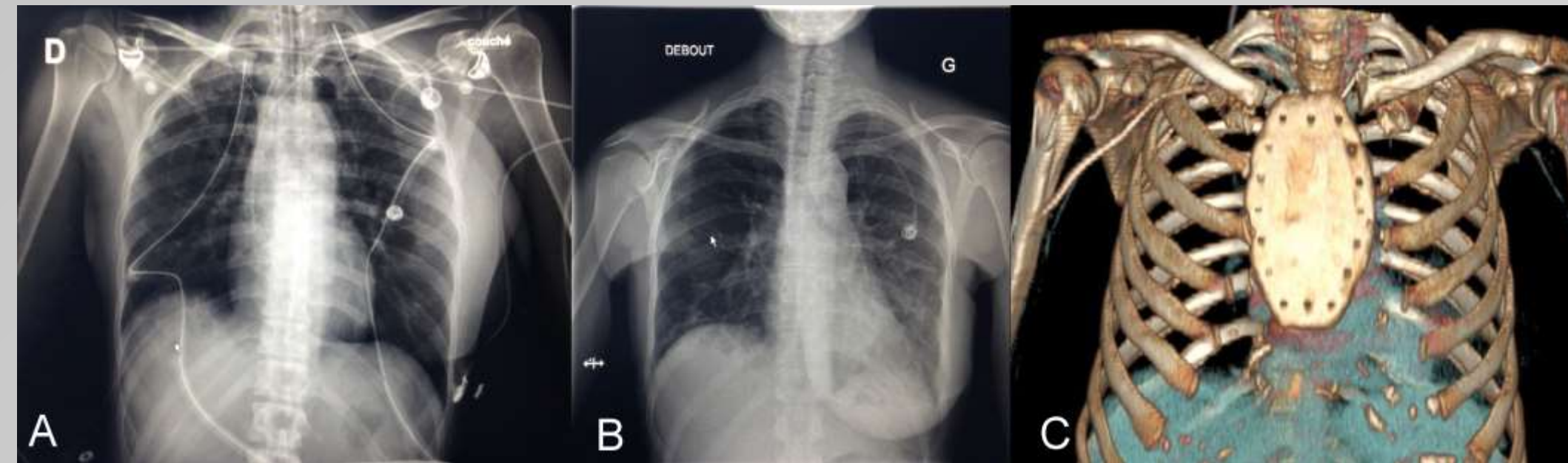


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## Background:

There is to date no satisfactory technique for sternal replacement in a context of neoplastic disease or for deep sternal wound infection. A prosthetic sternum made of porous alumina ceramic was produced thanks to the collaboration between a medical ceramic devices manufacturer and cardiothoracic surgeons. This material has mechanical resistance exceeding bone's one, is bio-inert, biocompatible, non-resorbable and radiotransparent. There is no need for osteosynthesis devices. The objective of this abstract is to describe characteristics and follow up of the patients who undergone this procedure.



## Material/methods:

We describe the patients who were prospectively included in the cohort while being operated with this new therapeutic option.

## Results:

Seven patients underwent this procedure. Sternal replacement was decided for oncologic diagnosis in 4 cases and for infection in 3 cases. Five patients received a complete sternum and two a half-sternum (manubrium part). Two patients received a prosthesis loaded with antibiotics (gentamicin) in order to protect implantation from prosthesis infection. Characteristics are summarized in table. Implantation was simple thanks to trial implants ancillary and the ready-to-use prosthesis. Skin and wound healing was obtained quickly after surgery. One complication (hematoma) occurred for the second patient with a need for surgical revision but with retention of the prosthesis. The mean follow-up is 10.6 months (1.8 – 21.8 months). During the follow-up no major complication occurred. There was an improvement of FEV1 values during the follow-up without difficulty in breathing. All the patients recovered their previous life and activities. There was no complaining about scar or residual pain. CTscan follow-up did not show local abnormal reaction, no abscess or collection.

## Conclusions:

Even if it's too early to draw conclusions, this new bioceramic prosthesis seems to be a simple and reliable technique for the replacement of tumoral or infected sternum even for patients with a lot of comorbidities.

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Sex	Age (year)	Indication	Risk factors	Body mass Index	ASA	Type of surgery	Antibiotic loaded	Complications	Delay to discharge after surgery (Days)	Follow up (Months)	
1	F	55.1	Radio-induced sarcoma	Malignancy	22.5	3	Complete replacement	No	None	41	25,9
2	F	53.9	Breast cancer metastasis & skin localization following biopsy	Malignancy Diabetes mellitus	24.6	3	Complete replacement	No	Hematoma	36	19,0
3	M	61.5	Sternal disunion after aortic valve replacement and deep sternal wound infection	Lung cancer with radiotherapy including sternal area (2007) Diabetes mellitus Smoking COPB	26.3	4	Complete replacement	No	Surgical site infection without prosthesis infection	132	21,3
4	F	37.9	Manubrial breast cancer metastasis	Malignancy Smoking	19.3	3	Half-sternum replacement	No	None	19	14,2
5	M	68.1	Sternal disunion after coronary bypass and deep sternal wound infection	Diabetes mellitus Obesity COPB	29.8	3	Complete replacement	Yes	None	20	10,6
6	M	77.8	Sternal disunion after coronary bypass and deep sternal wound infection	Diabetes mellitus, obesity, COPB, HTA, Prostate cancer	22.8	3	Complete replacement	Yes	None	25	6,6
7	F	41.9	Clavicle and manubrium neoplasia	Malignancy	21.9	3	Half-sternum replacement	No	None	5	5,9