

Chapter 3 – Basic techniques of AQB implant

Book editorial committee

The basic techniques of AQB implant can largely be divided into: one-piece type, one-piece T-type, two-piece one-stage type, and two-piece two-stage type. The surgical procedures for each of these types are illustrated in Figure 3-3-1. The steps leading to the formation of implant cavity are the same for each of these types and conducted using the same AQB implant tools. The tools employed for each steps are shown in Fig. 3-3-2.

This chapter discusses the basic implant techniques, the steps that follow on from the incision and detachment for AQB implants with reference specifically made to the one-piece type. For further details, refer to the “AQB implant system manual” if necessary. The main body of this chapter will focus on the outlines of the techniques and the general notes of caution, but a suitable decision needs to be made specific to each of the cases as the state of each individual can have significant influences on the treatment prognosis. The tools are nondurable therefore another set of tools needs to be prepared in order to avoid panic to arise during the procedure.

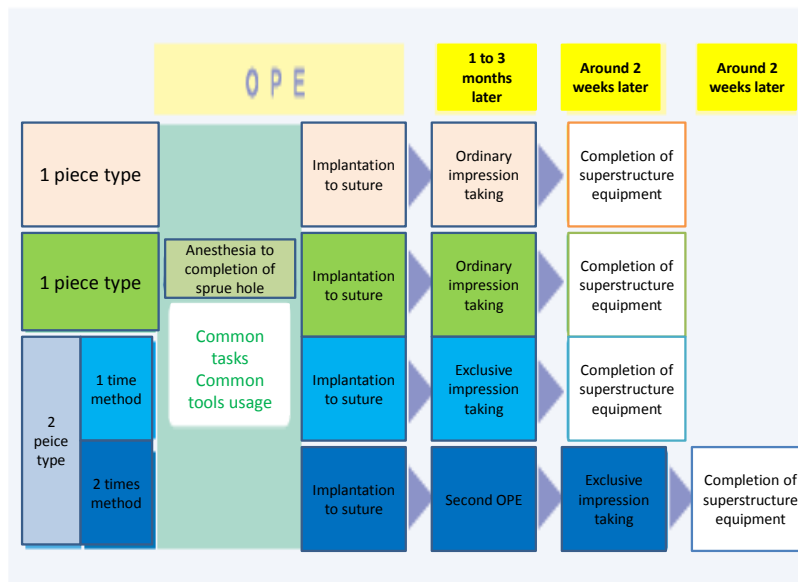


Fig. 3-3-1 Procedure of AQB implant installing surgery

Name of product	Type	Name of product	Type	Name of product	Type	Name of product	Type
AQB round bur	.		∅3		∅3		S
AQB drill guide	S	AQB circular knife	∅4	AQB fixer	∅4	AQB direction checker	M
	L		∅5		∅5		L
AQB spiral drill	∅2.5S	AQB endmill reamer	∅2.75	AQB fixer support	.	AQB finger screwdriver	S
	∅2.5L		∅3.75	AQB fixer support	.		L
	∅3.5S		∅4.75	AQB wrench free	.	AQB wrench free adaptor	.
	∅3.5L	AQB reamer	∅2.9	AQB alarm gage	∅3	AQB reamer extension	.
	∅4.5S		∅3.9		∅4		
	∅4.5L		∅4.9		∅5		

