27th ESTS MEETING

9 JUNE - 12 JUNE 2019 • DUBLIN, IRELAND

EUROPEAN CONFERENCE ON GENERAL THORACIC SURGERY

ANTIBIOTIC LOADED CERAMIC STERNUM FOR STERNAL REPLACEMENT DURING REFRACTORY DEEP STERNAL WOUND INFECTION

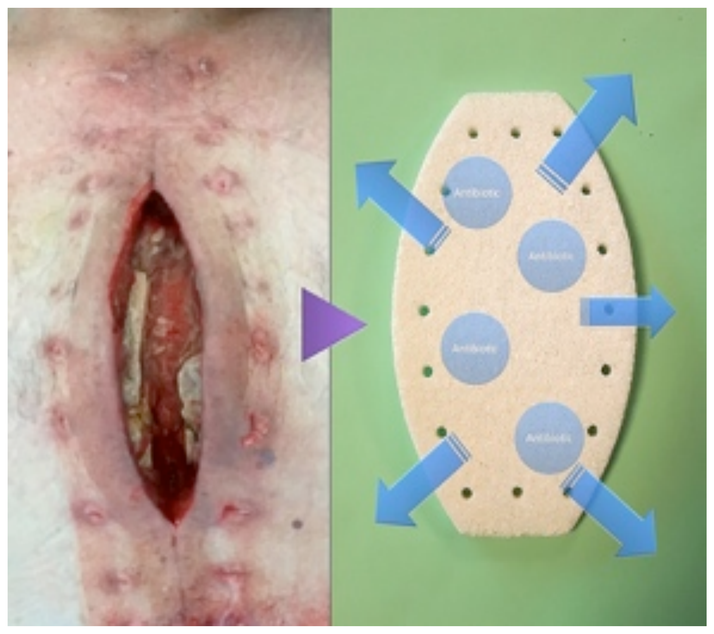
Jérémy TRICARD, Anaëlle CHERMAT, Eric DENES, Souleiman EL BALKHI, François BERTIN

Thoracic and Cardiovascular Surgery department
LIMOGES University Hospital, France

f.bertin@sfctcv.org ; jeremy.tricard@etu.unilim.fr

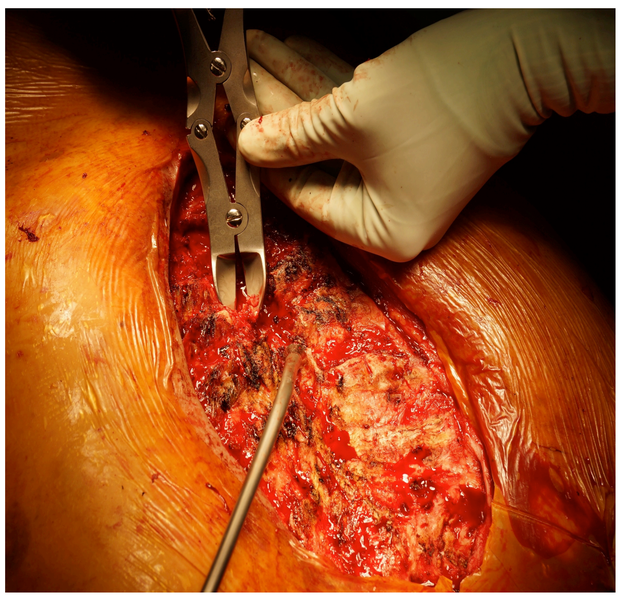
Objective:

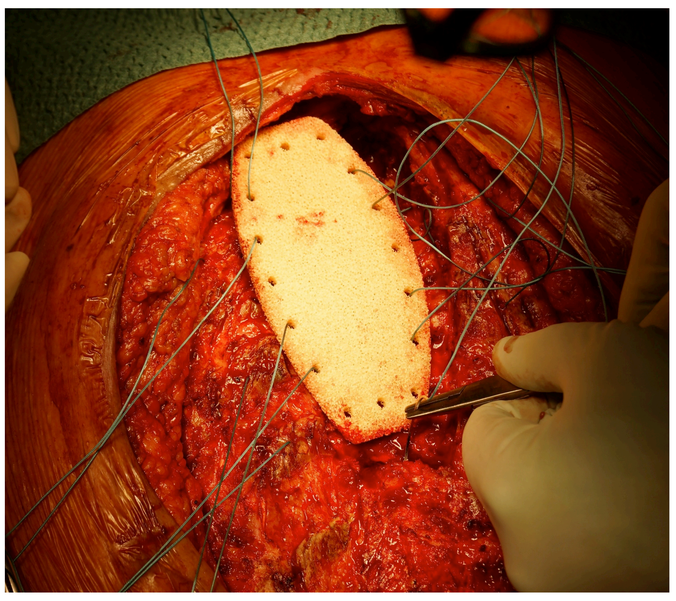
Sternum reconstruction after its destruction during refractory deep sternal wound infection (DSWI) mainly relies on vacuum-assisted closure therapy (VAC) and muscle flaps which has some pitfalls. We report here the use of an antibiotic loaded prosthesis for sternal replacement during DSWI (**CERAMIL®**). The device is a porous alumina sternum loaded with gentamicin. The aim is to obtain a mechanical replacement of the sternum associated to its bacterial protection during implantation thanks to antibiotic local release.

