Magnetic rubber dam construction

Natural rubber sheets (Hygenic Dental Dam, Coltene Whaledent) with a thickness of approximately 0.15 mm and a size of 152 x 152 mm were used to manufacture the rubber magnetic dam. A sheet of natural rubber latex was cut into four 76 x 76 mm squares, creating three overlapping squares, each representing the base, i.e., the layer on which the neodymium-iron-boron powder rests, the inner cover separating the magnetic powder from the tissue to be regenerated, and an outer cover consisting of a double layer of latex sheets separating the magnetic powder from the gingival tissue. The base layer, placed on a specially prepared plywood support, was heated to a temperature of not less than 90 °C and not more than 140 °C to achieve adhesive properties (soft and sticky consistency even after cooling) to keep the neodymium-iron-boron powder on its surface. Then, the base layer was bonded first to the inner cover on the side where the magnetic powder was located, which was heated by contact with the base to change the physical properties only on one side, and then to the outer cover on the smooth side. In this way, a three-layer device was obtained, in which the base contains the magnetized powder, the inner cover on the smooth side, which comes into contact with the powder, has an adhesion, albeit limited, while the outer cover, which comes into contact with the tissue to be regenerated, finally, on the outer side, which comes into contact with the gingiva and has not been heated, maintains the typical characteristics of the rubber dam on both sides, while adhering to the base thanks to the high adhesive properties it also exhibits on its non-smooth side.