Reply to letter to the editor: “Is balloon osteoplasty attractive or questionable treatment for Hill-Sachs lesions?”

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Dear Editor,

We appreciate the important annotations of the readers and agree with them that the treatment regime of Hill-Sachs lesions is diverse and therefore difficult. In our feasibility study, we evaluated the use of balloon osteoplasty as a new treatment option in a cadaver model [1]. We have considerable experience with the kyphoplasty system in the treatment of spinal compression fractures and tibial plateau fractures [2]. Herein we discuss five points addressed by the readers.

However, our experience in treating Hill-Sachs lesions with this method is limited to the cadaver study described. But when transferring data and experience to daily clinical life we would strongly recommend performing an MRI—as suggested by the readers—prior to surgery (point 1). An MRI with the suggested STIR sequence enables the detection of fresh Hill-Sachs

lesions and concomitant injuries such as Bankart lesions or lesions of the long biceps tendon, e.g. SLAP lesions [3].

We believe that fresh Hill-Sachs lesions will be much easier to reduce since fibrotic tissue is easier to repair than old bony consolidated Hill-Sachs lesions. This leads us to the recommendation of early restoration during the first six weeks. We also think that the force required for osteoplasty reduction is lower at this earlier stage and therefore the risk for leakage or joint fracture limited.

(Point 2) We have tried several custom-made instruments ranging from a curved instrument to the cannula we used in the publication. We have performed all restorations by the entry point at the greater tuberosity as we believe that this entry point is comfortable to reach and enables a restoration of Hill-Sachs and reversed Hill-Sachs lesions. It would be desirable to have an instrument with a balloon expanding to the front, but so far various companies have not been in the position to adopt or develop new instruments to our specifications. Nevertheless, our custom-made instruments worked well and we could achieve an almost anatomical reduction of the fractures in all cases.

(Point 3) The exposure to radiation ranged between 60 and 90 seconds.

(Point 4) We used a standard kyphoplasty cannula and adopted it to our specifications. For osteoplasty in humeral heads we think that a set of different angulated, fenestrated cannulas would be very helpful since the circumference of humeral heads varies. We fenestrated the instrument to have a “directed balloon” for positioning under the defect. The costs of our custom-made instrument were equal to the standard kyphoplasty system.

(Point 5) We thank you for this valuable comment. It would be desirable to reconstruct the joint almost anatomically,

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bearing in mind that the aim of the balloon osteoplasty is not reconstruction of the cartilage but avoidance of recurrent instability due to engaging Hill-Sachs lesions. Future research is needed in this field to find the ideal solution for augmentation—whether it is cancellous bone or bone cement. If using the latter, one would have to be sure to use the cement at a semi-solid stage to avoid leakage to the joint.

All in all we believe our technique to be an important step in the minimally-invasive treatment of Hill-Sachs lesions. We appreciate the comments of the authors and are looking forward to transfer the experience of our cadaver study to the clinical situation. Further clinical studies covering this topic will follow in the future.

With kind regards,

Gunther H. Sandmann

References

1. Sandmann GH, Ahrens P, Schaeffeler C, Bauer JS, Kirchhoff C, Martetschläger F, Müller D, Siebenlist S, Biberthaler P, Stöckle U, Freude T (2012) Balloon osteoplasty—a new technique for minimally invasive reduction and stabilisation of Hill-Sachs lesions of the humeral head: a cadaver study. *Int Orthop* 36 (11):2287–2291
2. Ahrens P, Sandmann G, Bauer J, König B, Martetschläger F, Müller D, Siebenlist S, Kirchhoff C, Neumaier M, Biberthaler P, Stöckle U, Freude T (2012) Balloon osteoplasty—a new technique for reduction and stabilisation of impression fractures in the tibial plateau: a cadaver study and first clinical application. *Int Orthop* 36(9):1937–1940
3. Spiegl UJ, Beisse R, Hauck S, Grillhosl A, Bühren V (2009) Value of MRI imaging prior to a kyphoplasty for osteoporotic insufficiency fractures. *Eur Spine J* 18(9):1287–1292