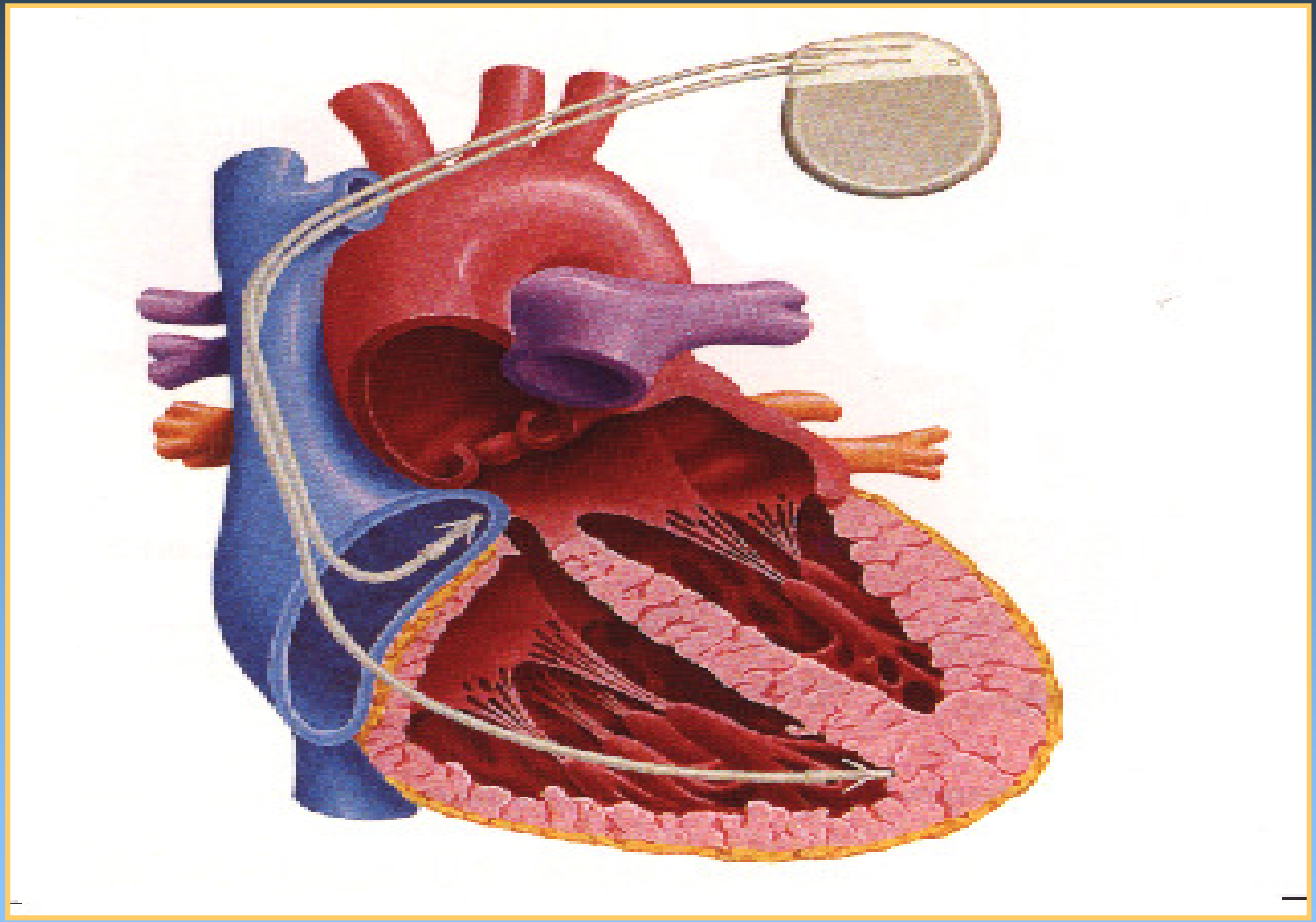
Pacing cardiaco in emergenza

Pacing

- Uno stimolo elettrico, condotto al cuore attraverso elettrodi, causa depolarizzazione e conseguente contrazione del cuore
- Il generatore di impulsi puo essere
  - interno (PMK permanente)
  - esterno al paziente (PMK esterno)

Utilizzo nelle ECC (emergency cardiac care)

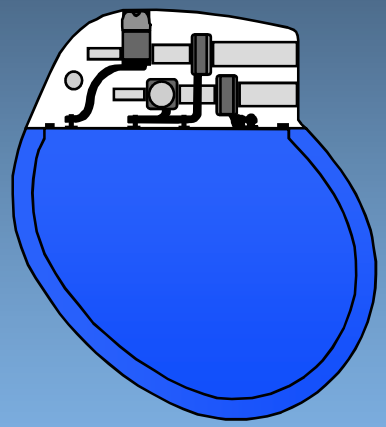
Endocardico (Transvenoso)



