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Letter to the Editor

Should Bone Cement be Used Only in Limited Ossicular Chain Defects?

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We read Delrue et al. [1] article with great interest. They discussed very important results regarding traumatic ossicular chain defects, which may be observed in otolaryngology practice and which reduce the quality of life by causing hearing loss.

Incus injuries are the most common pathology, as discussed in the article by Delrue et al. [1]. Other ossicular defects follow that. There are different treatment methods to resolve these defects. Bone cement, a cheap and practical material that was also used by Delrue et al. [1] for some of their cases, may be used for all types of ossicular chain defects [2, 3]. Bone cement can also be safely and reliably used for repairing very small defects, as indicated by Delrue et al. [1], and longer ossicular chain defects [2, 4]. In addition, some types of bone cements that are used in ossiculoplasty have stronger bond strengths to ossicles than some others [5]. Therefore, if bone cements with stronger bond strengths are used for longer ossicular chain defects, they may have better long-term results.

However, there are some concerns regarding the toxic effects of bone cement, particularly those on facial nerves, when used for middle ear surgery. Histopathological and electrophysiological examinations recently revealed that glass ionomer cement does not have toxic effects on facial nerves [6]. Thus, it can be safely used for tympanoplasty surgery.

In conclusion, we believe that for traumatic ossicular chain defects, the use of bone cement enables the preservation of the natural pathway of voice transmission from the tympanic membrane to the oval window and provides better hearing results owing to natural pathway protection. Therefore, bone cement application may be preferred over incus interposition or PORP.

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Authors' Reply

Dear Editor,

We would like to thank the authors of the letter to the editor for their comments regarding our recently published article titled "Management and hearing outcome of traumatic ossicular injuries" [1]. Bone cements enable the physiological restoration of ossicular chain defects, with minimal manipulation. For incudostapedial discontinuity, which is the most commonly encountered ossicular reconstruction problem, the "bridging technique" obviates the need to further disrupt the ossicular chain [2]. Some authors also

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advocate the use of glass ionomer cement to restore larger defects. Because of its stronger bond strength, glass ionomer cement can be used to perform malleostapedial bridging, with good functional results being reported [3, 4]. Although glass ionomer cement appears promising, we would like to address two issues.

First, we are convinced that there remains a place for incus interposition or a prosthesis for larger interruptions. For example, in case of a completely luxated incus, using the patient's own incus is logical, instead of bridging with bone cement. In terms of sound transmission, a well-sculpted incus provides good and stable results [5]. Because of their high biocompatibility, stability, and good hearing outcomes, titanium implants also remain an integral part of modern otology [6].

Second, we are reluctant to use glass ionomer cement in the middle ear because several problems have been previously encountered while using this cement type. Kupperman et al. [7] reported foreign body reactions with granulation formation and spontaneous extrusion around the region where glass ionomer cement was used. Remarkably, these adverse reactions did not occur in the immediate postoperative period but 10–18 months postoperatively. A more concerning complication is subacute myoclonic encephalopathy, described by Renard et al. [8], that occurred after the closure of a skull base defect with glass ionomer cement.

In conclusion, in our practice, hydroxyapatite cement has largely replaced incus interposition in cases of incudostapedial discontinuity. However, for large interruptions or more delicate defects (e.g., lesions of the stapes suprastructure), an interposition with an autograft or allograft is still performed or a prosthesis (if necessary stabilized with hydroxyapatite) is used to bridge the gap.

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