

History of dental impressions

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Abstract

Dental impression provides an accurate layout of edentulous alveolar ridge or teeth upon which a denture, crown, inlay, or other prosthodontic devices can be built. Impression-taking has a 360-year-old history.

Keywords: prosthodontics, crown, bridge, denture, edentulous, impression-taking

The first documented case for an impression comes from the Royal Prussian court dentist to the King of Prussia, Phillip Pfaff (1713-1766), in 1756 (1). Pfaff took impressions with beeswax, one-half arch at a time, and obtained cast models with plaster of Paris. But wax impressions were easy to deform and needed rigid support. In 1820 Christophe Delabarre (2) invented the tray for impressions. Still, wax impressions could not deal with high-precision areas. In 1844 E.J. Dunning, an American dentist, tried to resolve a problematic edentulous case with flabby mucosa that was particularly ill-suited for wax impression and came up with the plaster of Paris impression (3). It was apparent that a detailed impression needed a better-supporting tray. In 1861 B.W. Franklin split the impression, first taking a preliminary wax impression and then removing 1/8th of an inch evenly, taking a second final plaster impression (4). The functional impression using muscle molding was only three years away in 1864 in the hands of Johann Joseph Schrott (5). The only impression material for the next 50 years was wax, plaster, gutta-percha, and synthetic resin.

A breakthrough came in 1925 when a Viennese physician, Alphonse Poller (6), invented reversible hydrocolloid agar-agar impression material. That discovery led William Wilding 10 years later, in 1935, to a better hydrocolloid, sodium alginate (7). When raw material for agar-agar, algae on the beaches of Japan dwindled, in 1955, the British S.L. Pearson from the University of Liverpool came up with the silicone rubber-based impression material (8). The last 65 years have seen additional impression materials introduced, including several that were polysulfide and polyether-based (1965, 1988) and light cured-elastomers (1988) (7). But the digital impression was the most critical development of the last three decades. Initially conceived in the mid-1980 as a scanner, it finally took off in the new millennium's first decade.

Timeline for impression-taking materials

- 1711 First use of wax model - Mattheus Purmann
- 1756 First beeswax impression - Phillip Pfaff
- 1756 First plaster model and first centric relations registration with wax - Phillip Pfaff
- 1820 First tray to hold impression material - Christophe Francois Delabarre
- 1844 First plaster impression for complete denture E.J. Dunning
- 1848 Gutta-percha is used as impression material - GFJ Colburn and WP Blake
- 1856 Introduction of the thermoplastic Stent material - Charles Stent
- 1861 Double impression, wax primary, and plaster final - BW Franklin
- 1864 First functional impression - Johann Joseph Schrott
- 1924 Alphons Poller, invents agar-agar, reversible hydrocolloid impression
- 1930s The zinc oxide eugenol-based impression material - AW Ward and EB Kelly.
- 1935 Sodium alginate impression invented - William Wilding
- 1950s Polysulfide impression materials
- 1955 Elastic, rubber-base impression - SL Pearson
- 1965 Polyether impression materials introduced
- 1980 Digital scanners introduced to dentistry = first digital impression
- 1988 Light-cured elastomers (Polyether urethane dimethacrylate)
- 2000s Digital impressions were widely introduced

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