Concetti di base

Sistema :

- Generatore ("can")
- Catetere
- Paziente



Pacemaker Generator

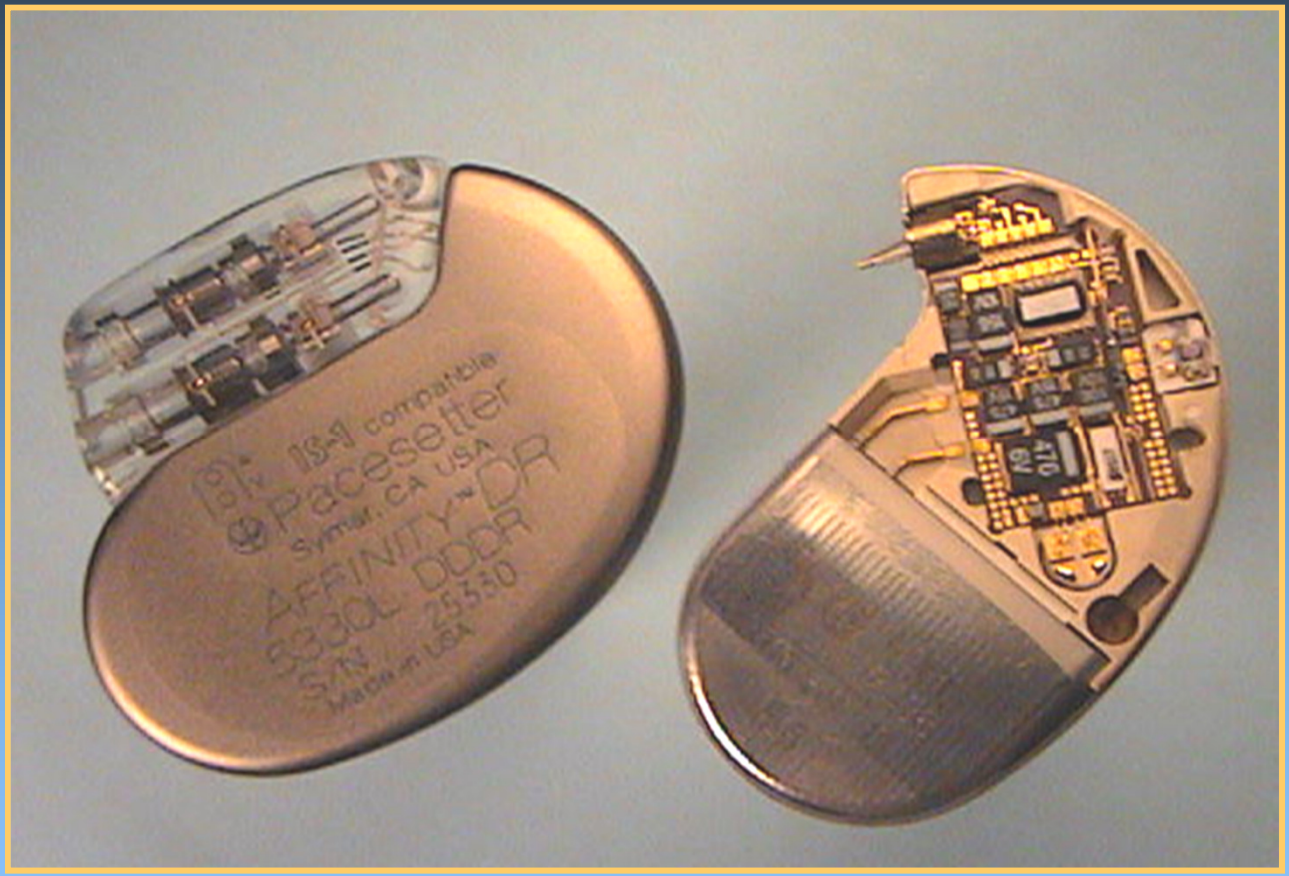
Composed of:

Battery

Hybrid circuit

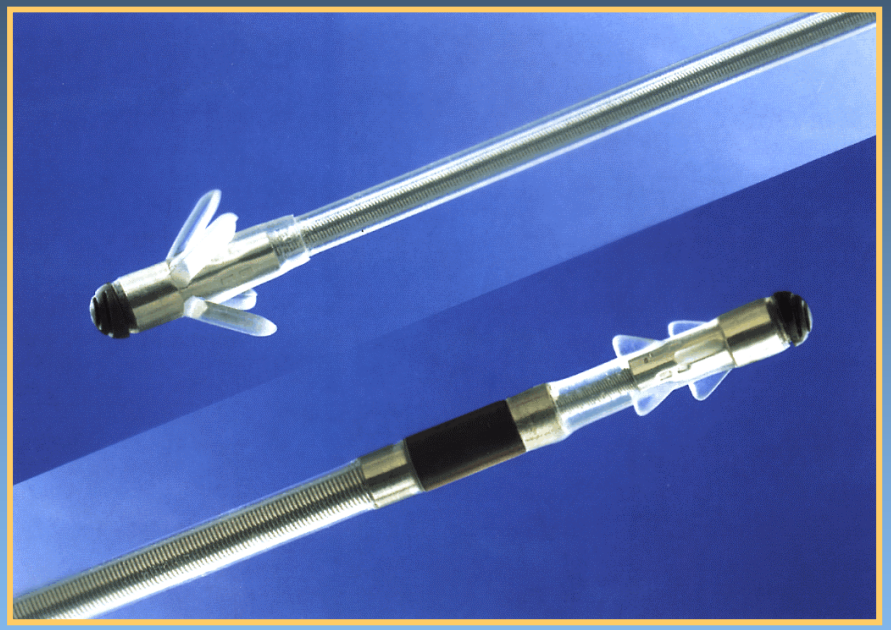
(brains)

and Header

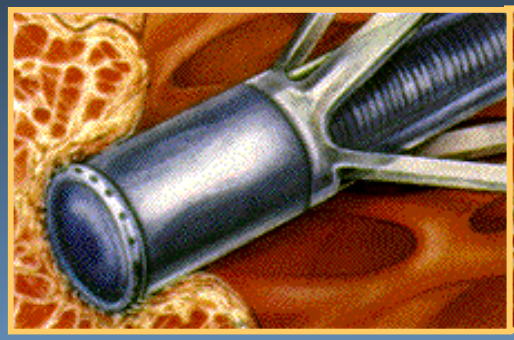


Pacemaker Leads

- Methods of Insertion:
  - Epicardial
  - Endocardial (Transvenous)
- Needed to conduct current to the heart

