

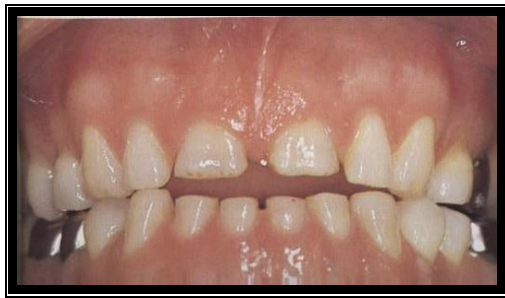
Crown and Bridge

Lecture: 1

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An introduction to fixed prosthodontics:

The scope of fixed prosthodontic treatment can range from the restoration of a single tooth to the rehabilitation of the entire occlusion. Single teeth can be restored to full function, and improvement in cosmetic effect can be achieved. Missing teeth can be replaced with fixed prostheses that will improve patient comfort and masticatory ability, maintain the health and integrity of the dental arches, and in many instances, elevate the patient's self-image.



Steps in crown construction:

- 1- Diagnosis**
- 2- Tooth Preparation.**
- 3- Final impression.**
- 4- Temporary restoration (Crown).**
- 5- Construction of working model.**
- 6- Waxing.**
- 7- Investing.**
- 8- Wax Elimination.**
- 9- Casting.**
- 10- Finishing and polishing.**
- 11- Cementation of the restoration**

History:

A patient history should include all necessary information concerning the reasons for seeking treatment, along with any personal details and past medical and dental experiences that are pertinent. It is important that a good history be taken before the initiation of treatment to determine if any special precautions are necessary.



Chief complaint

The accuracy and significance of the patient's primary reason(s) for seeking treatment should be analyzed first. This may be just the tip of the iceberg and careful examination will reveal problems and disease of which the patient is often unaware: nevertheless, the patient perceives this chief complaint as the major problem. The inexperienced clinician trying to prescribe an "ideal" treatment plan may lose sight of the patient's wishes.

Chief complaints usually fall into one of the following four categories:

- Comfort (pain, sensitivity, swelling)
- Function (difficulty in mastication or speech)
- Social (bad taste or odor)
- Appearance (fractured or unattractive teeth or restorations, discoloration)

Extra oral examination

• *Evaluation of the TMJ:*

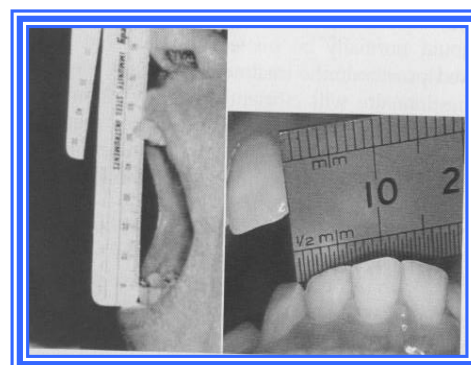
The clinician locates the **TMJs** by palpating bilaterally just anterior to the auricular tragic while having the patient open and close. With light anterior pressure helps identify any potential disorder in the posterior attachments of the disc.

Tenderness, clicking, or pain on movement is noted, maximum jaw opening of less than 40mm indicates restriction, because the average opening is greater than 50mm. Any deviation from midline is also recorded. Maximum lateral movement can then be measured (normal is about 12mm)



• **Muscles of mastication.**

Many patients suffer from muscle pain as a result of parafunctional jaw activity related to stress or sensitivity to faults in their occlusion. Habits such as clenching the teeth and "playing with the bite"



during the course of the daily routine may result in fatigue and muscle spasm.

