

THE TRADITIONAL WORKING METHOD IN THE FIXED PROSTHETICS - THE ACCU-TRAC SYSTEM -

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Abstract: The traditional physical and analogue working model is obtained through different technologies in the technician's laboratory, based on a conventional chemical-manual impression of the prosthetic field. On the working model, we will make the template of the future prosthetic part.

The working model with mobile and detachable parts can be classified as follows: a) sectioned models with pines, which use a metallic cylinder-conical swivel; b) sectioned models without pin, which use a prefabricated conformer made out of plastic, which permits the obtainment of mobile dental dies without swivels. The ACCU-TRAC system is an efficient one (fast and cheap) and precise in the accomplishment of models with dental dies which eliminate the pines, being indicated in fixed and composed prosthetics.

Keywords: working model, mobile dental dies without a swive, ACCU-TRACK system

Rezumat: Modelul de lucru tradițional fizic și analog este obținut prin diferite tehnologii în laboratorul de tehnică dentară, pe baza unor amprente convenționale chimico-manuale ale câmpului protetic. Pe modelul de lucru se confecționează macheta viitoareii piese protetice. Modelele de lucru cu bonturi mobile detașabile sunt clasificate în: a) modele secționare cu pinuri, care utilizează pivoturi metalice cilindro-conice; b) modele secționare fără pinuri, care utilizează un conformator prefabricat realizat din material plastic ce permite obținerea unor bonturi mobile fără pivot. Sistemul ACCU-TRAC este un sistem eficient (rapid, economic) și precis de realizare a modelelor cu bonturi mobilizabile care elimină pinurile, fiind indicat în protezarea fixă și compozită

Cuvinte cheie: modelul de lucru, bont mobil fără pivot (pin), sistemului ACCU-TRAC

INTRODUCTION

The traditional physical and analogous working model is obtained through different technologies in the technician's laboratory, based on a conventional chemical-manual impression of the prosthetic field.

The virtual model is obtained on the basis of an optical 3D impression of the prosthetic field, the data being stored and reported by a computer.(1)

Classifying criteria of the traditional method in fixed

prosthetics.(1,2)

a. *by the material used*

1. Gypsum

- Gypsum – class III (Moldano, Begodur, Duralit, Vel-Mix Stone etc);
- Plaster of Paris – class IV (Extrahart, Stone);
- Cement.

2. Metal

- on the galvanic base;
- easy fusionable alloys;
- melted and pulverized alloys;
- amalgam.

3. Polymer

- acrylic resins;
- polyurethanic resins;
- epoxydic resins;
- epimimic resins.

4. Composite materials

5. Silicones

b. *by the technology used for accomplishment*

- moulded: gypsum, plastic materials, easy fusible alloys;
- stuffed: cement (FOZ, silicium), amalgam;
- galvanized and pulverized from metals/alloys;
- through the burning of ceramic masses.

c. *by the possibility to mobilize the dental dies*

- with fixed dental die;
- with mobile dental die.

d. *by the purpose*

- documentary model;
- study model or diagnostic model;
- working model (for unidental prosthetics, RPF etc.);
- duplicate model.

Working model

On the working model, we make the template for the future prosthetic part. The model has a base which permits its assembly into a simulating intermaxillar instrument.

The conditions which need to be fulfilled (1,3)

- giving the details of the dental field back, the worked teeth, the marginal limit of the preparation, gingival groove, the papilla gums, the adjacent teeth to the prepared teeth, the toothless zones, the teeth from the opponent hemiarch; the most used material for

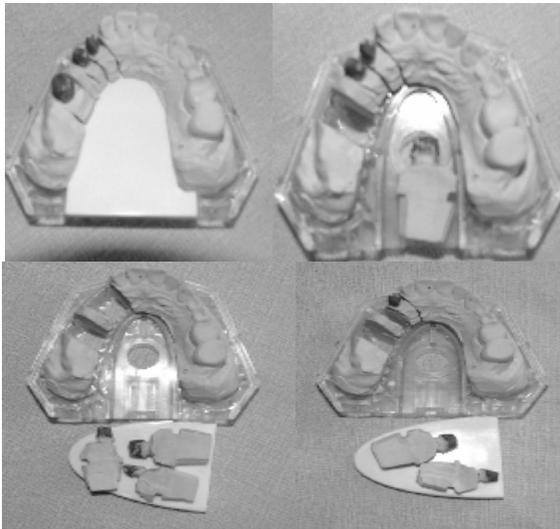
CLINICAL ASPECTS

- confectioning the working model is type IV Gypsum;
- the integrity of the model should not be damaged until the accomplishment of the prosthetic part;
- the possibility of mobilizing the dental dies in order to allow access to the marginal area of the preparation;
- the unique positioning of the dental dies;
- the parallelism of the dental dies;
- the possibility of duplicating the working model.