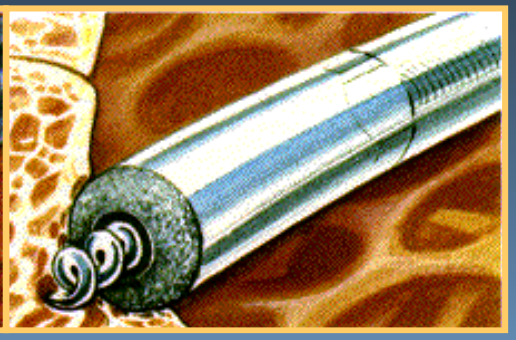


Pacemaker Leads: Methods of Fixation

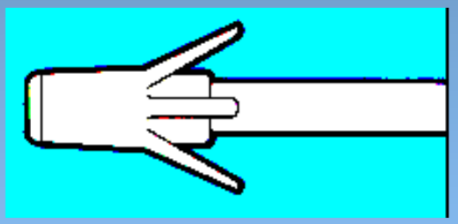


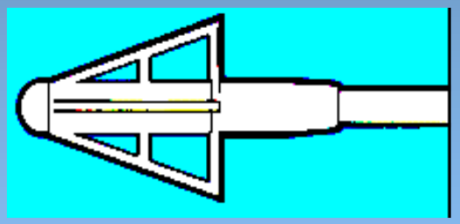
Passive fixation
Tined tip

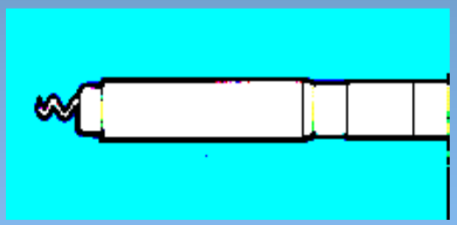
Passive fixation
Finned tip



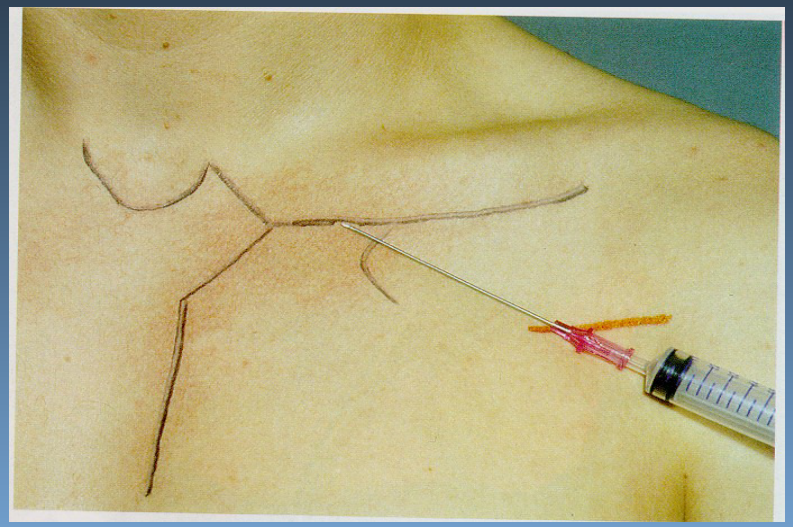
Active fixation
Screw-in lead