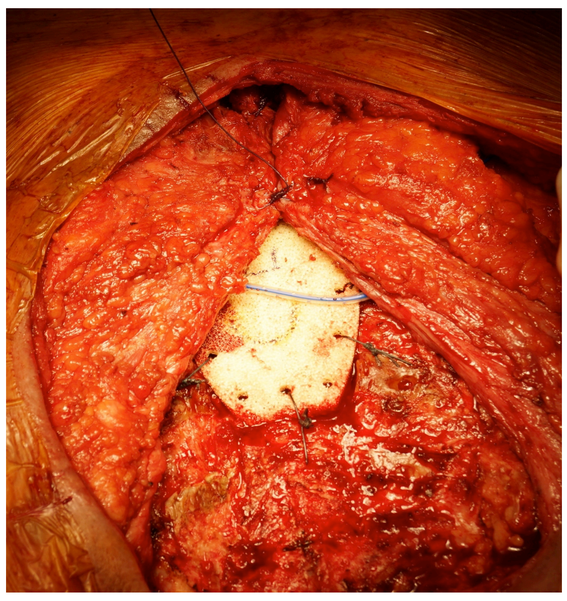


Methods:

This device was implanted in three male patients with DSWI and persistent infected sternal dehiscence following coronary heart by-pass.







Results:

Table 1 : clinical experience and follow-up

	age	Reoperations before recontsruction	VAC therapy (months)	Time between cardiac and recontsruction procedure (months)	Duration of reconstruction (min)	Hospital Discharge	Reoperations after reconstruction	Follow-up (months)	Status
#1	67	3	6	10	225	D20	0	35	**At home**
#2	77	2	1	2	165	D25	-Wound closure (M3) -Removal of the prosthesis (M19)*	31	**Wound healing achieved**
#3	53	2	11	15	180	D30	0	14	

**Previously unknown gentamicin resistant bacteria present in the surgical wound at the time of positioning required sternal implant removal for one patient after 19 months. Despite this adverse event, after a mean follow-up of 26 months, all patients are well-being.*

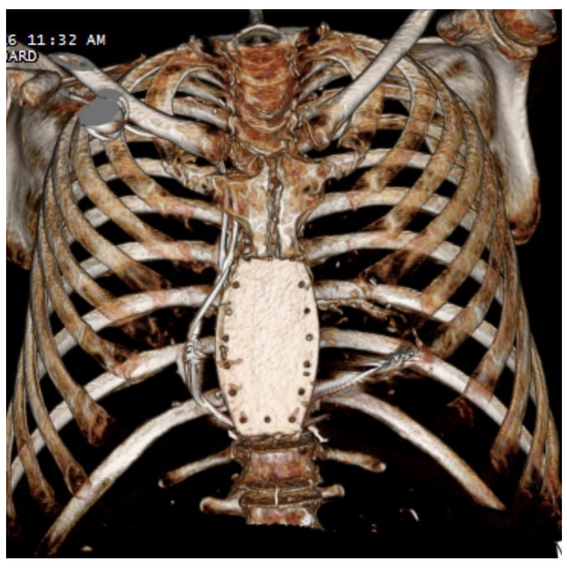


Table 2: Local gentamicin concentration exceeded the one needed for its efficacy while no antibiotic was found in the blood

			H1		H24		From H1 to H48
	Antibiotic	Loaded dose (mg)	Local concentration (mg/L)	Comparison to the needed concentration	Local concentration (mg/L)	Comparison to the needed concentration	Antibiotic sampled in blood (mg/L)
#2	Gentamicin	320	1500	>175 folds	395	>50 folds	<0.5
#3	Gentamicin	160	2100	>260 folds	37	> 5 folds	<0.5

Conclusions:

These three implantations are promising for patients with sternal destruction after DSWI, offering a protection against bacteria.