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LETTER TO THE EDITOR

Letter to the editor: response to article "management and prevention of cranioplasty infections"

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Dear Editor:

We read with great interest the manuscript by Frassanito et al. *Management and prevention of cranioplasty infections* [1]. We applaud the authors for their work, and for emphasizing the important role of standardization in reducing the risk of infection in cranioplasty and when implanting neurosurgical devices.

In particular, we were intrigued by their institutional bundle method and their preference of completely shaving the hair with clippers to allow for identifying areas of skin dehiscence or breakdown. The fact that they highlight patients with infectious history and give each patient preventive antibiotics before incision is of great importance.

As we know, infection is one of the most common complications in cranioplasty surgery. This may be surgical site infection (SSI) or infection of the cranioplasty material. Risk factors for SSI are variable. Given that SSIs are commonly caused by skin flora, and cultures of cranioplasty implants typically reflect skin bacteria, strategies to reduce the number of bacteria in the operative field are critical. In cranioplasty patients in particular, there are a number of factors that make the skin prone to having high bacterial load. For example, it is performed in a hair-bearing area, and there is usually scarring from the decompressive craniectomy or other neurosurgical procedure (which may have crevices or areas difficult to prep adequately). Thus, preoperative surgical site preparation is of utmost importance.

Having said that, a key addition to this publication would be the infection rate in their cohort. Additionally, it is conceivable that foregoing the use of drains may contribute to fluid accumulation in the peri-implant space and increase the risk of infection.

In our experience of 440 cranioplasty procedures, the infection rate was 4% for the primary cases and 17% for the revision cases (unpublished data). This is considerably lower than the published results, which as Frassanito and colleagues mentioned, range is from 5 to 33%. Although this may be attributed to multiple factors, including surgical technique and our multidisciplinary approach to cranioplasty, we believe that our preoperative preparation plays a major role.

As previously published by our group, similar to the authors, we also prefer to shave the scalp and determine all previous scalp incisions, and to visually inspect the cranial contour during reconstruction. After shaving, the scalp is scrubbed with iodine solution–containing surgical-scrub brushes, followed by a wet iodine-based prep. The final preparation is performed with Iodine Povacrylex solution (Duraprep, 3 M, Maplewood, MN) [2]. Unlike Frassanito however, to prevent unwanted fluid collections and dead space from accumulating around the implant, we place 2 postauricular 15F round, fluted drains. The first drain is placed in the infratemporal area above the temporalis, which is a gravity-dependent location. The second drain is placed at the farthest extent of the contralateral and posterior undermining.

Also, in contrast to Frassanito et al., we close the scalp meticulously in 3 layers. The galea is approximated with 3-0 delayed, absorbable monofilament suture in an interrupted buried fashion. Next, a deep dermal running subcuticular suture is placed using the 3-0 dissolvable braided suture. The skin edges are then aligned tension free with 3-0 nylon in an interrupted fashion with precise dermal ridge alignment and wound eversion [3].

Our assumption is that by consistently using a perioperative bundle or algorithm, we may reduce the risk of infectious

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complications in cranioplasty. We hope that more groups like Frassanito et al. will adapt a consistent algorithm and possibly decrease infection rate of cranial reconstruction.

Thank you for your kind consideration.
Yours truly,
Drs. Shay, Mitchell, and Gordon

Compliance with ethical standards

Conflict of interest The authors declare no conflict of interest.

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