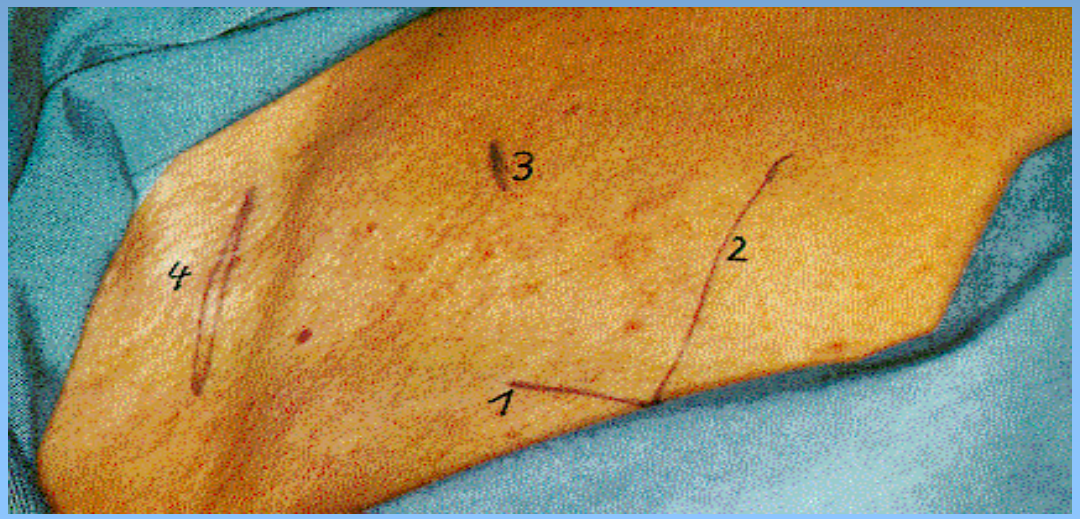


VIE DI ACCESSO

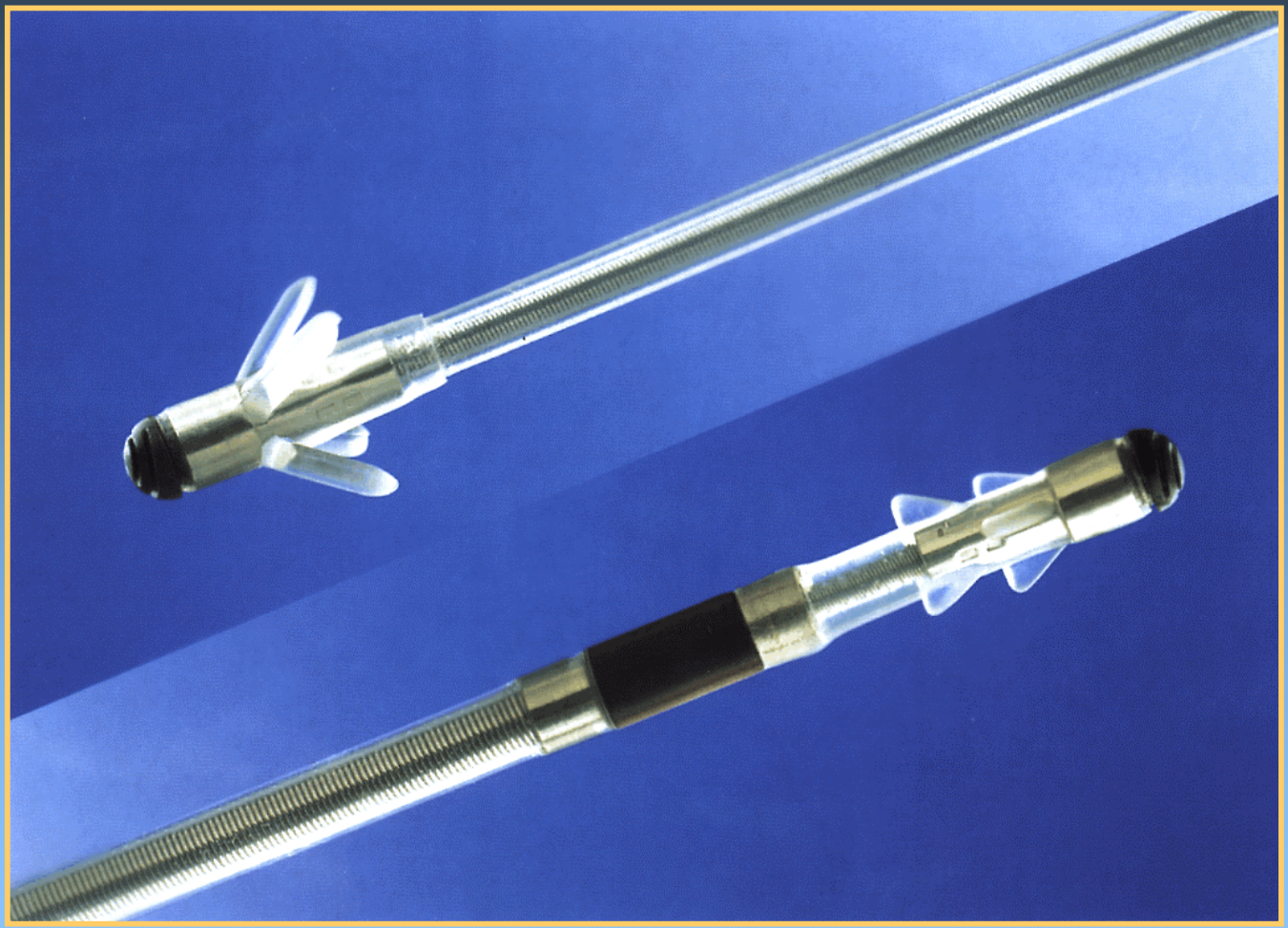


principali vie di accesso per elettrocateteri endocardici:

- *vena cefalica (2)*
- *vena succlavia (3)*
- *vena giugulare esterna (4)*

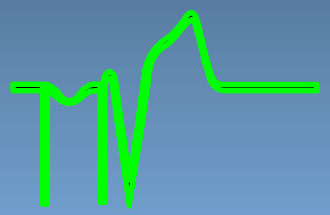


Unipolar vs. Bipolar

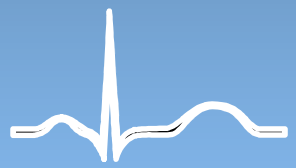


Pacing Technology "Secret"

