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Sounds towards the tympanic membrane

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The acoustic coupling of the hearing aid to the outer ear is well-known as one of the most important factors for its performance. Therefore, appropriate impedance matching, venting and filtering are considered as state-of-the art of modern hearing aid fitting. Nevertheless most development and fitting resources went into hearing aid hardware and software in the past. This trend has been reversed by the rediscovery of open fittings made possible by novel feedback suppression algorithms. Totally open fittings using either off-the-shelf silicone eartips or individual open earmolds in conjunction with micro tubings became accessible for the majority of hearing aid candidates. This trend also initiated new developments in ITC venting, e.g. specially shaped venting systems or IROS solutions aiming at optimization of the vent dimensions. Whereas open BTE fittings have proven to be a major step forward in terms of wearing comfort and sound quality open ITC solutions did not make this breakthrough yet. Recently most manufactures introduced devices with external receivers combining the benefits of open solutions with broader frequency response, fewer resonances, and possibly lower gain requirement. Furthermore, it is frequently argued that the extended distance between microphone and receiver would create less feedback. These advantages are compromised by the fact that external receivers may have a higher repair rate and are unsuitable for small ear canals. Today open products with external receivers are fairly successful on the market, but it remains to be seen whether this is due to the benefits of external receivers or just a bonus for the most modern technology. Hearing aids with external receivers actually have the potential to provide more gain in the high-frequency range beyond 6 kHz. Clinical studies, however, have shown that it is difficult to prove significant extra benefit due to high frequency emphasis. Probably specific candidature criteria have to be taken into account.