Classification of the working model with mobile detachable dental dies:

- Sectioned models with pins, which use metallic cylindrical swivels, which are inserted into the mobile dental dies and remain attached through fixed immobility;
- Sectioned models without pins, which use a prefabricated conformer made out of plastic materials, which allows the obtainment of mobile dental dies without swivel. Systems which permits the obtainment of mobile dental dies without swivel: CRACK-WAFER, DI-LOCK, System-TRAY, Model-SPLIT, ZACK, ACCU-TRAC PRECISION DIE SYSTEM, HIGH-TECH etc.(1,3,4)

Picture no. 1. Sectioned model without pins: a. – conformer and sectioned model, before the extraction of the dental die, b.c.d. - the extraction of the dental dies from the monoblock model.



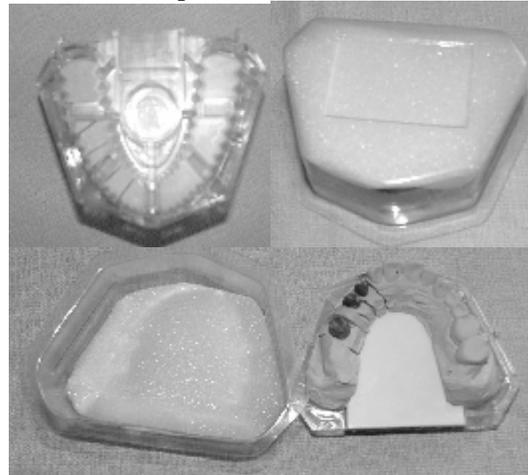
The technique of accomplishing the sectioned working models, without swivels through the ACCU-TRAC system(1)

- The components of the ACCU-TRACK system are: the main device conformer with lateral arms, base and space maintainer.

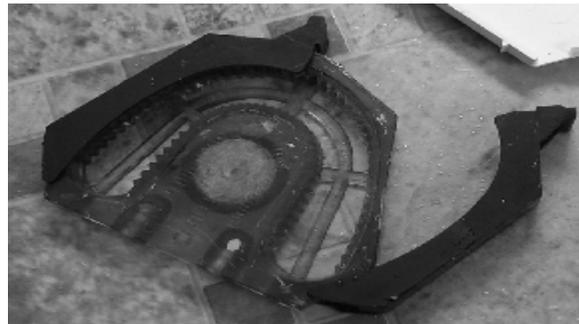
The conformer is made of Plexiglas. It has a canal with embattled border and a rib (with numbers from 1 to 59), which permit the reattachment of the sectioned segments from the working model (the mobile dental die and the other components of the prosthetic field) into the support of a unique position. On the both sides of the main device,

there is a mobile arm which can be mobilized only horizontally. The side arms are made of plastic material, allowing the entire fixing of the mobile dental dies and model.

Picture no. 2. The model transportation is made with a special case which protects the model.

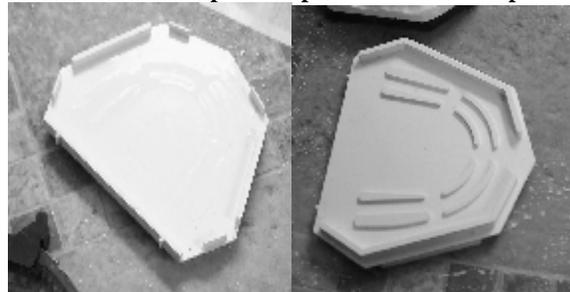


Picture no. 3. Main positioning device: with an open and a closed arm.



The basic plate has a heptagonal shape and is made of plastic masses of white colour. It has 2 faces: a neat superior face, which during the molding process is applied over the basic plate. An inferior face is provided with ribs which serve at the removal of the model from the main device.

Picture no. 4. Basic plate: superior and inferior plates.



