

Autologous Bone Flap infection Following Craniectomy : Clinical Experience in a Referral Center

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Background

The autologous bone flap infection following craniectomy is a serious postoperative bone and joint infection (BJI). Very few data are available concerning its epidemiology and management.

Methods

Prospective study in a referral center including patients with with autologous bone flap infection following craniectomy between 2007-2014. The acute infection was defined when the diagnosis of the infection occurred within 3 months following the refitting of the bone flap. Otherwise, the infection was considered chronic. The data collected were analysed in order to determine a specific profile for each of those category (acute or chronic) and for the main bacteria found.

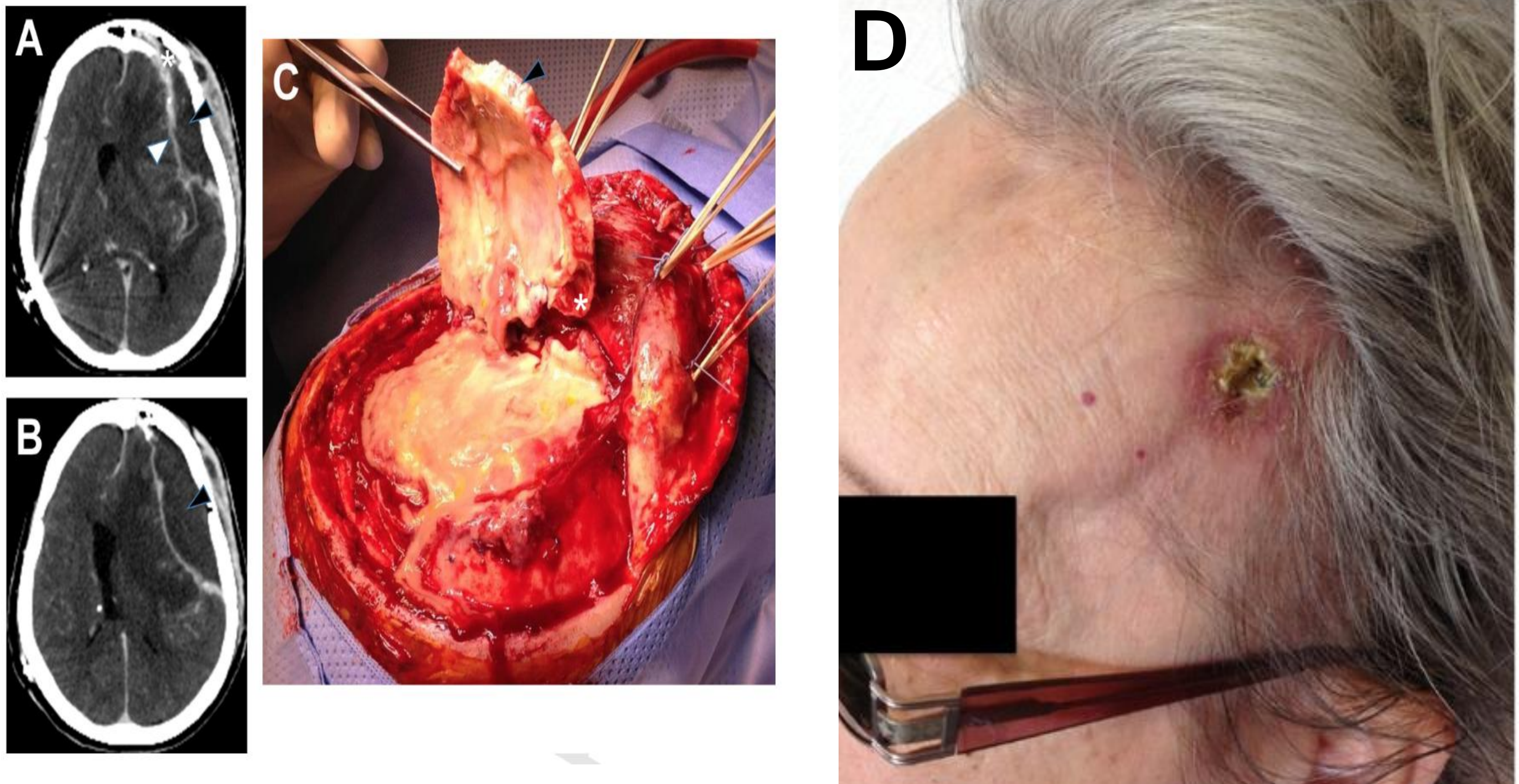


Figure 1. Example of an acute infection 2 months after the refitting of the autologous bone flap with empyema: presentation on cerebral tomodensitometry (panel A and B); peroperative findings by the surgeons (panel C). The only clinical symptom in this case was a fistula (panel D).

Results

Clinical signs are rare. Most of patients (30 [59%]) had a fistula as only clinical sign of bone flap infection (figure 2). 14 patients (27%) had empyema at preoperative imaging, whereas only 1 had fever.

Bone flaps were mainly located in frontal or fronto-temporal (33 [64%]) areas, and 19 of them (37%) were >10 cm.

The mean time between the bone flap refitting and the diagnosis of infection was 2.9 years (1.1-4.6).

