To Whom It May Concern

Regarding the use of Ambu Neuroline Cup electrodes in CT scans.

The Ambu Neuroline Cup electrode is designed for clinical EEG, EP and PSG examinations.

**Device materials:** The cup is made of polycarbonate and coated with silver/silver chloride. There is metal in the connection between the cup and the wire, and on the wires.

In some clinical circumstances, patients being monitored via EEG cups have to undergo CT scans. In these cases, it is desirable that the electrodes can be left in place while the CT scan procedure is performed.

**CT scan technology:** X-ray computed tomography, also computed tomography (CT scan) or computed axial tomography (CAT scan), is a medical imaging procedure that utilizes computer-processed X-rays to produce tomographic images or 'slices' of specific areas of the body.

**Literature:** It is known that metal can produce artifacts in the CT and PET scanners. The most discussed cases are artifacts generated by metal hip joints (1) and dental fillings. Artifacts generated by metal EEG electrodes have also been studied (2). Algorithms are constantly developed aiming to reduce metal artifacts on CT scans (3). The study of Lemmens et al (2) investigated the impact of EEG electrodes on the visual quality and quantification of PET images in neurological PET/CT examinations. The scans of 20 epilepsy patients with EEG monitoring were used. The CT data were reconstructed with filtered back-projection and with a metal artifact reduction algorithm. Results showed that EEG electrodes gave rise to local hot spots outside the brain and a positive quantification bias in the brain. However, when diagnosis was made by mere visual assessment, the presence of EEG electrodes did not seem to alter the diagnosis.
Use of Ambu cup electrodes on CT scan: From the safety point of view, there is no risk to the patient or the user during the use of Ambu Neurolne ECG cups during a CT scan. The hot spots mentioned in Lemmens study (2) would not be generated under Neurolne cups, since they do not contain metal. However, artifacts cannot be discarded due to metal parts in the joint between the cable and the cup, and also as part of the cable. Moreover, the device is not completely translucent and parts containing metal will be fully visible. The use of Neurolne ECG cup during a CT scan shall always under the indication and responsibility of the medical professional.

Yours sincerely

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Literature