

Chapter 2- Impression taking and die preparation

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I. Method of impression taking to the fabrication of die for one-piece type

The impression taking technique for AQB one-piece implant is the same as that for the natural teeth therefore it is a relatively simple procedure. There are instances such as in some combinations of implants with certain diameters or the length of abutment or the parallel nature of the implant body whereby preventative measures for fracture of the abutment is necessary.

[Agar alginate combined impression]

- ① Take impression after establishing a firm interaction between the implant and the bone (usually after two to three months) (Fig. 4-2-1 to 4).
- ② Select a tray with a size so that the sides of the trays do not contact the implant body (Fig. 4-2-5).
- ③ The agar impression agent should be applied mainly to the abutment surroundings (Fig. 4-2-6).
- ④ Complete the impression taking (Fig. 4-2-7).
- ⑤ Modeling material
 1. In modeling material selection for the implant superstructure, the important factors are the hardness and its dimensional stability.
 2. If the blood is smeared on the impression material, rinse and disinfect before application of plaster (Fig. 4-2-9).
- ⑥ The floor of the working model should be constructed with the same modeling material for the finish (Fig. 4-2-10).



Fig. 4-2-1 Implant AQB one-piece type to the left maxillary first molar



Fig. 4-2-2 Single implant case



Fig. 4-2-3 Antagonist teeth



Fig. 4-2-4 Occlusal relationship



Fig. 4-2-5 Impression tray



Fig. 4-2-6 Injection of agar impression material (Aromaloid, GC Co.)

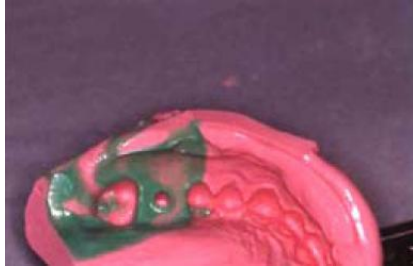


Fig. 4-2-7 Alginate impression material (Aroma Fine DF, Normal set, GC Co.)



Fig. 4-2-8 Fabrication of die, super hard plaster (Fujirock GC) was used. Measure to prevent abutment fracture.



Fig. 4-2-9 Differentiate the use of hard plaster for instances when substances such as blood becomes smeared on the impression agent (New Plastone, GC Co.)



Fig. 4-2-10 Use the same modeling material for the floor to achieve as much dimensional stability as possible.

II. Method of impression taking to the fabrication of die for one-piece T-type

The method is generally the same as that for the one-piece type, but here the rubber based impression agent is used to prevent the abutment fracture.

[Impression technique with rubber based agent]

- ① Take the impression with the impression tray (Fig. 4-1-15)
- ② Construct a working model with hard plaster (Fig. 4-2-16)
- ③ Forming individual tray for abutment impression and custom tray
 1. The outline of the individual tray should be recorded (Fig. 4-2-17).
 2. The thickness of the impression material is evened out by forming wax relief on the cast, and applying room temperature curing resin (Fig. 4-2-18).

3. Form impression by compressing the resin on the impression tray with the usual procedures (Fig. 4-2-19).
 4. Once the tray resin has set, relieve the internal stress by dipping the tray into warm and cold water in alternating manner (Fig. 4-1-20).
- ④ For silicon rubber impressions, employ impression agent with a high viscosity. The abutment is at higher risk of fracturing with a small degree of elasticity (Fig. 4-2-21 a,b).



Fig. 4-2-11 Implant AQB T-type to the right mandibular molar region

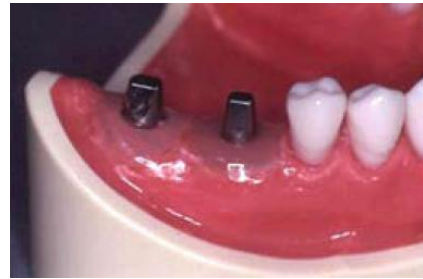


Fig. 4-2-12 Implant AQB T-type to the first and second molars



Fig. 4-2-13 Antagonist teeth



Fig. 4-2-14 Occlusal relationship



Fig. 4-2-15 Impression taking with the net impression tray



Fig. 4-2-16 Working model for the formation of individualized tray and custom tray



Fig. 4-2-17 Recording the outline of the individualized tra



Fig. 4-2-18 The individualized tray was fabricated with Unifast III (GC)



Fig. 4-2-19 The custom tray was fabricated with resin Quicky for impression tray (Nissin Dental Products Inc.)