Fig. 3-3-2-a Tool Sets for AQB implant

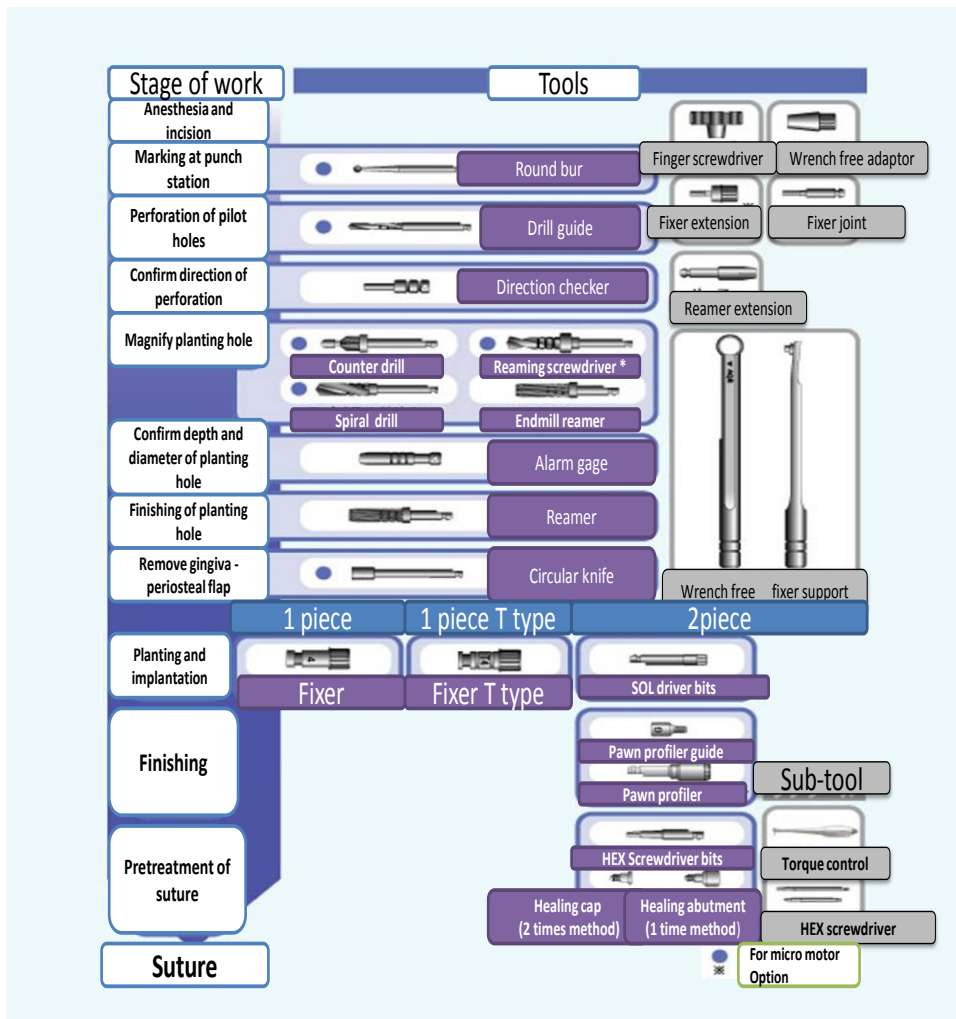


Fig. 3-3-2-b List of tools for AQB implant

I. Marking the site for perforation

Form a primary indentation with the AQB round bur to mark the centre of the implant cavity and this can also act to stabilize the first drilling perforation (Fig.3-3-3).

Having exposed a sufficient amount of alveolar bone surface, rotate the AQB round bur (Engine speed: 400-800 revolution/minute (rpm)) at the centre of the implant cavity to place an indentation with application of physiological saline solution. The cavity depth should be to the extent that the blade of the AQB guide drill does not slip out of the hole. Where a significant excavation in the alveolar bone is present, alveolar crest preparation may need to be considered.

II. Perforation of pilot hole

The pilot hole should be formed with the AQB guide drill at the implanting position in the direction of its insert (Fig. 3-3-4).

Place the tip of the AQB guide drill in the indent formed with the round bur, and stand it in the direction of the implantation. Rotate the AQB guide drill (Engine speed: 400-800 rpm) for a hole that corresponds to the length of the implant insertion under sufficient amount of saline solution.

The accuracy of the perforation hole can be improved with a surgical stent that is usually fabricated preoperatively on the study model.



Fig. 3-3-3

Marking at the perforation site - Form an indentation at the centre of the implant cavity by rotating the AQB round bur.



Fig. 3-3-4

Perforation of the pilot hole - Construct a cavity that corresponds to the length of the implant with AQB guide drill.

