FREQUENCY AND STRUCTURE OF CLINICAL COMPLICATIONS DEPENDING ON THE METHOD OF FIXING A FIXED PROSTHETIC CONSTRUCTION ON DENTAL IMPLANTS

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The method of fixing a fixed prosthetic construction on dental implants plays a crucial role in the frequency and nature of clinical complications. The two primary methods of fixation—screw-retained and cement-retained prostheses—each have distinct advantages and potential risks that can influence the long-term success of dental implants. This thesis examines the frequency and structure of clinical complications associated with both methods, highlighting factors such as mechanical stability, ease of maintenance, biological response, and complication management.

1. **Complications in Screw-Retained Prostheses:**

o **Mechanical Complications:** The most common issues in screw-retained prostheses are screw loosening and fracture. This is primarily due to inadequate torque, occlusal overload, or poor prosthetic design.

o **Prosthetic Fit Issues:** Misalignment of the abutment or prosthesis can cause improper seating, leading to mechanical instability and the need for frequent adjustments.

o **Aesthetic Concerns:** The need for an access hole for the screw can sometimes affect aesthetics, particularly in anterior restorations, requiring additional steps to conceal it.

2. **Complications in Cement-Retained Prostheses:**

o **Biological Complications:** Cement residue left subgingivally is a major risk factor for peri-implantitis. The excess cement can act as a bacterial reservoir, leading to inflammation and bone loss around the implant.

o **Retrievability Issues:** Cement-retained prostheses are more challenging to remove for maintenance or repair compared to screw-retained options, which can complicate the management of underlying issues.

o **Occlusal Adjustments:** Excessive cement layer thickness or uneven distribution can affect occlusion, leading to mechanical stress and potential implant overload.

3. **Frequency of Complications:**

o Studies indicate that screw-retained prostheses tend to have a higher incidence of mechanical complications, such as screw loosening, while cement-retained prostheses are more prone to biological complications like peri-implantitis due to cement residue.

o The frequency of complications also depends on factors such as implant location, patient hygiene, and the accuracy of prosthetic placement.

4. **Prevention and Management:**

o **For Screw-Retained Prostheses:** Proper torque application, regular follow-up visits to check for screw loosening, and the use of advanced materials (e.g., titanium screws) can minimize mechanical issues. Aesthetic concerns can be addressed by using composite materials to cover the access hole.

o **For Cement-Retained Prostheses:** The use of radiopaque cement and careful cementation techniques can reduce the risk of excess cement. Additionally, placing the

implant-abutment interface at or above the gingival level makes excess cement easier to detect and remove.

o **Occlusal Considerations:** Both fixation methods require careful occlusal management to prevent excessive loading and mechanical stress.

Conclusion:

The method of fixing a fixed prosthetic construction on dental implants significantly influences the type and frequency of clinical complications. While screw-retained prostheses are more prone to mechanical issues, cement-retained prostheses carry a higher risk of biological complications, particularly peri-implantitis. Choosing the appropriate fixation method and employing preventive strategies—such as careful cementation and regular monitoring—are critical for reducing complications and improving long-term outcomes in implant-supported prosthetics.

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BIOMECHANICAL PROBLEMS OF CEMENT FIXATION OF ARTIFICIAL CROWNS ON IMPLANTS

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Cement fixation of artificial crowns on dental implants is a widely used technique due to its aesthetic advantages and ease of fabrication. However, it presents several biomechanical challenges that can affect the long-term success of implant-supported prostheses. This thesis explores the biomechanical problems associated with cement fixation, focusing on complications such as excess cement, occlusal load distribution, retrievability issues, and their impact on peri-implant health.

1. **Excess Cement and Peri-Implantitis:**

o A major biomechanical issue with cement fixation is the risk of excess cement being trapped subgingivally, which can lead to inflammation and peri-implantitis. The cement acts as a nidus for bacterial colonization, causing soft tissue inflammation and progressive bone loss around the implant.

o Detecting and removing excess cement is difficult, especially when the implant-abutment interface is placed deep in the gingival tissue, further exacerbating the problem.

2. **Occlusal Load Distribution:**

o Cement-retained crowns may present challenges in distributing occlusal forces evenly across the implant-supported prosthesis. The layer of cement can introduce slight discrepancies in the seating of the crown, potentially leading to uneven loading and implant overload.

o Poor occlusal management can lead to mechanical complications such as implant fracture, abutment loosening, or crown failure, especially in cases of parafunctional habits like bruxism.

3. **Lack of Retrievability:**

o One of the primary biomechanical limitations of cement-retained crowns is their lack of retrievability. In the event of complications such as implant failure, crown fracture, or peri-implantitis, removing the prosthesis without damaging the implant or abutment can be difficult.