

discharge or granulations in examination or a need for revision surgery) in 16% (5) patients. We did not have enough information to determine the Nadol grading for 5 patients. 35% (14) did not practice water precautions of whom only one experienced a vestibular effect. 10% (4) used a hearing aid, one had a Bone Anchored Hearing Aid and one had a Bonebridge.

Conclusions: CWDM is reserved for aggressive or recurrent cholesteatoma. We believe that the following are essential for the achievement of a dry care free cavity with a low recurrence rate and rare vestibular effect: evacuate all mastoid air cells, avoid overhangs of the tegmen, drill the sinudural angle, amputate the tip, lower the facial ridge, drill down the inferior part of the tympanic bone, smoothen obliterate the mastoid cavity with bone pate, perform an adequate miatoplasty and use an antiseptic dressing like BIPP. Most patients continue to practice water precautions although the cavity is dry and do not accept hearing rehabilitation with a hearing aid or a bone anchored hearing device.

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The application of surgical simulation system in the middle ear surgery

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Learning Objectives:

Objectives: To probe into the characteristics and applications of the Voxel-Man TempoSurg in middle ear surgical procedures.

Methods: 40 middle ear surgical procedures were selected with videos of the routine surgical procedures reserved. Then simulated procedures were done as the real procedures in the operation. Depending on the different viewing angles, the above cases were classified as three methods: A. Different types of middle ear surgery; B. Different types of mastoid pneumatolysis. C. Different surgical methods (canal wall up or canal wall down). The appearances of the important structures were recorded and compared both in the real procedures and the simulated procedures.

Results: 1. For different middle ear surgeries, the simulator can truly reflex the surgical situations in diseases mostly with bone structure lesions; 2 Recognitions of anatomic structures are easier in better pneumatic mastoids. 3. Recognitions of anatomic structures are almost the same in different procedures with different surgical methods.

Conclusion: Otologic simulator can be used in difficult middle ear surgeries mainly with bone lesions and it can be used in pre-operation and path planning to increase the safety of the surgery.

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Cone-Beam CT compared to Multi-slice CT for the diagnostic analysis of conductive hearing loss, a pilot study

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Learning Objectives: Image quality is largely dependent on the pilot study parameters that have been used during scanning. Additional research will be performed to optimize the parameters for CBCT (and the MSCT) in imaging of the temporal bone. Thereafter, a new comparison in optimal settings between the NewTom 5 G (CBCT) and MSCT will be conducted.

Introduction: Multi-slice CT (MSCT) is commonly used as a diagnostic tool for patients with a conductive hearing loss. Recent studies indicate that Cone-beam CT (CBCT) may be used as a low radiation dose alternative for temporal bone imaging. However, limited data are available on the image quality of CBCT compared to MSCT (Casselmann, 2013; Theunisse, 2015). The aim of this study was to compare image quality and effective radiation dose of CBCT with MSCT.

Methods: Three human cadaver heads (six ears) were imaged on three CBCT scanners (NewTom 5G, Accuitomo 170 3D, PaX-Zenith 3D) and one MSCT scanner (Discovery CT750 HD Freedom Edition). Visibility of sixteen anatomical landmarks of the middle and inner ear were assessed by two observers on a 4-point Likert scale. Total scores of all landmarks, scores of subgroups (such as the ossicular chain) and individual landmarks were compared. Furthermore, effective radiation dose of the protocols was measured and compared.

Results: Image quality of MSCT and the NewTom 5 G were assessed as superior to the Accuitomo 170 3D and Pax-Zenith 3D ($P < 0.05$). No significant differences in image quality were found between the MSCT and the NewTom 5G. Similar results between scanners were found when comparing scores of the ossicular chain.

It seems that optimizing the scan settings could further improve the image quality of the NewTom 5 G CBCT.

Effective radiation dosages of CBCT protocols were around 25 percent of the clinical MSCT dose.

Conclusion: Image quality of the NewTom 5 G seems comparable to MSCT when scanning the temporal bone with special attention to the ossicular chain and conductive hearing loss landmarks. Furthermore, CBCT imaging results in a considerably lower effective radiation dose compared to MSCT.