



IX Congresso
Novas Fronteiras
em Medicina
Cardiovascular

22 a 24 de Fevereiro 2019

The Village Praia
D'El Rey - Óbidos

INFECÇÃO APÓS PROCEDIMENTOS DE BENTALL

INFECTION AFTER BENTALL PROCEDURE

RICARDO ARRUDA PEREIRA- CHUL

INFECTION AFTER BENTALL PROCEDURE

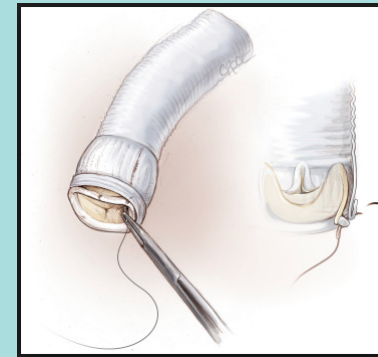
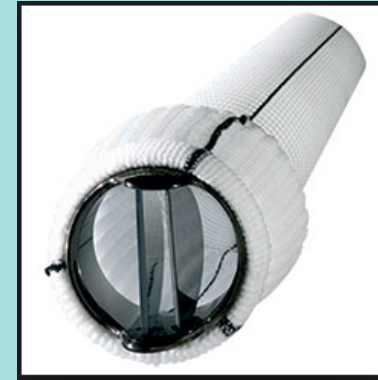
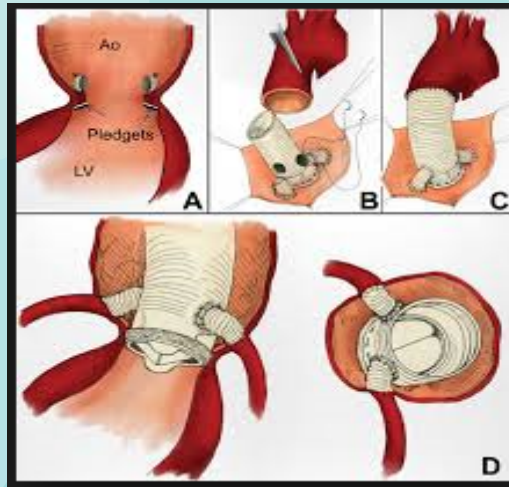
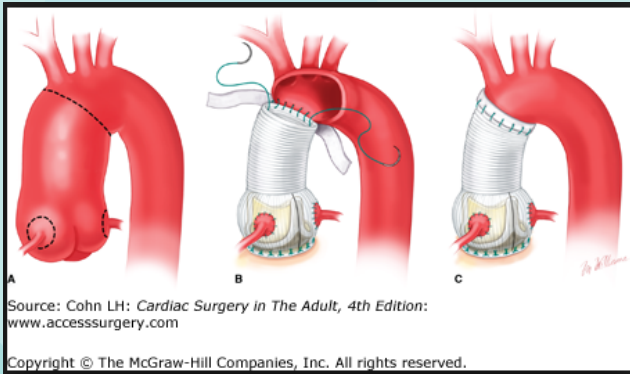
-CARDIOLOGIST / INT. MEDECIN / INFECTOLOGIST:
“Ricardo...you have an infected bentall to redo”

-RICARDO : &%\$(\$#!!!???



