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Time from last procedure:
Results:
deriving pacemaker surgery from 1991-2009. Implant and clinical follow-up data
Methods:
A retrospective chart review was conducted on all patients (pts) un-

P3651 | BEDSIDE
Presence of a central venous catheter is associated with a
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Purpose: Hematogenous seeding of permanent pacemaker (PPM) leads sec-
to bloodstream infection from a distant source is a major concern but data
regarding this phenomenon are scarce. The purpose of this study was to evaluate
the risk factors for PPM infection with an emphasis on incremental risk due to the
presence of a central venous catheter (CVC).
Methods: We conducted a retrospective case-control study of PPM infections
identified at our institution over 18 years. Each case of PPM infection was matched
with 2 un-infected controls (cases matched on implant and duration of follow-up.
Epicardial, resynchronization and defibrilla-
tor systems were excluded. The presence of a CVC and comorbid host factors
(demography, prior myocardial infarction, heart failure, immunocompromised status, moderate to severe
kidney disease), device features (generator volume, number of leads and aban-
donated leads, insulation material), and procedural characteristics (pocket compli-
cations, prior device related procedures, antibiotic prophylaxis) were evaluated
using conditional multiple logistic regression models to assess associated risk of
PPM infection.

Results: Forty-nine cases of PPM infection (age [mean ± SD] 66±16 years)
were matched to 98 un-infected controls (67±16 years). The majority (75%) of
infections were due to staphylococcal species and blood cultures were positive in all
patients with PPM lead infections in the presence of an implanted CVC. In our study
the presence of a CVC had a higher independent associated risk of PPM in-
fection (OR 22.84, p<0.001) than other comorbid conditions. All device infections
in patients with a CVC occurred within a median 16 (IQR 6.5-135) days of CVC
implantation. The other independent risk factors for PPM infection included heart
failure (OR, 2.87, p=0.033), comorbidities (combined variable representing dia-
betes mellitus, any immunocompromised condition or kidney disease, OR 7.57,
p<0.001), >1 prior device-related procedure (OR 7.44, p<0.001), and number of
PPM leads (OR 4.64, p<0.001).

Conclusions: The presence of a CVC was associated with significantly higher
independent risk for PPM infection than other comorbid conditions included in our
analysis. Therefore, patients with a staphylococcal bacteremia who have a
PPM and a CVC should be evaluated for both CVC infection and PPM infection.
Moreover, every effort should be made to avoid CVC use among patients with
permanent pacemakers.

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A claim for using post-operative antibiotics in pacemaker related infections:
an extended 19-year experience
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Purpose: Although the reported incidence of pacemaker related infection
(PPMINF) is low, it necessitates the removal of the pacing system for cure.
The present study elucidates factors associated with PPMINF over a 19 yr period.
Methods: A retrospective chart review was conducted on all patients (pts) un-
dertaking pacemaker surgery from 1991-2009. Implant and clinical follow-up data
were collected prospectively and entered into an SPSS database.
Results: There were 3253 procedures with PPMINF identified in 46 (1.4%) pts.
Timing: Extracardiac procedures: 1mo ≤ 7% (15.2%); 1mo-1yr ≤ 21 (45.7%); >1yr =
18 (39.1%). During the 19 yr period the incidence of PPMINF fell from 3.6%
(no antibiotics) to 2.9% (only peri-operative antibiotics – PERI = two doses iv cefazolin)+clindamycin), to 0.4% (peri-operative plus post-operative antibiotics –
PPOST = PERI + 4 day course of oral cephalexin/clindamycin). With PPOST, the
infection rates were significantly reduced in both new implants (1/1289 = 0.1% vs.
22/967 = 2.3%, p<0.001) and repeat procedures (7/682 = 1.0% vs. 16/3055 =
5.2%, p<0.001). On univariate analysis, the following were associated with an
increased risk of PPMINF: non-use of PPOST (3.0% vs. 0.4%, p<0.001), re-
peat surgery (2.2% vs. 1%, p = 0.006), non-use of PERI (3.6% vs. 1.3%,
p= 0.027). The following were not significant: surgical suite (procedure room vs.
operating room); diabetes; local antibiotic use; age; gender; implanted vs outpatient
procedures. On multivariate analysis the following were significant (standardized
coeficients denote relative importance of each): PPOST (0.886), repeat proce-
dures (0.508). PERI (0.115). In the repeat procedure group, there was a trend
in reduction of PPMINF to 0.5% (1/188) from 2.7% (22/809, p = 0.101) when all prior
procedures had PPOST administered.

