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Course

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Title: Crown Lengthening

**Biologic Width**

Ectodermal tissues in the human body exist for protection against bacterial invasions or other external materials, however this defensive barrier has to be penetrated by both dental implants and teeth. The biologic width is the natural seal that grows around both and protects the alveolar bone against disease and infection. It refers to a dimension of the soft tissue that attaches itself to that portion of the tooth which is coronal to the alveolar bone’s crest. There is a relationship between dentogingival components, and studies that measured individual teeth from specimens point towards the fact that there is a certain proportional relationship between the epithelial attachment, the connective tissue attachment, the alveolar crest and the sulcus depth. The biologic width plays an essential role in removing irritation causing objects and preservation of periodontal health, in order to protect the periodontium from damage (Nugala, Kumar and Sahitya).

**Crown lengthening necessary for bleeding and ulceration of the sulcus**

The ulceration and bleeding of the sulcus leads towards a condition known as bleeding on probing, which indicates that an inflammation exists along with an erosion and destruction of the sulcus lining, or that an ulceration in the sulcular epithelium exists. The bleeding may be caused as a result of invasion of the biologic width. An advanced complication may arise from plaque formation in the periodontitis. Any inflammation in the gingival area causes a decrease in the connective tissue fibers in the gingival area, and subsequently an increase in the gingival tissues vascularity. This causes an increase in vascular permeability and leads to vasodilation. Consequently, an edema arises within the gingival tissues which leads to the ulceration of the sulcular epithelium (Gulabivala and Ng).

The procedure for crown lengthening is typically conducted in order to achieve esthetic contours or to correct gingival levels, and to achieve sufficient crown length for the purpose of restoration. Functional crown lengthening is done to place a veneer or a dental crown by exposing a larger part of the tooth structure, ensuring that the new crown and the gum tissue has adequate space and thus establish an optimum fit. It is also necessary for improving gum health, and reduce the chances for periodontal disease as a result of excess gum tissue. Thus, for the ulceration of the sulcus, a crown lengthening procedure may be used if the condition has advanced sufficiently.

**indications and contraindications for crown lengthening**

Several indications exists for crown lengthening, which includes:

* fracture of the tooth post-perforation or after an endodontic procedure
* repairable cervical resorption which follows crown lengthening
* extending apical to the gingival margins
* If tooth structure is not adequate for crown retention
* Ease in taking a crown’s final impression
* Any aesthetic problems such as asymmetrical gingival margins, excess gingiva, etc
* Establishment or preservation of sufficient biologic width

Contraindications to crown lengthening include:

* A post-surgical root/crown ration which is not favorable
* Excess removal of osseous support from crown lengthening which compromises the teeth adjacent to it.
* Difficulties in the anterior region out of balancing between restorative needs and aesthetic concerns.
* Any local anatomic apprehensions such as an ascending ramus, large torus, or closeness of the neurovascular bundle which make crown lengthening difficult

**When it would be appropriate to complete a crown lengthening**

The gingivectomy technique is typically carried out when the keratinized tissue and sulcular depth is sufficient enough in order that the biologic width is not violated by the incision or which leads to the bone being exposed. It is performed through either electrocautery, Kirkland knife, scalpel or lasers. Laser external gingivectomy in the case of the procedure leaving a pocket which is lesser than a milimetre, is not recommended and thus the preferred treatment course will be osseous crown lengthening. In the case of the apically positioned flap technique which involves a resection or re-contouring of the bone, it can be used when exposing a sound tooth structure is required. At the time of the procedure, a sound tooth structure of at least 4mm must be exposed as a general rule (Juturu, Mannava and Singh).

**length of time for healing**

The healing time prior to placing a restoration can considerably differ across persons, however some shared factors have been identified which affect the healing time after placing dental implants. Although the general time needed varies for an implant to become osseo-integrated, and hence the time which practitioners need to allow prior to placing a restoration on the implant also varies, but typically two to six months are given by practitioners for healing.

Osseo-intergration requires adequate time to pass to occur successfully and completely. It refers to a process wherein a structural and functional connection occurs between the surface of the implant and the bone that is living. Essentially, the bone is able to fuse directly with the implant to create sufficient stability which a tooth needs for support. The dental implant is only then placed inside the bone seeking to replace part of the tooth’s root. The main reason is that Osseo-integration requires several months to pass before the process completes successfully. The time for it is nearly between four to six months, and only after the process has finished, the tooth can be attached to the dental crown, which will enable the patient to use the implant for chewing without any issue. An inadequate time would thus lead to inadequate stability required by the tooth for functioning properly.

**Complications associated with a crown lengthening**

The process of crown lengthening involves certain complications. One of the complication that can follow the procedure is excessive bleeding. The patient during the surgery may experience persistent bleeding hours after the procedure is over. Although typical bleeding time is between 45 to 60 minutes post-surgery, but it can become longer in some patients. As a remedy for the complication, patients should have coagulants administered.

Another infection that can follow the procedure is the risk of infection. This can affect the alveolar bone and the tissues and occur commonly at sites of incision. Typical signs include fever, swelling redness which grows severe, accumulation of pus, gum tissue becoming light-colored. Any redness and swelling post-surgery that persists beyond one week indicates a complication from infection, and requires the administration of antibiotics to prevent or treat the infection.

# Works Cited

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Juturu, Rajesh Kumar Reddy, Padmakanth Mannava and Harkanwal Preet Singh. "Comparison of Three Crown Lengthening Procedures - A Clinical Study." *Saudi Journal of Pathology and Microbiology* 1.3 (2016): 94-97.

Nugala, Babitha, et al. "Biologic width and its importance in periodontal and restorative dentistry." *Journal of Conservative Dentistry* 15.1 (2012): 12-17.