INFECTION AFTER BENTALL PROCEDURE

BENTALL SURGERY



INFECÇÕES APÓS PROCEDIMENTOS DE BENTALL

DIAGNOSIS

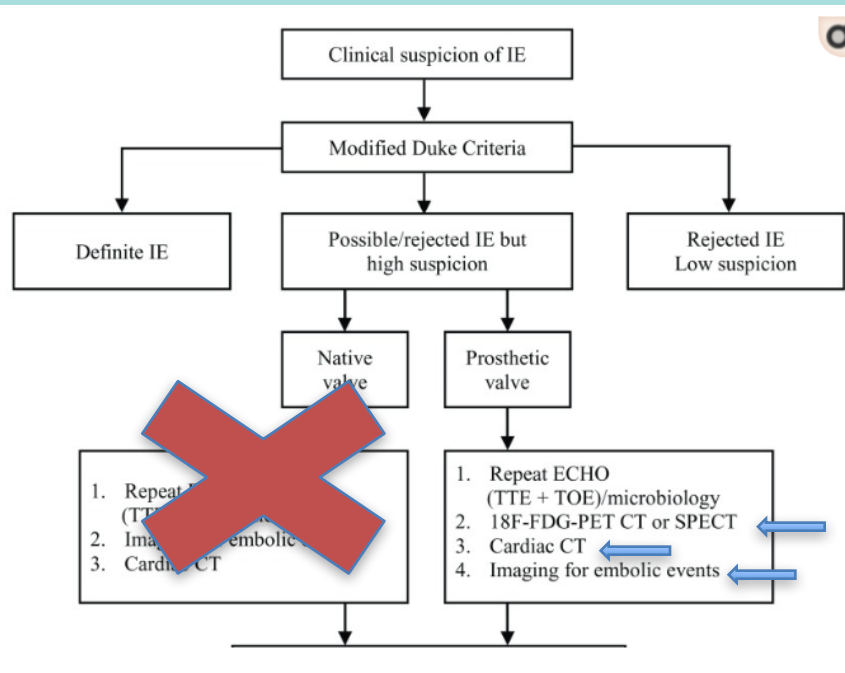
Table 34.3. The Modified Duke Criteria for the Diagnosis of Endocarditis

Major Criteria

- Blood culture positive for IE
 - Typical microorganisms consistent with IE from two separate blood cultures
 - Viridans streptococci; *Streptococcus bovis*, HACEK group, *Staphylococcus aureus*; or
 - Community-acquired enterococci, in the absence of a primary focus
 - Microorganisms consistent with IE from persistently positive blood cultures, defined as follows:
 - At least two positive blood cultures of blood samples drawn >12 h apart; or
 - All of three or a majority of ≥4 separate cultures of blood (with first and last sample drawn at least 1 h apart)
 - Single positive blood culture for *Coxiella burnetii* or antiphase I IgG antibody titer >1:800
- Evidence of endocardial involvement
 - Echocardiogram positive for IE (TEE recommended in patients with prosthetic valves, rated at least "possible IE" by clinical criteria, or complicated IE [paravalvular abscess]; TTE as first test in other patients), defined as follows:
 - Oscillating intracardiac mass on valve or supporting structures, in the path of regurgitant jets, or on implanted material in the absence of an alternative anatomic explanation; or
 - Abscess; or
 - New partial dehiscence of prosthetic valve
 - New valvular regurgitation (worsening or changing or preexisting murmur not sufficient)

Minor Criteria

- Predisposition, predisposing heart condition or injection drug use
- Fever, temperature >38°C
- Vascular phenomena, major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial hemorrhage, conjunctival hemorrhages, and Janeway lesions
- Immunologic phenomena: Glomerulonephritis, Osler nodes, Roth's spots, and rheumatoid factor
- Microbiological evidence: Positive blood culture but does not meet a major criterion as noted previously (excluding single positive cultures for coagulase-negative staphylococci and organisms that do not cause endocarditis) or serologic evidence of active infection with organisms consistent with IE
- Echocardiographic minor criteria eliminated



INFECTION AFTER BENTALL PROCEDURE

EVIDENCE BASED MEDECINE

- DIFFICULT TO FIND
- VERY LITTLE INFORMATION PUBLISHED
- CASE REPORTS...
- 2017 – JUST ONE PAPER (CASE SERIES, AND SYSTEMATIC REVIEW)

WHY?

- UNCOMMON SITUATION...?
- BAD SURGICAL RESULTS...?

INFECTION AFTER BENTALL PROCEDURE

EVIDENCE BASED MEDECINE

TWO DIFFERENT SITUATIONS:

BENTALL INFECTION...

BENTALL INFECTION WITH “COMPLICATIONS” ...