Fig. 4-2-20 place the tray alternately into warm and cold water to relieve internal pressure



Fig. 4-2-21 a,b Examixfine injection type was employed as the silicon rubber agent

⑤ Fabrication of working model

1. Apply epoxy resin to the abutment site (Fig. 4-2-22)
2. Apply super hard plaster to the remaining space, and form a segmented type working model (Fig. 4-2-23).
3. Take impression of the abutment surroundings with silicon paste, and trim the abutment margin (Fig. 4-2-24).
4. State after the completion of trimming (Fig. 4-2-25).
5. A completed artificial gingival model (Fig. 4-2-26)



Fig. 4-2-22 Polyrock epoxy model material (Metalor Dental, Inc.) was used as a measure for preventing fracture of the abutment



Fig. 4-2-23 A working model was fabricated with New Fujirock model material



Fig. 4-2-24 The margin was trimmed using diamond point



Fig. 4-2-25 State after the trimming



Fig. 4-2-26 Soft tissue moulaghe (Sybron Dental Specialties) was used as the artificial gingiva material

III. Method of impression taking to the fabrication of die for two-piece type

The impression taking technique for AQB two-piece type implant is conducted in the same way as other two-piece types. The techniques comply with both the simple closed tray method as well as the precision open tray methods (Fig. 4-2-27).

[Impression technique with rubber based material]

- ① Take impression once the intactness of the gingivae has been confirmed after the secondary operation. Connect the multi-abutment that corresponds with the implanted fixture, with HEX driver (Fig. 4-2-28).
- ② Take impression for the individual tray (Fig. 4-2-29).
- ③ Construct the working model from the impression tray (Fig. 4-2-30).



Fig. 4-2-27 Once confirming the healing of the gingivae, after the secondary surgery, take impression



Fig. 4-2-28 Place the multi-abutment that corresponds with the size of the buried fixture



Fig. 4-2-29 Close the access hole of the abutment, temporarily, with utility wax or cotton wool for taking the impression with alginate impression tray

Fig. 4-2-30 Be aware of the abutment fracture, particularly with certain parallel orientation of implant

- ④ To even out the thickness of the silicon impression agent, apply relief with use of paraffin wax. The surroundings of the multi-abutment requires a relief space of over 5 mm to secure the space required for pick-up coping.
- ⑤ Preparation of impression taking process for closed tray method (Fig. 4-2-31)
 1. Produce a custom tray (Fig. 4-2-32).
 2. Apply pick-up coping to the multi-abutment groove with elasticity (Fig. 4-2-33).
 3. Place the pick-up coping so that the opening of the impression support faces the buccolabial sides (Fig. 4-2-34).
- ⑥ Open tray impression taking technique
 1. Close the constructed hole with coping-screw using paraffin wax. If the hole is too large, the filling pressure of the impression agent becomes reduced, subsequently affecting the accuracy of the impression (Fig. 4-2-35,36).
 2. Form a hole on the top of the pick-up coping, being cautious to avoid any of the tools touching the coping screw (Fig. 4-2-37).
 3. After the placement onto the multi-abutment, confirm that it is applied without any excess space (Fig.4-2-38).
 4. Trial placement of the custom tray. In the open tray method, the coping screw should be inserted with after softening the wax.
 5. Insert silicon impression agent to the gingivae surrounding the multi-abutment and to the holding portion of the pick-up coping, with syringe designed specifically for this purpose (Fig. 4-2-40 a,b).



Fig. 4-2-31 Apply relief on the cast so that the top of the coping screw is exposed roughly by 1 mm from the tray.