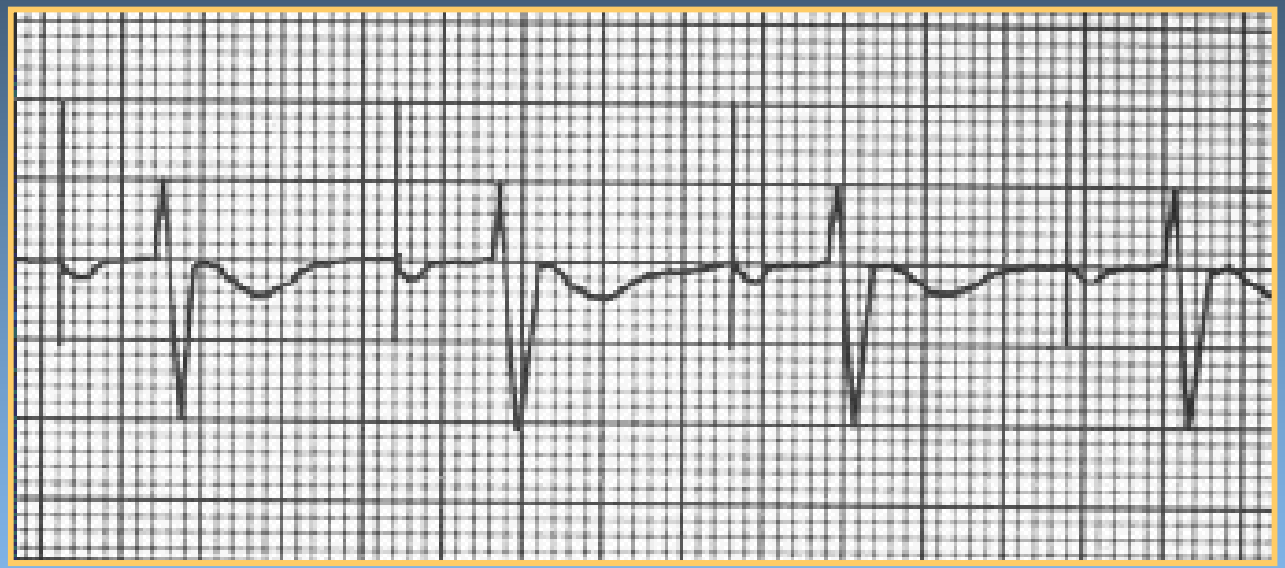
- Pacemakers do only 2 things:
  - Pace



  - Sense



Capture



Atrial Capture

- Paced Atrial events re-start the pacing interval

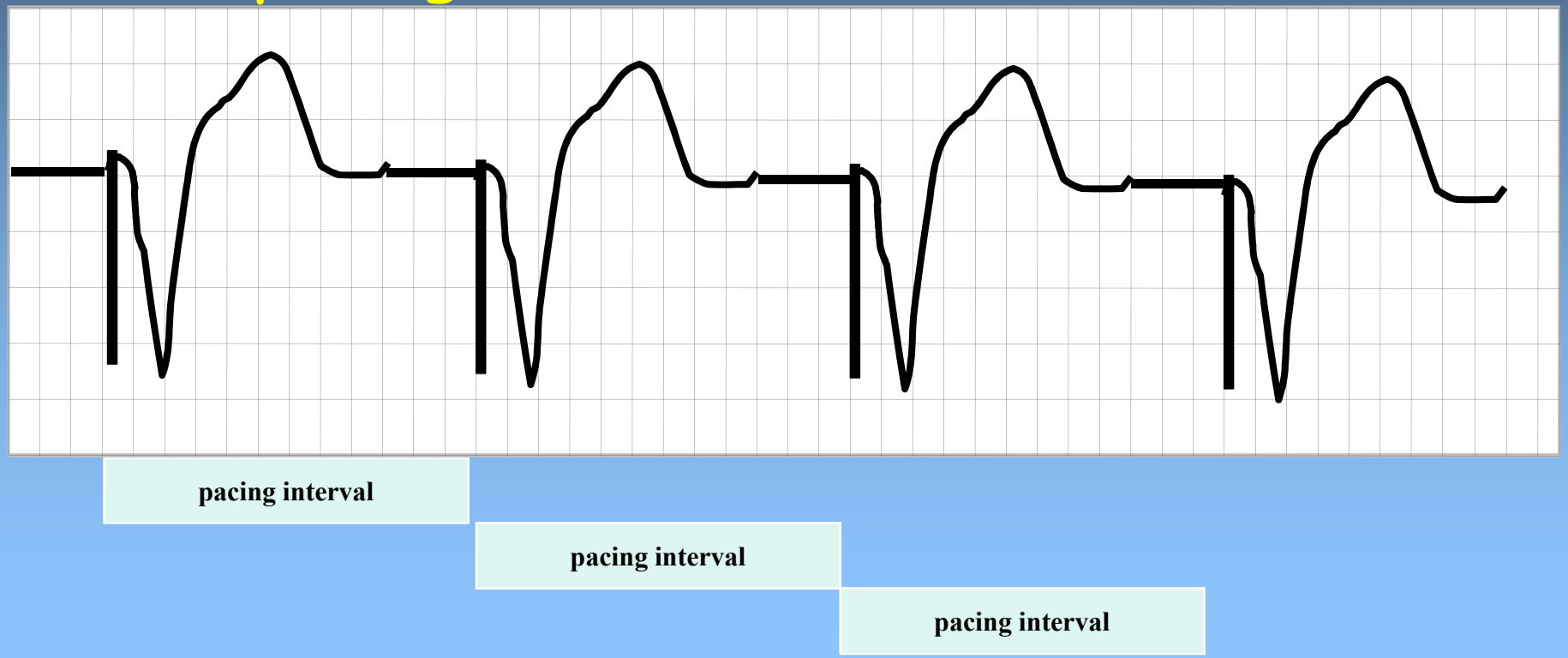
pacing interval

pacing interval

pacing interval

Ventricular Capture

- Paced Ventricular events re-start the pacing interval



Tipi di stimolatori

	Elettrodo	Generatore
• Transcutaneo	cute	esterno
• Transvenoso	AD VnDx	esterno
• Transtoracico	nel cuore	esterno
• Transesofageo	esofago	esterno
• Epicardico	epidardico	est e int
• Permanente	endocard.	interno

indicazioni

Emergenza

- Bradicardia con PA< 80 e sintomi bassa portata (mentale angina EPA)
- Bradicardia e scappamenti
- Overdrive nelle tachicardie refrattarie
- Arresto da bradisistolia