INFECTION AFTER BENTALL PROCEDURE

EVIDENCE BASED MEDECINE

Accepted Manuscript

Graft Infection after A Bentall Procedure: A Case Series And Systematic Review Of The Literature

I Machelart, C Greib, G Wirth, F Camou, N Issa, J.F Viallard, JL Pellegrin, E Lazaro

PII: S0732-8893(17)30078-0
DOI: doi: [10.1016/j.diagmicrobio.2017.03.002](https://doi.org/10.1016/j.diagmicrobio.2017.03.002)
Reference: DMB 14314

To appear in: *Diagnostic Microbiology and Infectious Disease*

Received date: 27 November 2016
Revised date: 24 February 2017
Accepted date: 3 March 2017



INFECTION AFTER BENTALL PROCEDURE

EVIDENCE BASED MEDECINE

HÔPITAL HAUT LEVEQUE, PELEGRIN, AND SAINT ANDRÉ (BORDEAUX)
EVERY PATIENT FROM 2008 TO 2014 THAT HAD A BENTALL PROCEDURE

METHODS

Patients

A retrospective study was performed using all adult patients admitted to the Bordeaux University Medical Hospital for BGI between 2008 and 2014 as recorded in the Bordeaux endocarditis database accredited by the French national data protection commission (CNIL number: 2009020). Epidemiological, and clinical characteristics, as well as outcomes, were recorded for each patient.

Literature analysis

Published case reports were identified in a Medline search of literature reported in the English-language from the years 1968 to 2016. The following keywords were used: vascular graft infection (VGI), Bentall procedure, endocarditis.

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EVIDENCE BASED MEDECINE

From a microbial perspective, there is a predominance of ***Staphylococcus aureus* infections** (35%), with a recent 20% increase in *Methicillin-resistant Staphylococcus aureus* infections (16) associated with VGI. In our study, ***Staphylococcus epidermidis* (SE)** (*Methicillin-resistant in half of the cases*) was the most frequent cause of infection.

...IE can be diagnosed by CT (15),(17) with a sensitivity and specificity rate close to 100% for acute infections, TEE is less valuable to assess the presence of aortic infection. In most of the published reports (**Table 4**), **the diagnosis of BGI used a combination of TTE, TEE, CT and PET/CT**. In our study, TEE performed in nine cases demonstrated signs of BGI (n=7), of which five cases showed signs of endocarditis, but not vascular infection, whereas CT contributed to the diagnosis of BGI in only three cases of the eight performed.

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EVIDENCE BASED MEDECINE

Table 1 : Clinical characteristics of the BGI patients

	Age	Gender	Type of valvular prosthesis	Definite VGI	Definite endocar- -ditis	White blood cell count (G/L)	CRP (mg/L)	Time to infection	Follow- up (months)
		↓	↓					↓	
Patient 1	79	F	bioprosthesis	yes	yes	13.1	204	3 years	48
Patient 2	59	M	mechanical	yes	yes	2.2	11	6 years	30.5
Patient 3	57	M	mechanical	yes	no	8.46	13	5 days	18
Patient 4	74	M	bioprosthesis	yes	yes	5.03	29	2 years	1.5
Patient 5	72	M	mechanical	yes	yes	9.8	130	9 years	46
Patient 6	74	M	bioprosthesis	no	yes	9.35	167	3 years	Lost
Patient 7	68	M	bioprosthesis	yes	yes	7.9	110	1 years	39
Patient 8	80	M	bioprosthesis	yes	yes	11.2	80	3 years	68
Patient 9	77	M	bioprosthesis	yes	yes	12.31	129	8 years	22
Patient 10	75	M	bioprosthesis	no	yes	9.84	13	2 years	4

F: Female; M: Male; G/L: Giga/Liter; CRP: C-reactive-protein; mg/mL: milligram/milliliter