Fig. 4-2-32 Fabricated with tray-type resin
Quicky

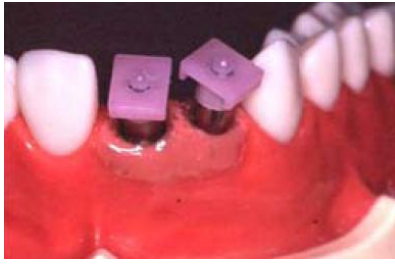


Fig. 4-2-33 The insertion of pick-up coping should be checked with the clicking touch



Fig. 4-2-34 The pick-up coping may become discolored or damaged if incorrectly applied



Fig. 4-2-35 Fabrication of open-tray



Fig. 4-2-36 The hole for the coping screw should not be made unnecessarily enlarged



Fig. 4-2-37 Open a hole on the top of the pick-up coping with a design knife



Fig. 4-2-38 Placement on the multi-abutment



Fig. 4-2-39 The positional relationship of the intraoral screw and the tray is easier to recognize with the screw cavity

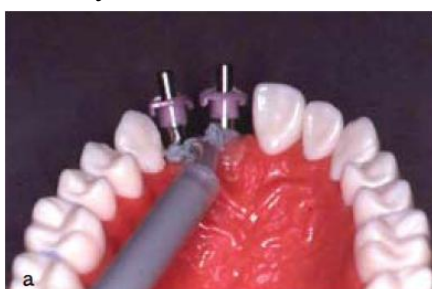


Fig. 4-2-40 a,b Exafineimplant (GC Co.) is available on the market as a silicon rubber impression agent specifically for use of implants

6. Remove the impression material so that the coping screw is exposed out of the paraffin wax (Fig. 4-2-41).
7. Once the impression material has been set, loosen the coping screw with HEX driver bit to remove the tray. The screw does not have to be removed completely as the displacement of the connection to the fixture allows it to be moved up and down by 2 mm (Fig. 4-2-42).
8. Complete the impression taking procedure once the impression interior has been closely inspected. With the open-tray method, the separation is possible between the fixture and the abutment, and multi-abutment and pick-up coping. If the multiple fixtures could not be implanted in parallel, there have been cases in which the multi-abutment is left remaining on the intraoral fixture. After the impression taking, the multi-abutment in the oral cavity should be replaced with healing abutment. The technical operation of this step also applies to the close-tray method (Fig. 4-2-43).
9. Fix the multi-abutment, the buried fixture and the implant analogue, with a corresponding diameter, securely with an abutment screw. Pull the structure from both sides to confirm that no spaces are available for rotation or jerking (Fig. 4-2-44).
10. Restore multi-abutment and implant analogue to the pick-up coping. Confirm that it has been correctly restored and that it does not rotate or become dislodged easily (Fig. 4-2-45).
11. Reproduce the gingivae with silicon specific for artificial gingivae. Here, gingival mask soft (GmbH & Co. KG) was used as the silicone impression agent. The ideal thickness of the artificial gingival silicone should allow for the joint of the multi-abutment and the implant analogue to be just hidden.

⑦ Fabricating the working model

1. Apply the model material upon confirming setting of silicone artificial gingivae material. New Fujirock IMP (GC Co.), a modeling material specific for implant use was employed. The characteristic of this agent is that it limits the initial expansion as well as the residual expansion to the utmost. The model material can be removed roughly 40 minutes after its application (Fig. 4-2-47).
2. Complete the working model. When displacing the model, be cautious of it breaking (Fig. 4-2-48 to 50).



Fig. 4-2-41 Remove the impression agents using various tools



Fig. 4-2-42 Loosen the coping screw using HEX driver bit



Fig. 4-2-43 completed impression



Fig. 4-2-44 Secure the implant analogue firmly with abutment screw



Fig. 4-2-45 When connecting the coping screw, ensure that no rotational forces are not applied on the pick-up coping or the multi-abutment



Fig. 4-2-46 Reproduce gingivae with the artificial gingivae silicone impression agent.



Fig. 4-2-47 New Fujirock IMP (GC Co.)

Fig. 4-2-48 The completed working model from the labial side



Fig. 4-2-49 The completed working model from the palatal aspect

Fig. 4-2-50 The state removed with the artificial gingivae