III. Confirming the direction of the perforation

The position, the direction and the space in relation to the adjacent teeth need to be confirmed with AQB direction checking tool. For multiple installations the factors that are of particular concern are the spacing and the parallel nature of the insertion with respect to the adjacent implant bodies (Fig. 3-3-5). To prevent the patients from swallowing the structure, pass a thread through the top of the checker, and insert the narrow probe into the pilot hole formed with the AQB guided drill. Inspect the positioning, the direction, and its position relative to the adjacent teeth of the cavity. In addition, where multiple implantations are conducted, examine the parallel nature and the spacing of the cavities. If possible, ask the patients to close their jaw to gain a rough estimate of the clearance. Where the ideal position, direction, and parallel insertion with multiple implants have not been achieved, the perforation hole should be prepared carefully from this stage with the aim to recover the ideal structure as much as possible.

In some bone morphologies, the height of the alveolar crest can become lower than the height before the surgery with the expansion of the cavity. This should be considered when determining the implant size.

IV. Primary formation of the planting cavity

The expansion of the planting cavity is conducted in a step-wise manner with the AQB spiral drill (Fig. 3-3-6-a).

Under the application of saline solution, rotate the AQB spiral drill (400 -800 rpm) to enlarge the cavity in the direction of the hole that was initially constructed with the guided drill in a step-wise manner. This should be continued till reaching a diameter that is 0.5 mm less than the diameter of the implant body. With regards to the length of the cavity, the drilling should be conducted till the groove marking on the drill blade is hidden within the bone structure. In some of the bone morphologies, perforation should be made to be 0.5 to 1.0 mm deeper than the length of the implant fixture, S (8 mm), M (10 mm), or L (12

mm).

In some the bone structures such as the cortical bone, AQB counter-drill (Fig. 3-3-6-b) is employed as an option. Drilling with this tool should be conducted by inserting the guide into the cavity at a slower speed, roughly 300 to 600 rpm, for perforating through the cortical bone.

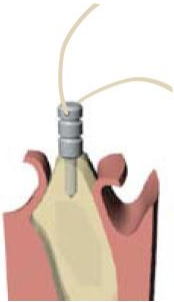


Fig. 3-3-5

Confirm the direction of the perforation.

Assess the position, the direction, and the interval with the adjacent teeth; and for multiple planting, confirm the interval and its parallel nature with the AQB direction checker.

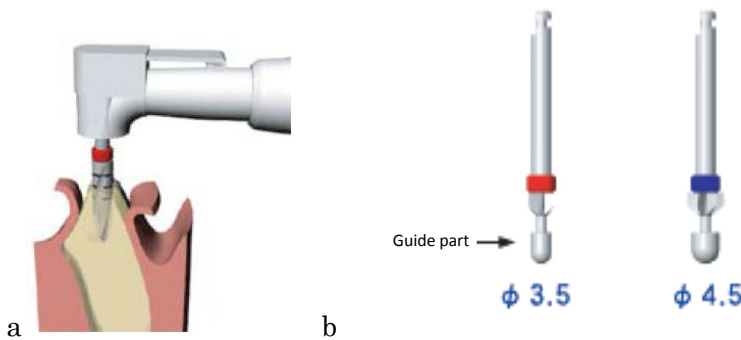


Fig. 3-3-6-a,b

Expansion of the cavity

a. Perform step-wise expansion of the implant cavity with AQB spiral drill

b. AQB counter drills

V. Expansion of the implanting cavity

The AQB end-mill reamer should be employed to expand the base and axial plane of the cavity (Fig. 3-3-7-a).

Connect the AQB finger driver to the AQB end-mill reamer to drive through to the point at which the groove marking is hidden within the jaw bone. The key point to note here is to supply the perforating hole with saline solution and to avoid the axis of the end-mill reamer from becoming dislocated. In addition, be careful of the patients swallowing the tools when conducting the procedures.

The blade attached to the tip of the AQB end-mill reamer enables the expansion of the cavities and can perforate through to deepen the hole to some extent, but if the finger driver is lowered to the level of the dental arch becoming in the way of the neighboring teeth, the length of the finger driver can be extended with the AQB reamer extension driver (Fig. 3-3-7-b).

If the manual operation of the AQB finger driver becomes difficult AQB free-wrench adaptor with AQB free-wrench is recommended (Fig. 3-3-7-c).

There are methods where the optional AQB reaming drill (Fig. 3-3-7-d) is employed instead of the AQB end-mill reamer. AQB reaming drill can be operated by attaching the engine specifically for implants, at 400 to 800 rpm, and paying attention not to over-perforate.