Definitiva

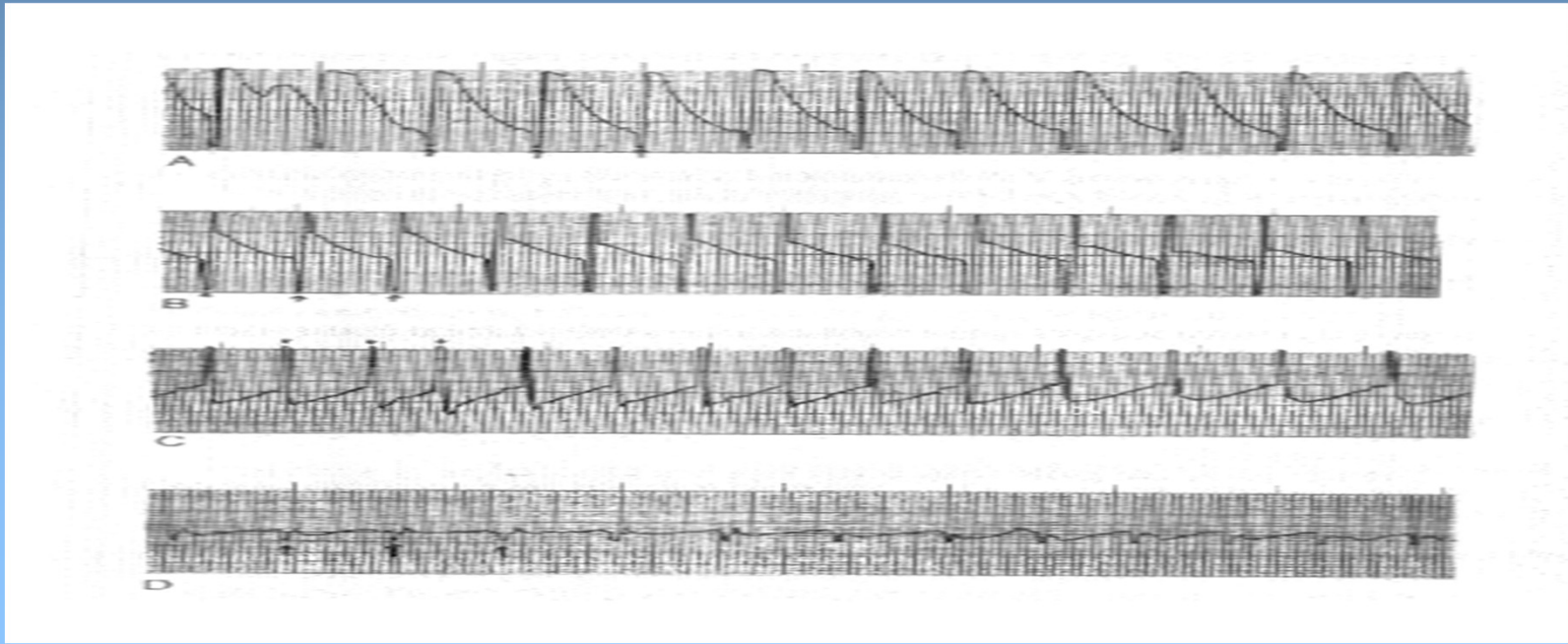
- SSS, BAV mobitz 1 secondo grado, III,blocchi alternanti o trifascicolari

Pacing transcutaneo o transtoracico (1952 1980)

