

**An Alternative to Collodion**  
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In 1996, at the Westchester County Medical Center in Valhalla, New York, my coworker Yvonne Case and I were struggling with collodion application for long-term EEG/video monitoring of children. The difficulties of proper ventilation, applying and removing electrodes, and other problems accompanying collodion, especially skin breakdown in infants, led us to start using a relatively soft conductive paste as a conductor and a thicker one as the glue. The results were amazing!



FIG. 9. EC2® Genuine Grass Electrode Cream on a small piece of gauze to be placed over the electrode.

Our procedure is as follows: Prepare the skin as usual. Cut gauze into 1 inch by 1 inch squares. Fill a 10 mm cup electrode with a conductive paste [we used Ten20® Conductive Paste (Weaver and Company, Aurora, CO, USA), but Elefix® (Nihon Kohden America, Foothill Ranch, CA, USA) could be used as well], just enough to fill the cup (as it will spread out beyond the edge a little when the electrode is applied, which is fine). Squeeze a bit of paste [we used **EC2® Genuine Grass Electrode Cream (Grass Technologies, An Astro-Med, Inc. Subsidiary, West Warwick, RI, USA)**] on a gauze piece; just enough to cover the electrode (Figure 9). Hold down the gauze over the electrode for about 10 seconds. This method does not actually "mix" conductors since there is almost no contact between the two. One conductor is inside the electrode cup and the other conductor is on the outside and not serving any conductive function. The impedances of the electrodes should be less than 5,000 Ohms and balanced. After the impedances are found to be satisfactory, apply a piece of 3M™ Micropore™ Microporous Hypo-Allergenic Surgical Tape (3MT™, St. Paul, MN, USA) over the electrodes on the forehead, the temples, and posterior temporal electrodes, e.g., F7, Fp1, Fp2, F8, T1, and T2 (Figure 10). Now you are ready to wrap the head. We use two 4 inch self-adhering, conforming bandages. We wrap the head with the bandages and tape the head wrap for security and then place a net which is very convenient especially in children.



FIG. 10. Tape being placed over the frontal and temporal electrodes.

We have found this method to be fast, easy, and convenient with no collodion odor, no skin breakdown, and easy electrode removal with just water. We have monitored patient with all types of seizures, including up to three generalized tonic-clonic seizures, as well as during violent postictal states. The electrodes have remained secure. On uncooperative adults and autistic children, the electrodes have been stable with low impedances for three to four days without any repairs. On other occasions, two or three electrodes have been reapplied when impedances rose above 5,000 Ohms. These repairs were also quick and easy. This method is also for patients with an allergy to collodion as discussed in Maxine Wilson-Young's article "Technical Tips: Non-Collodion Long-Term EEG Monitoring Necessitated by an Allergy to Collodion" (Am J EEG Technol 1995; 35:303-304). I introduced this method to my colleagues in Dallas, Texas, Newport Beach, California, and Phoenix, Arizona with great acceptance by the technologists and the epileptologists.

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