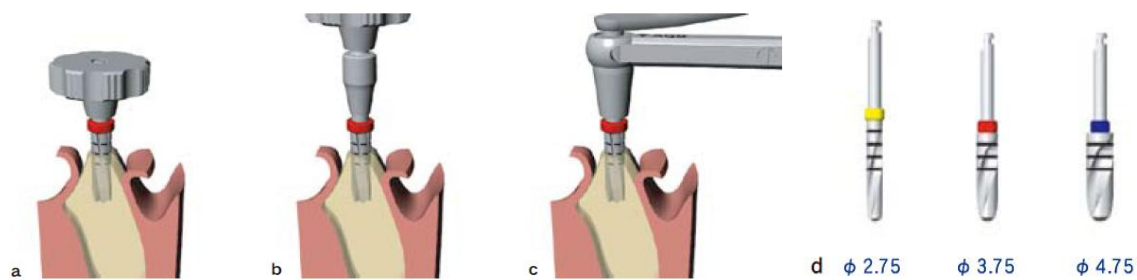


Fig. 3-3-7-a~b Expand the cavity

- a. The AQB end-mill reamer should be employed to expand the base and axial plane of the cavity
- b. If the finger driver is lowered to the level of the dental arch becoming in the way of the neighboring teeth, the length of the finger driver can be extended with the AQB reamer extension driver
- c. If the manual operation of the AQB finger driver becomes difficult AQB free-wrench adaptor with AQB free-wrench
- d. AQB reaming drill

VI. Verifying the length and the diameter of the implanting cavity

Inspect the depth and the diameter of the implanting cavity with the AQB alarm gauge (Fig. 3-3-8).

Clean the interior of the cavity thoroughly after expanding the diameter with an AQB end-mill reamer, with physiological saline solution to ensure a complete removal of the debris including bone splints. Thread a string to the top of the alarm gauge to prevent the patient from accidental swallowing, before its insertion into the planting hole to determine the diameter and the depth of the cavity.

This step should confirm that the complete burial of the HA coated layer of the implant body, both mesiodistal and especially, in the buccolingual direction is possible. If the depth is inadequate, drill further into the hole with the use of AQB end-mill reamer, or the AQB spiral drill if necessary. Upon insertion of the alarm gauge, if there is rattling or a loosely fitted implant, there is a risk of over-expansion of the hole in the final steps using the AQB reamer. There are situations where the finishing touches with the AQB reamer should be avoided such as in sparse bone to ensure secure implantation. Particularly with the maxilla, and in some of the mandibles, implant may need to be considered at this stage if the one is sparse.

VII. Final touches to the implant cavity

AQB reamer is used in the final steps of the cavity formation to determine the internal diameter (Fig. 3-3-9-a).

Connect the AQB finger driver to the AQB reamer for the final extension in the axial direction. It is imperative to stabilize the axis of the reamer till the final diameter of the cavity becomes 0.10 mm less than that of the implant body. Avoid use of this tool to the bones which are soft and sparse, as this can result in over-expansion of the cavity. Where the AQB finger driver becomes difficult to operate with the neighboring teeth getting in the way, the length of the tool should be extended with the use of the AQB reamer extension (Fig. 3-3-9-b). In addition where the AQB finger driver becomes too strenuous in its operation, apply AQB free wrench adaptor to the AQB free-wrench to conduct rest of the procedure (Fig. 3-3-9-c).

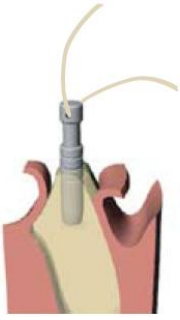


Fig. 3-3-8

Confirm the depth and the diameter of the planting hole.

Insert AQB alarm gauge to the planting hole to confirm the diameter and the depth of the hole.

