Sensitivity and specificity of the split light reflex in the diagnosis of early retraction of the tympanic membrane

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Introduction
It is difficult to reliably diagnose the early stages of retraction on a purely clinical basis. This is of particular importance where a diagnosis needs to be made in a setting, such as in primary care or a clinical dataset, where tympanometry is not always available. Although a split light reflex is sometimes used clinically, it has not been shown to be of definite diagnostic value.

Methods
Digital photographs were taken of the tympanic membrane of fifty sequential ears for which a type C tympanogram had been recorded and fifty ears for which a type A tympanogram had been recorded. Each photograph was cropped to an area that incorporated the light reflex only. Three otologists examined each image and recorded the status of the light reflex as split, not split or ‘unable to determine’.

Results
The sensitivity of the split light reflex in diagnosing mild retraction of the tympanic membrane ranged from 83% to 87% with a ‘majority value’ sensitivity of 91%. The specificity ranged from 84% to 98%. The positive predictive value ranged from 84% to 90%. The Krippendorff’s alpha statistic for inter-rater reliability between all three raters was 0.61

Conclusions
The split light reflex is a sensitive and specific sign in the diagnosis of a mildly retracted tympanic membrane. This finding has important implications in the construction of a reliable system for the staging of retractions of the pars tensa.