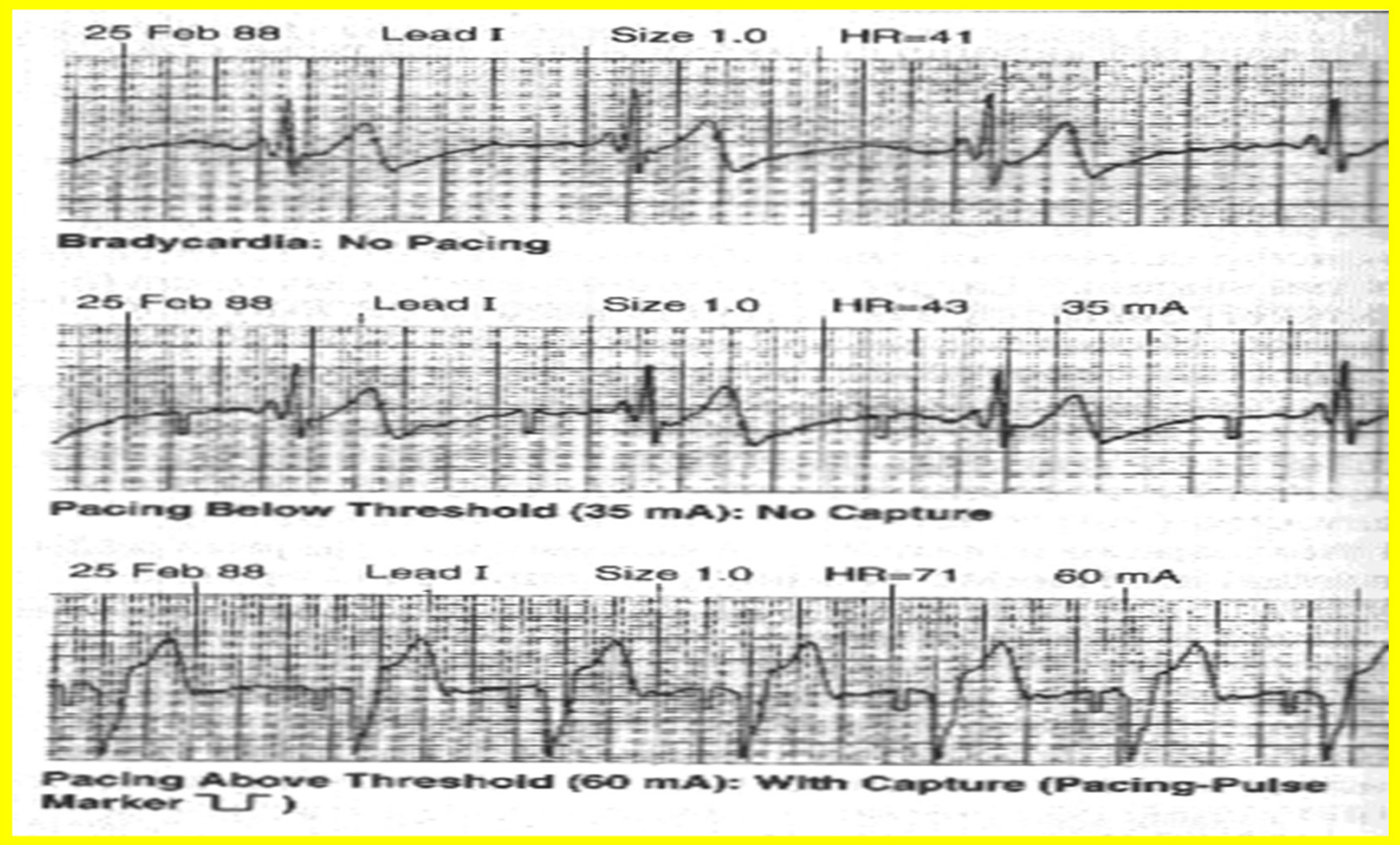
- Il cuore viene stimolato attraverso elettrodi cutanei (antero-posteriori o apico-sternale
- L'impulso a parete integra raggiunge il miocardio
- Non invasivo

Pacing trancutaneo

- 80b/m' - intensità media dello stimolo 50-100 mA
- Deve catturare
- Si diminuisce la stimolazione in uscita mantenendola 10% sopra il valore soglia



Pacing transcutaneo



Contrazione del muscolo -- sedazione

Pacing trans venoso

- Stimolare l'endocardio dell'atrio e/o ventricolo attraverso un elettrodo introdotto in una vena centrale (1950)
- Approccio venoso femorale
- Fluoroscopia di ausilio per il corretto posizionamento
- 60-100 b/m' 20 mA soglia < 0,5 mA
- Si mantiene a 1,5-2 volte la soglia di stimolo

Pacing trans-esofageo (1960)

- Stimolazione dell' atrio attraverso un sondino in esofago
- La vicinanza permette la cattura a relativa bassa corrente che crea minimo disturbo
- La cattura del ventricollo richiede energie maggiori (10-80 mA) che provocano fastidio e talora mancata cattura
- E' perciò utilizzato per il pacing atriale come overdrive di aritmie atriali e/o studio elettrofisiologico

Pacing epicardico

- Elettrodo epicardico durante diretta visione
- Necessita toracotomia
- Elettivamente posizionati nei cardiooperati