BORDEAUX-10

INFECTION AFTER BENTALL PROCEDURE

EVIDENCE BASED MEDECINE

Table 3: Microbial characteristics, treatment, and outcome of patients

	Microorganisms	Surgery	Lenght of IV ATB	Total duration of ATB	Follow-up
Patient 1	MRSE	no	7.5 months	7.5 months	Remission
Patient 2	Streptococcus agalactiae	no	7 weeks	6.5 months	Remission
Patient 3	Candida parapsilosis Achromobacter species Serratia marcescens MRSE	no	6 weeks	1.5 years	Death related to BGI
Patient 4	Bartonella quintana	no	3 days	1.5 months	Death not related to BGI
Patient 5	MSSE	no	5 days	6 months	Remission after relapse
Patient 6	MSSE	Bioprosthesis replacement	NA	NA	Lost to follow-up
Patient 7	NA	no	1 year	1 year	Remission
Patient 8	Enterococcus faecalis	no	2 weeks	2.4 years	Remission
Patient 9	Streptococcus sanguinis	Bentall graft replacement	2 weeks	2 months	Remission after relapse
Patient 10	Coxiella burnetii	no	0	Presently ongoing	Treatment ongoing

BORDEAUX-10



INFECTION AFTER BENTALL PROCEDURE

EVIDENCE BASED MEDECINE

Table 4: Summary of published findings for BGI patients

		Time	Diagnosis	Microbiology	BG replacement	ATB duration	Outcome
<i>Takano et al. (5)</i>	Case 1	Late	CT	Methicillin-resistant <i>Staphylococcus epidermidis</i>	Yes	NA	Remission
	Case 2	Late	CT	Methicillin-sensitive <i>Staphylococcus aureus</i>	Yes	NA	Remission
	Case 3	Late	PET/CT	<i>Alpha streptococcus</i> <i>Enterococcus faecalis</i>	No	3 years	Remission
	Case 4	Late	TEE	<i>Staphylococcus hominis</i>	Yes	NA	Remission
<i>Coselli et al. (6)</i>	Case 5	Late	NA	<i>Staphylococcus epidermidis</i>	Yes	« lifelong »	Remission
	Case 6	Late	NA	<i>Staphylococcus aureus</i>	Yes	« lifelong »	Remission
	Case 7	Late	NA	<i>Streptococcus</i> , <i>Enterococcus</i>	Yes	« lifelong »	Remission
	Case 8	Early	NA	<i>Staphylococcus coagulase negative</i>	Yes	« lifelong »	Remission Died 5 months later due to myocardial infarction
	Case 9	Late	NA	Gram-negative bacilli, <i>Candida</i>	Yes	« lifelong »	Death related to infection
	Case 10	Late	NA	<i>Staphylococcus aureus</i>	Yes	« lifelong »	Death due to infection
<i>Sharifkazemi (8)</i>	Case 11	Late	TEE	<i>Brucella melitensis</i>	Yes	Several months	Remission
<i>Hussein (7)</i>	Case 12	Early	TTE	<i>Finexgoldia magna</i>	Yes	8 months	Remission
<i>Tossios et al. (9)</i>	Case 13	Late	TTE+CT	NA	No (conservative surgery)	Several weeks	Remission

REVIEW-13

INFECTION AFTER BENTALL PROCEDURE

PERSONAL BASED MEDECINE

CASE 1 - REDO (DIED, BUT NOT OF ENDOCARDITIS)

CASE 2 - ANTIBIOTICS IV TREATMENT (REMISSION)

CASE 3 – ANTIBIOTICS IV TREATMENT (REMISSION)

INFECTION AFTER BENTALL PROCEDURE

CONCLUSIONS

- LUCKLY, A RARE SITUATION.
- EXCEPT FOR THE “BORDEAUX GROUP”, THERE ARE NO MORE THAN 13 CASES PUBLISHED. (2017)
- TECHNICALLY, A VERY COMPLEX SURGERY.
- DIAGNOSTIC BY CLINIC (MODIFIED DUKE CRITERIA) , TEE, AND WHEN INCOCLUSIVE, CT, PET-CT.
- VERY INDIVIDUAL TREATMENT OPTION, AND MADE BASED BY CLINICAL CONDITION.
- IF NOT “COMPLICATED”, THINK ABOUT IV TREATMENT, EVEN IF FOR LIFE.

INFECTION AFTER BENTALL PROCEDURE

**OBRIGADO
THANK YOU**