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Authors' Reply

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Authors' reply

T Hampton[1,2], J Allan[1,3], D Pearson[1,3], H Emerson[1,4], G H Jones[1,2], M Junaid[1,4], T Kanzara[1,5], A S Lau[1,3], R Siau[1,2], S P Williams[1,6] and M D Wilkie[1,2]

[1]Mersey ENT Trainee Research Collaborative, Liverpool University Hospitals NHS Foundation Trust, [2]Department of ENT Surgery, Liverpool University Hospitals NHS Foundation Trust, [3]Department of ENT Surgery, Wirral University Teaching Hospital NHS Foundation Trust, Birkenhead, [4]Department of ENT Surgery, Warrington and Halton Teaching Hospitals NHS Foundation Trust, Warrington, [5]Department of ENT Surgery, Mid Cheshire Hospitals NHS Trust, Crewe and [6]Department of ENT Surgery, Countess of Chester Hospital NHS Foundation Trust, Chester, UK

Dear Editors,

We thank Heng and colleagues for their interest in our study[1] and for the three main points raised in their letter to the Editors.

Firstly, the use of crude assessment of patient-reported symptom improvements rather than the utilisation of any symptom assessment tools has been scrutinised. Whilst we agree that such an approach would have added value and certainly would have represented a more robust assessment of subjective outcomes, the retrospective nature of the dataset derived from multiple institutions hindered this, and indeed is acknowledged in the discussion section of the paper.

Curiously, Heng *et al.* have recommended the Dysphagia, Regurgitation and Complications Scale scoring tool developed by their senior author, first published in 2015,[2] the chronology of which precluded its use in our study. This tool was initially developed using only retrospective data. The definitions in the tool also appear to change between the initial paper (where complications are defined as cough and aspiration, and graded with numerical frequency analogue scales ranging from 0 to 4)[2] and subsequent use (complications graded from 0, representing no complications, to 2, representing recurrent chest infections and unintentional weight loss).[3]

Our paper cites the Eating Assessment Tool 10 ('EAT-10') score as a preferred tool, first published in 2008, as this has been validated in patients with Zenker's diverticulum, showing excellent internal consistency, test–retest reproducibility, and criterion-based validity, both during initial development[4] and in further studies.[5] To our knowledge, no studies have yet performed pre- and post-operative validation of these tools using videofluoroscopic swallowing studies.

Secondly, the issue of defining technical and clinical success has been raised. For clarity, procedures were deemed to have been technically successful where the procedure was performed and not abandoned, which constituted one of our audit standards (84 per cent in our series), whereas clinical success was defined as the patient reporting a subjective improvement in symptoms, again one of our audit standards (83 per cent in our series). As discussed above, unfortunately the latter was obtained through rudimentary assessment rather than through any validated patient-reported outcome measure.

Heng *et al.* also touch on the issues of symptom recurrence and follow-up duration. It is important to highlight the distinction between initial symptom improvement (i.e. clinical success of the procedure) and the relapse of symptoms following initial clinical success. The latter is a well-recognised longer-term risk of any intervention for pharyngeal pouch. The symptom relapse rate was reported as 12.8 per cent in a previously pooled analysis of UK data (Leong *et al.*[6]). Long-term follow-up duration was not reported in our study. Although all retrospective cohort studies are prone to selection bias, we believe that the inclusion of tertiary centre data should have enabled us to capture those patients whose symptoms recurred but decided not to represent to their original hospital. We decided not to include variable duration follow-up periods because there was close to a decade between some initial procedure dates, and we perceive that this would have introduced considerable information bias to any conclusions drawn from such sub-analysis.

Finally, our exclusive focus on endoscopic stapling has been criticised. The premise of our study was to audit outcomes of endoscopic pharyngeal pouch stapling specifically against a pre-determined benchmark for this procedure. We acknowledge that there are several alternative endoscopic techniques which have been developed and are widely practised by various specialties internationally. The large majority of pharyngeal pouch surgery in our region is performed by ENT surgeons, mostly through endoscopic stapling, in line with National Institute for Health and Care Excellence (NICE) recommendations.[7] Should this approach fail or not be feasible, typically either a transoral carbon dioxide laser cricopharyngeal myotomy or an external approach will be offered in our region. We did not include these patients because our objective was to study endoscopic stapling.

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Heng *et al.* make specific reference to the technique of flexible endoscopic septal division. The NICE guidelines currently recommend flexible endoscopic septum division only as a second-line approach to treat pharyngeal pouches for patients in whom other surgical treatments are not suitable,[8] owing to the unfavourable perforation rates, quoted at 23 per cent (7 out of 31) and 27 per cent (6 out of 22) in the guideline.[8] In line with this notion, anecdotally the technique has been met with a significant degree of trepidation within the ENT community in the UK because of the perceived risk of perforation. Nonetheless, Heng *et al.* cite a meta-analysis,[9] reporting improved pooled rates of perforation (4.8 per cent) and other outcomes that correlate closely with the audit standard we used. However, among the 20 included papers, 4 included flexible endoscopic septum division performed under general anaesthesia, and 9 studies varied the degree of sedation depending on patient factors.[9] This clouds interpretation for clinicians seeking to understand the suitability of flexible endoscopic septum division for frail patients.

We agree with Heng *et al.* that regurgitation can be a particularly disabling symptom even in the absence of dysphagia. A single comprehensive assessment tool could provide useful objective measures to quantify the severity of symptoms pre- and post-procedure. This should be utilised as part of a wider multidisciplinary service that seeks to evaluate Zenker's diverticulum patients from multiple points of view, including that of speech and language therapy and gastroenterology.

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