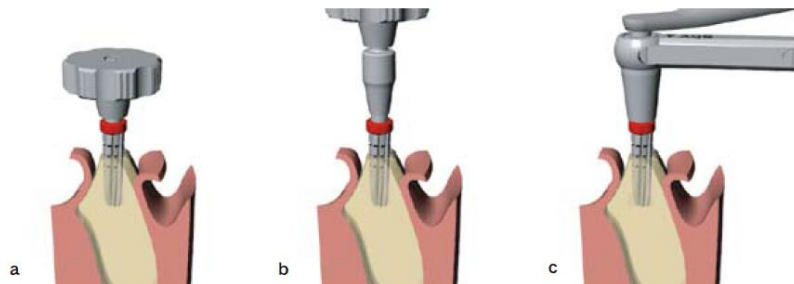


Fig. 3-3-9 - Completing the implant cavity

- a. Employ AQB reamer to finalize the diameter of the hole.
- b. Use of AQB reamer extension tool to elongate the AQB finer driver to avoid getting in contact with the neighboring teeth.
- c. If the operation becomes difficult to conduct with the fingers, employ AQB wrench free adaptor to operate the AQB free wrench.

VIII. Removal of gingival periosteal flap

Curve out a circle with a circumference corresponding to the implant body cervix, by using AQB circular knife (Fig. 3-3-10).

Restore the gingival periosteal flap to its original position to conduct temporary suture to limit the movement of the gingivae. Under the application of sufficient amount of saline solution, rotate the AQB circular knife (300-600 rpm) to curve out the gingival periosteal flap covering the top of the cavity (by applying the temporary suture at an equidistance from the centre of the cavity in the mesiodistal direction, it can act as the guide for the cutting.)

Alternative tools for the removal include small scalpel, or with a gingival punch.



Fig. 3-3-10 - Remove gingival periosteal flap

Remove gingival periosteal flap in an arch-form with AQB circular knife.

IX. Installation of AQB implant (One-piece type)

AQB one-piece type to be installed into the cavity (Fig. 3-3-11-a,b)

The planting cavity should be thoroughly cleaned with the saline solution before carrying the AQB implant attached with a silicon cap for its installation into the cavity. A non-metal forceps can be used as an alternative to apply this into the cavity, or in a state that is attached to AQB fixer.

Implantation can be conducted with using either the AQB finger driver or with the AQB free-wrench.

A. AQB finger driver

Connect the AQB fixer joint or the AQB fixer to the AQB finger driver to subsequently fit the implant body within the mouth, and install it by screwing it in a rotating motion to the right (Fig. 3-3-11-a).

B. AQB free-wrench

First fit the AQB free-wrench, attached with an AQB fixer, to the implant body within the oral cavity. Next, place the tip of the AQB fixer support or the finger tip onto the hole of the fixer, and slowly rotate the AQB free-wrench to the right to finally install the implant (Fig. 3-3-11-b).

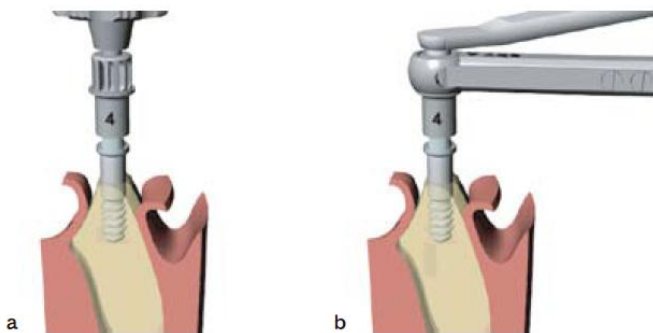


Fig. 3-3-11-a,b Planting AQB implant (one piece type)

a. Installation with AQB finger-driver

b. Installation with AQB free-wrench

The aim of the implant installation should be to cover the HA coating fully within the bone structure, and ensure that there are no loose movements of the implant body. If the first attempt to implant had failed due to reasons such as the cavity size had been too small, it should be cleaned with saline solution to remove blood serum or body fluids and prevent it from drying out before attempting for the second time.

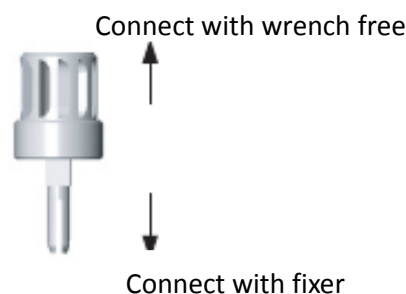


Fig. 3-3-12

AQB fixer extension