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## Comparison of rigid versus flexible balloon catheters under image guidance navigation in transnasal dilation of the eustachian tube: A cadaver study

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**Objective:** To compare the feasibility and safety of rigid versus flexible catheters in Balloon Dilation of the Eustachian Tube (BDET) and evaluate the accuracy and usability of Image Guidance Navigation in BDET utilizing flexible wire technology.

**Methods:** Transnasal BDET was performed on eight Eustachian Tubes (ET) (four cadaver heads) under Image guidance. Utilizing image guidance navigation one flexible two rigid catheters were introduced into each ET under direct endoscopic visualization, then inflated with contrast material to a pressure of 12atm, the catheter was then secured and Computed Tomography (CT) performed. Both the CT images as well as the navigation recordings were reviewed to evaluate if inadvertent penetration into the surrounding soft tissue occurred and determine if navigation of BDET was safe and reliable.

**Results:** The flexible balloon catheter was able to safely cannulate all eight ET, however both rigid balloon catheters failed to stay within the ET in four out of eight procedures, penetrating the surrounding soft tissue. Both CT findings as well as middle ear examinations demonstrated that flexible navigation was able to reliably in determine the catheter position within the ET.

**Conclusion:** This study demonstrated flexible balloon catheters can reliably transverse the cartilaginous ET, however significant caution needs to be used when utilizing rigid balloon catheters as they have the tendency to penetrate into the soft tissue surrounding the ET. Navigation of BDET via a flexible guide wire was also shown to be reliable and accurate in demonstrating the course of the catheter through the ET.

### Biography

Marc Dean is a board-certified Otolaryngologist, who graduated from Baylor University with a bioinformatics and went on to graduate from Texas Tech Health Science Center with a degree in medicine. He completed his residency at Louisiana State University Health Science Center in Shreveport, as well as his fellowship in Otorhinology under Gale Gardner and Fred Stucker. He currently practices in Fort Worth, Texas, focusing on both otologic and rhinologic disorders. He also serves as Chairman of Vitruvio Institute of Medical Advancement (VIMA), a nonprofit research institute, as well as holds clinical faculty positions at both TTUHSC and University Health Shreveport.

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