Conclusions: The present study confirms a small but definite risk of PPMINF with
a significant proportion manifesting beyond one year of implantation. The PPMINF
rate is reduced significantly by peri-operative antibiotics with a further significant
reduction with the addition of post-operative antibiotics. Repeat procedures are
associated with higher rates of PPMINF which are also attenuated by PERI and
PPOST. The trend towards a decrease in the PPMINF for repeat procedures where
all prior procedures had PPOST suggests the higher rate of PPMINF for repeat
procedures may be related to recrudescence of bacterial colonization at the time
of the original procedure as opposed to new PPMINF. The present study makes
a strong case for the use of an extended course of post-operative antibiotics to
minimize pacemaker related infections.

P3653 | BEDSIDE
Blidding complications after implantation of active cardiovascular
implantable devices in an era of triple therapy and novel
antithrombotic drugs
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Introduction: Blidding complications (eg. pocket hematoma) are still common
complications after implantation of active cardiovascular implantable devices
(CIEDs). We investigated the influence of the type of CIED, the implantation
strategy, and the underlying antplatelet- and anticoagulation-therapy on blidding
complication.
Methods: Between 2006 and 2012, a total of 3,082 CIEDs (Pacemakers:
1,669; ICD/CRT/CCM: n= 1393) were implanted at our institution. There was
no perioperative anticoagulation in 17.7%, ASA or thienopyridine monotherapy
in 33.5%, and/or anticoagulation with NOAKs (Novel Oral Anticoagu-
ulants (NOAKs)) in 16.3%, and a dual- or triple-combination of dif-
ferent antithrombotic drugs in 32.5% of the patients. HAS-BLED-score was >3 in
17.5% of the patients. Blidding complications were defined as pocket hematoma,
a major or minor complication. Manual traction, haemotherax, drop of hemoglobin >2mg/dl, and transfusion
of >2 erythrocyte concentrates.

Results: No patient died due to blidding complications. The overall incidence
of blidding complications was 7.2%. Resorption for pocket hematoma or hema-
thorax was required in 1.26%. Patients with HAS-BLED-Score >3, patients on
dual- or triple combination of antithrombotic drugs, patients on low molecu-
lar weight heparins (LMWHS), and patients on dabigatran, facigrel or prasugrel
exhibited a higher incidence for blidding complications.

Conclusions: Even in an era of novel antithrombotic drugs and dual-/triple-
anticoagulation, the rate of blidding complications is comparable to published
data of the last decade. The use of bridging therapy with LMWHS and especially
its combination with ASA/thienopyridine treatment are highly predictive for blidding
complications during or after CIED-surgery.

P3654 | BEDSIDE
Transvenous removal of recalled ICD leads: riata vs sprint fidelis
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Introduction: Sprint Fidelis (S) and Riata (R) ICD leads were recalled by the
FDA and Drug Administration because of an increased rate of failure due to con-
ductor fracture (S) or insulation abrasion (R). Treatment options include intensify-
ing monitoring and intervening replacing replaced lead, with or without extraction.
However, because of its mechanical separation, R leads may be challenging to
extract. Aim of this study is a comparison between S and R lead extraction.
Methods: Since January 1997 to June 2012, we managed 513 consecutive pa-
ients with 545 venricular ICD leads; among these, 45 were S and 94 R. There
were no significative difference in patients and lead characteristics in the two
groups. Indications to removal were infective in the majority of cases (73%). Mean
pacing period was 38±12.2 months in S group and 36±12.4 months in R group.
91% of ICD leads in both groups were dual coil. In case of manual traction
failure, we performed mechanical dilatation using a single polypropylene sheath
sheath (Cook Vascular – Leischung PA, USA) and if necessary, other intras-
vasal tools. (Catheter) A transvenous approach through the Internal Jugular Vein (JA)
was performed in case of failure of the standard approach.

Results: Success rate was achieved in all 45 (100%) S leads and in 93/94
(98.9%) R leads. No major complications occurred. Manual traction effectiveness
was higher in S leads (9 vs 2%) while JA was required more frequently in R leads
(8 vs 2%) (p<0.01). Extraction time and mean sheath size used were significantly
higher in R group. Comparing binding sites locations, R leads exhibited higher
incidence in superior vena cava, right atrium and tricuspid valve as compared to S
leads (p<0.02). In R group presence of cable externalization was a predictor of
difficult procedure and need for JA.

Conclusions: Our experience shows that the extraction of recalled S and R ICD
leads is feasible and effective. However, extraction of R leads is more complex
than S leads relative to coil backdrilling and cable externalization in R group may
account for these differences. The decision to extract or not to extract R leads
should be individualized.