

Department of Prosthetic Dentistry, Skubiszewski Medical University of Lublin

PRZEMYSŁAW LESZCZ, AGNIESZKA ZWOLAK, ANNA SZABELSKA,
ZBIGNIEW LESZCZ, JANUSZ KLEINROK

*Clinical aspect of modern biological restorations: galvano-forming
of permanent prosthetic restorations – case report*

Galvano-forming is modern technique used to make esthetic permanent prosthetic restorations displacing lost-wax method. The replacement of wax by metal produces marginal tightness of 70 μm . The technology satisfies esthetic demands, ensures beneficial and long-term effects. Galvanic products are characterized by high biocompatibility, excellent marginal tightness (tightness of ca 18 μm), pulp protection, chance to apply traditional neutral zinc-phosphate cement and high esthetic quality. The technology of galvano-forming has originated from general galvanization technique. The process of galvano-forming is achieved by electrolytic breakdown of the electrolyte, i.e. gold sulphate: conducting electricity model post is connected to the positive cathode and gold ions collect on the cathode (i.e. the model post). The thickness of the layer thus formed depends upon the duration of the process and can reach up to 800 μm . That restorative method has been used since 1986. In 1990 C. Haffner developed Helioform HF 300 system, introduced into the market in 1993, which has been in use up till now (2, 4).

Biocompatibility. In the process of galvanization, gold 99.9% purity is precipitated. It is a mono-metal, not an alloy that guarantees the arrest of corrosion in the oral environment. Margins of pure gold do not undergo oxidizing (bluing) thus harmful ions are not secreted. The gum sticks to the crown margins closely. There are no signs of gingival intoxication with metal ions.

Esthetics. The construction of ca 0.2 mm thick leaves a lot of space to reconstruct full range of shades of the ceramic mass. In addition to that, the color of pure gold provides AN excellent base, which ensures no gray discoloration will create (1, 2, 4).

Technique of crown fabrication. From the basic model dental technician produces a single life-size (1:1) pole from silicone and special modeling component. After hardening a hole is drilled below the tooth preparation margin and a thin electrode inserted. Next, the entire surface of the preparation is silver varnished and connected to the tin electrode. During the next stage the poles are placed for galvanization (10–24 h). Once the plastic cover has been removed, the silver varnish is etched from inside of the crown. The edges of the crown are cut at the line of preparation. The following stage is sandblast cleaning and painting the crown with a bonder, which is a mixture of pure gold and ceramic particles. Once the crown has been painted with a bonder layer it is coated with porcelain or composite material. The most important advantages of the crowns fabricated by this method are the following: 1) little preparation of the hard dental tissues, 2) high precision and fit of the restoration, 3) possibility to use biologically neutral phosphate-phosphate cements, 4) only biocompatible materials are used (ceramic and pure gold without binding oxides), 5) considerable thickness of the ceramic layer, 6) golden color of the framework (there is no fear of gray discoloration of the gums), 7) wide range of recommendations (front and lateral teeth), 8) cost-effective fabrication (2).

CASE REPORT

The 22-year-old female patient, was seen for missing tooth buds 12 and 22. After orthodontic restoration of the area (Fig. 1), she was offered implants to replace missing teeth and prosthetic restoration by galvanofarming. After the implant screws have healed individual bonders were made of gold alloy ORLITZ. Then in the technical laboratory galvanic cap was fabricated in Heliiform HF 300 (Fig. 2). The crown surface was painted with bonder and coated with porcelain VITA OMEGA, tinted D2 color (shade selection VITA) (Fig. 3). During the next appointment the crown was fitted with glassionomer cement (Fig. 4, 5) (1, 3, 5).



Fig. 1. Orthodontic restoration of the area



Fig. 2. Heliiform HF 300

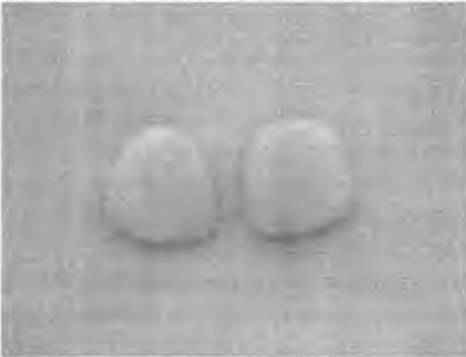


Fig. 3. Crown coated with porcelain VITA OMEGA D2 color



Fig. 4. Crown before fitting



Fig. 5. Crown fixed with glassionomer cement

CONCLUSIONS

High esthetic properties of the crown. Biocompatibility. Excellent marginal tightness. No allergic response. Durability. Warm colour of the crown. Preparation sparing hard dental tissues. That technique of prosthetic restoration offers high esthetic properties and is recommended by dental surgeons. However, it is very expensive for the patient, which greatly limits its application.

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SUMMARY

Galvano-forming is modern technique used to make esthetic permanent prosthetic restorations displacing lost-wax method. The replacement of wax by metal produces marginal tightness of 70 μm . The technology satisfies esthetic demands, ensures beneficial and long-term effects. Galvanic products are characterized by high biocompatibility, excellent marginal tightness (tightness of ca 18 μm), pulp protection, chance to apply traditional neutral zinc-phosphate cement and high esthetic quality.

Kliniczny aspekt wykonania nowoczesnych protez biologicznych:
galwanoforingu protez stałych, opis przypadku

Galwanoforingu jest nowoczesną technologią, odgrywającą w ostatnich latach coraz większą rolę w wytwarzaniu estetycznych uzupełnień stałych i wypierającą metodę traconego wosku, w której w wyniku zamiany wosku na metal uzyskiwano szczelność brzeżną 70 μm . Technologia ta spełnia wymogi estetyczne, zapewnia osiągnięcie korzystnych i długotrwałych efektów. Główne cechy charakteryzujące wyroby galwaniczne to wysoka biokompatybilność, idealne dopasowanie brzeżne (szczelność korony rzędu 18 μm), ochrona miazgi, możliwość cementowania tradycyjnym obojętnym cementem cynkowo-fosforanowym oraz wysokie walory estetyczne.