The main bacteria found were *S. aureus* (21 [41%]) and *P. acnes* (19 [37%]). A polymicrobial infection was found in 22 patients (43%). *S. aureus* was found in 71 % of acute infection, whereas *P. acnes* was found in 40% of chronic infection.

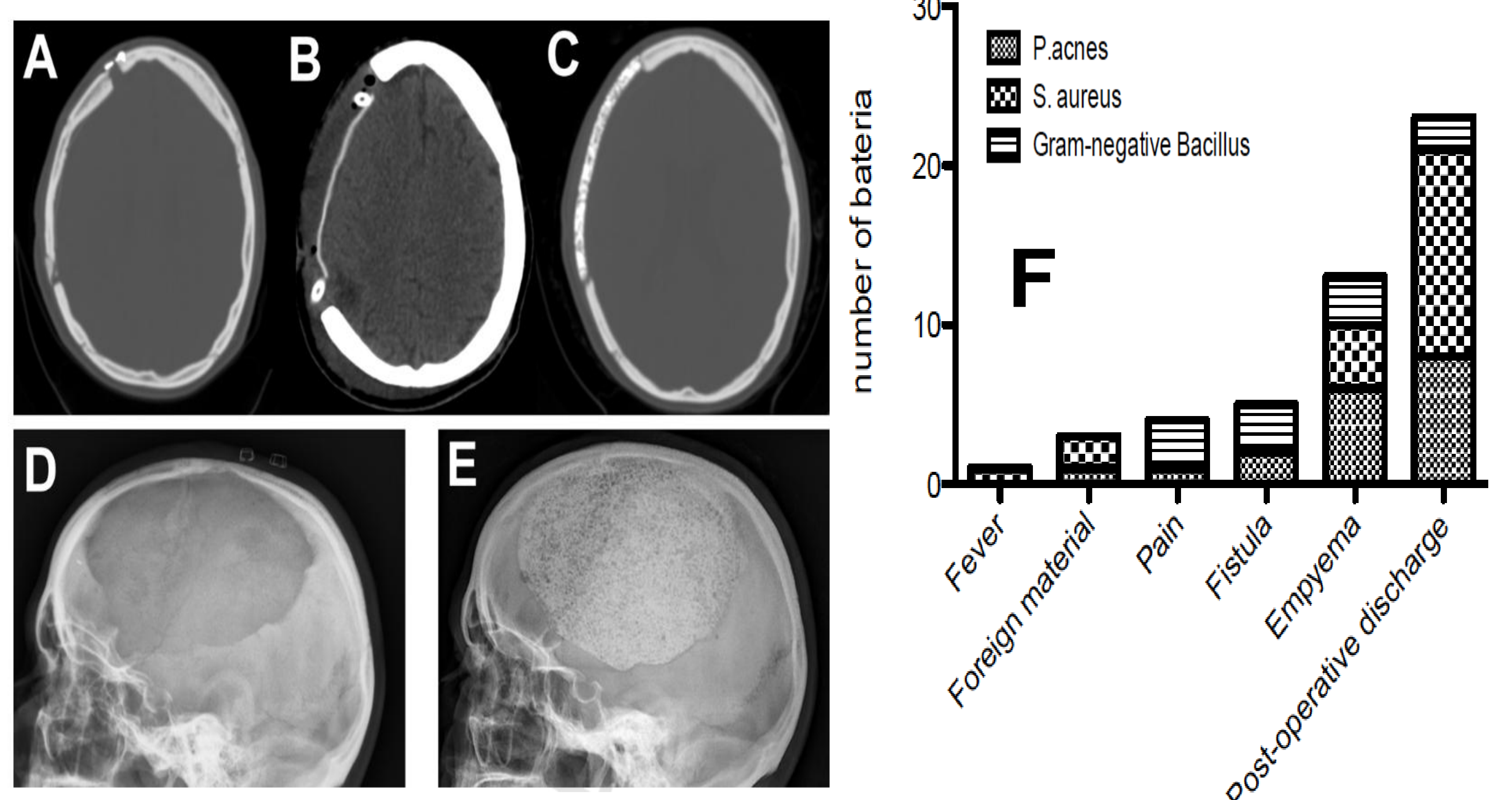


Figure 2. Removal of the bone flap and reconstruction by ceramic custom made implant (panel A to E). Main clinical signs and symptoms and distribution of bacteria for each type of sign and symptom (panel F).

A transient postoperative discharge was reported in 16 patients (31%) during the month following the refitting of the bone flap and was more frequently observed in patients with bone flap infection due to *S. aureus* (15/16 [93%]), in comparison with *P. acnes* (6/16 [37%]; p=0.012).

The management of bone flap infection mainly required a 2-stage approach: bone flap removal with prolonged antimicrobial therapy (41 patients [80%]), followed by reconstruction with ceramic custom-made implant. In patients with such implant, no relapse was observed during the follow-up).

Conclusions

Autologous bone flap infection is a severe delayed BJI that requires a specific treatment strategy in referral centers: bone flap removal, prolonged antimicrobial therapy targeting the involved pathogens, and reconstruction with ceramic custom-made implant (figure 2).

Lyon BJI Study group

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