Egyptian Prosthodontic Association (EPA Newsletter)

Cement Retained Vs Screw Retained Implant Supported prothesis

The roadmap for implant restorative selection

Electronic Newsletter

Volume 2. Issue 1

January 2023

The debate between cement and screw-retained dental implant restorations is old as the implant prosthodontics itself fig. (1) (1). Despite patients showing no preference for either retention system, there are relevant clinical and technical issues. These include ease of fabrication, precision, passive fit of the framework, occlusion, esthetics, accessibility, retrievability, complications especially biological complications and finally cost of fabrication (2). In clinical practice, both cementation and screw retention appear to have advantages and disadvantages (3).

The previously mentioned criteria could help in the clinical selection process for the type of restoration to be placed above the implant fixture. Going through this roadmap.

Ease of Fabrication

From the technical point of view, cement-retained restorations are easier in the fabrication process. In contrast screw-retained restorations requires great precision and are more technically sensitive and demanding during the lab fabrication procedures (4,5).

Retrievability

The retrievability of screw-retained prothesis is its great advantage, when compared to the cement - retained prothesis, which are difficult in retrieving and may be difficult to be removed without causing damage for the abutment or the implant fixture (6).

Occlusion

Cement- retained prothesis are characterized by an intact occlusal table, due to the lack of access hole to the fixture. This allows for better control over occlusal anatomy, when compared to screw-retained prothesis in which the screw hole access channel may occupy up to 50% of the occlusal table (7).

Aesthetic outcome

The aesthetic outcome in case of implant supported cement-retained restorations is better when compared to screw - retained restorations, especially if the implant position will cause the access hole of the screw-retained restorations to be visible labially fig. (3). An aesthetic challenge lies in hiding the screw access hole in an unseen area. This gives an advantage for cement retained prothesis, where there is lack of access channel

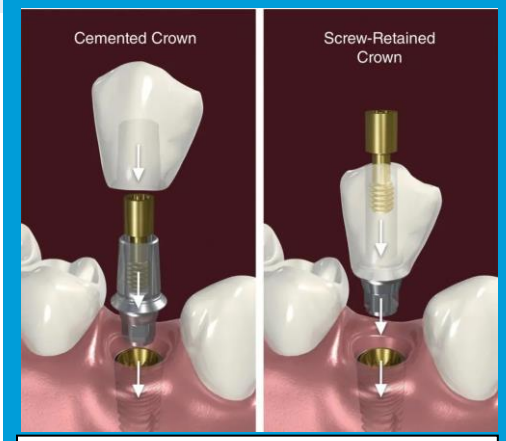

Figure 1: cement-retained Vs screw-retained implant supported restorations (1).

Figure 2: Cemented implant restoration being cut off to access the retaining screw (13).

hole (8).

Biologic and Technical Complications.

The biological complications were significantly increased with cement- compared to screw-retained reconstructions. The main cause of biological complications lies in the difficulty of removing excess cement, which has been associated with the development of peri-implant diseases such as peri-implant mucositis and peri-implantitis (9,10) fig.(4). This can be observed in the accelerated rate of bone loss in cement-retained prostheses when compared to screw - retained ones (10).

On the other hand, the technical complications such as screw loosening/fracture, or fracture/chipping of ceramic were statistically significantly more frequent in screw-retained reconstructions compared to cemented ones. In the screw-retained restorations, the integrity of the framework and the veneer layers are interrupted, and tension might be produced while tightening the assembly and manipulations with the screwdriver, provoking stress peaks laterally in the region of the access opening (10)

Passive fit

Cement-retained restorations offer better passive fit, which helps to improve force loading characteristics when biting, compared to screw-retained restorations (11).

Cost of fabrication

The ease of lab fabrication procedures for cement-retained restorations decreases its cost, and makes its more affordable as a restorative option (11).

Clinically oriented selection of the prosthetic solution.

Clinical situations that prefer screw-retained restoration (12):

Full arch cases are best restored with screw - retained restorations as complications with these cases are common.

In situations where there is reduced interocclusal space, adequate retention for cement-retained restorations may be impossible, as these restorations require a vertical component of at least 5mm to provide retention and resistance form. However, screw-retained restorations can be used with as little as 4 mm of interocclusal space. Additionally, screw-retained restorations can be directly attached to implants without the use of an intermediate abutment, reducing the amount of interocclusal space required for these restorations.

Cantilever Implant supported fixed partial denture.

Screw retained restorations are also indicated with increased interarch distance.

Figure 3: Labially visible access hole in case of screw-retained restorations (8).

Figure 4: Implant failure due to excess cement left around the fixture in case of cement retained restoration (13).

Clinical situations that prefer cemented restoration (12):

Cement-retained restorations are indicated in cases when the crown height space is between 8 – 15 mm.

Cement-retained restorations are preferred for single-unit and short-span implant restorations.

Cement-retained crowns are preferred in cases involving small-diameter crowns where screw access may jeopardize the crown's integrity.

If the divergence between the implant axis and the retaining screw of the angled abutment receiving the restoration is less than 17 degrees, conventional screw retention of the restoration using premachined abutments is not possible.

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