



ORAL PRESENTATION

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# CO<sub>2</sub> laser myringoplasty using handheld waveguide

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## Introduction

Eustachian tube dysfunction is very common and is the predominant cause of otitis media with effusion. Negative middle ear pressure generated by Eustachian tube dysfunction can cause deformation of the collagen layer in the ear drum. Collagen becomes stretched and loses its orderly array. Over time, deep retraction pockets form. If left untreated, the tympanic membrane becomes prone to cholesteatoma formation. CO<sub>2</sub> laser energy interacts with collagen and causes it to return to its natural configuration.

## Objective

To describe and review our results treating tympanic membrane retraction pockets using laser myringoplasty with a novel hand-held flexible photonic band gap fiber CO<sub>2</sub> laser.

## Methods

A hand-held flexible fiber CO<sub>2</sub> laser system (Omniguide BeamPath) was used to treat tympanic membrane retraction pockets. The fiber tip was held approximately 3mm from the membrane surface producing a spot size of 570 microns at the setting of 2 watt per 100 millisecond pulse. Pulses were administered until the desired level of membrane contraction was achieved. A tympanostomy tube was then placed in the affected ear.

## Results

We reviewed our results with this procedure on 22 patients (40 ears). The average pre-operative air bone gap (ABG) pure-tone average (PTA) was 15 dB. The average post-operative ABG PTA was 6 dB ( $p=0.002$ ). All patients had satisfactory contraction of the atelectatic segment. There were no adverse events recorded.

## Conclusion

Laser myringoplasty using the Omniguide hand-held flexible fiber CO<sub>2</sub> laser provides immediate hearing improvement and eardrum contraction. Long-term results are pending.

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