The space retainer is made out of semi-rigid green material, which is adapted to the main device base during the assembly into the articulator.

CLINICAL ASPECTS

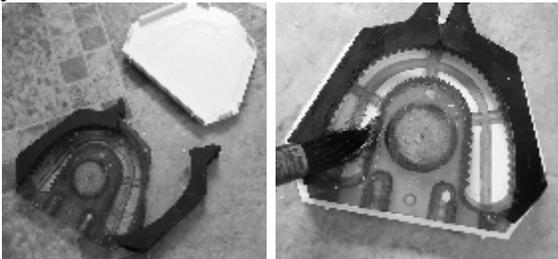
Picture no. 5. Space retainer.



Working stages:

- a. The ACCU-TRACK system's component parts are assembled. The arms are applied on the support and are closed; the basic plate is fixed and the functioning of the system is verified.

Picture no. 6. The assembly of the ACCU-TRACK system.



- b. Preparing the impression. The impression is washed, dried, the borders in excess will be reduced; we mark on the posterior side of the impression, the middle of the crests in the posterior region and the median line in the frontal zone.

Picture no. 7. Preparing the impression.



- c. Preparing the Gypsum. The paste of class IV Gypsum is prepared, for the socket and also for the model.
- d. The Gyps paste is poured into the impression and into the ACCU-TRACK support until we reach the side arms.

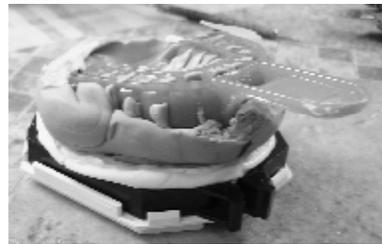
We overturn and centre the impression over the support, so that the line on the posterior part superposes the correspondent lines on the ACCU-TRACK support. The Gypsum in excess will be removed before it becomes harder.

- e. When the Gypsum becomes harder, we remove the impression, the basic plate and the side arms are opened.

Picture no. 8. The pouring of the Gypsum paste into the impression and in the ACCU-TRACK support, up to the level of the side arms.



Picture no. 9. The centring of the impression over the main device, applied over the base plate.



Picture no. 10. Removal of the impression



Picture no. 11. Removal of the white basic plate and the opening of the side arms.



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- f. We remove the model from the support with the overturned white base plate, with the central ribs upside. Over the inferior face of the basic plate, we apply the ACCU-TRAC support and we press uniformly. The model's base is not processed, the edges are rendered neat.
- g. With a blade or a special device type MODEL-CUT for sectioning, we remove the excesses of Gypsum, we divide the mobile dental dies which are parallel to the milled edges.
- h. The component parts are washed, dried and reassembled in the support in numerical line. The model is secured by closing the arms.

Picture no. 12. The model from the support.



Picture no. 13. Sectioning the mobile dental dies.



- i. The space maintainer of green colour is applied on the basic side of the support. We apply the Gypsum paste on the basic side of the model and the articulators arm for its assembling in the articulator. The support is fixed through the articulator's magnet.

Picture no. 14. Assembling the models in the articulator.



Picture no. 15 .The assembly of the ACCU-TRAC system in the articulator.



CONCLUSION

The ACCU-TRAC system is efficient (quick, economical) and precise in the accomplishment of the models with mobile dental dies. The ACCU-TRAC eliminates the pins which need a more laborious technology for the obtainment of models with mobile dental dies, being indicated in the fixed and composed prosthetics.

REFERENCES

1. Bratu D, Nussbaum R. Bazele clinice și tehnice ale protezării fixe, ed. III, Ed. Med. București, 2006.
2. Bratu D. și colab. Materiale dentare, vol.II., Ed. Helicon, Timisoara, 1994;15:37.
3. Popa Sever. Protetică Dentară, vol. II, Ed. Medicală S.A., 2001.
4. Richardson DW, Sanchez RA, Baker PS, Haug SP. Positional accuracy of four die tray systems J Prosth Dent 1991;(66):39-45.
5. Philips RW. Science of Dental Materials, ed. 9, Philadelphia, WB Saunders Co 1991; 135:156.
6. MTD Claudia Arndt, MTD Achim Ludwig, Massimiliano Trombin. Modelele în tehnica dentară, Jurnal internațional de tehnică dentară, Dental Dialogue, ed.1 (6), 2009, p.8:16.

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