Observe the physical appearance and activities of this type of patient. Many times they will have a square-jawed appearance, with masseter muscles that are over-developed from hyperactivity. They may be clenching their teeth even as they converse with you. A brief palpation of the masseter, temporalis, medial pterygoid, lateral pterygoid, trapezius, and sternocleidomastoid muscles may reveal tenderness. Palpation is best accomplished bilaterally and simultaneously. This allows the patient to compare and report any differences between left and right side to the clinician. The patient may demonstrate limited opening due to spasm of the masseter and/or temporal muscles. This can be noted by asking the patient to open "all the way". If it appears that the opening is limited, ask the patient to use a finger to indicate the area that hurts. If the patient touches a muscle area, as opposed to the TMJ, there is probably some dysfunction of the neuromuscular system.

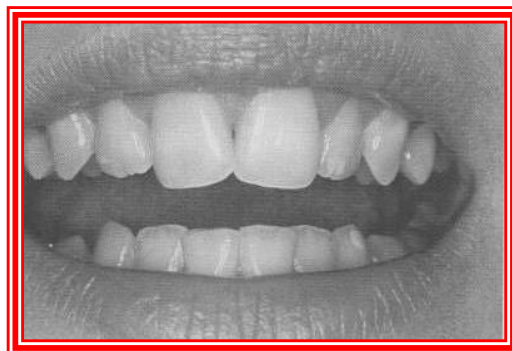
- **LIPS.**

The clinician next observes the patient for tooth exposure during normal and exaggerated smiling. This may be critical in treatment planning and particularly for margin placement of metal-ceramic crowns. Some patients show only their maxillary teeth during smiling. More than 25% do not show the gingival third of



the maxillary central incisors during an exaggerated smile. The extent of the smile will depend on the length and the mobility of the upper lip and the length of the alveolar process.

When the patient laughs, the jaws open slightly and a dark space is visible between the maxillary and mandibular teeth. This has been called the negative space. Missing teeth, diastemas, and fractured or poorly restored teeth will disrupt the harmony of the negative space and often require correction.



Intra oral Examination:

The patient's general oral hygiene...

- * The amount of plaque on the teeth.
- * The existence of pockets should be entered in the record and their location and depth charted. The presence and amount of tooth mobility should be recorded.

- * The condition of prospective abutment teeth, note the presence and location of caries, the areas of gingival lesions and decalcification, and evaluation of plaque retention, can offer some prognosis for the new restorations. It will also help to determine the preparation designs to be used.

- * Previous restorations and prostheses should be examined carefully, to determine their present suitability or their need to be replaced. The age of existing restorations can help establish the prognosis and probable longevity of any future fixed prosthesis that may be indicated.

Evaluation of occlusion:

The patient's occlusion must be evaluated to determine if it is healthy enough to allow the fabrication of such restorations. If the occlusion is within normal limits, then all treatment should be designed to maintain that occlusal relationship.

If the occlusion is dysfunctional in some manner, further appraisal is necessary to determine whether the occlusion can be improved prior to the placement of the restorations or whether the restorations can be employed in the correction of the occlusal problem.

- **Initial tooth contact (centric relation)**

The relationship of teeth in both centric relation and the intercuspal position should be assessed. The centric relation position (CR) of the patient should coincide with the maximum intercuspation (MI).

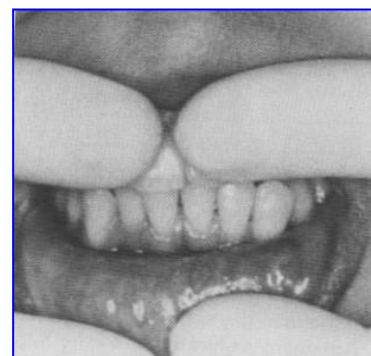
- **General alignment**

The teeth are evaluated for crowding, rotation, supra-eruption, spacing, and malocclusion.

Tipped teeth will affect tooth preparation design or in severe cases, need for minor tooth movement before restorative treatment.

- **Lateral and protrusive contacts**

In the presence or absence of tooth contact in eccentric movements, teeth may exhibit hypermobility, open contacts, or abnormal wear. Hypermobility of an individual tooth or opposing pair of teeth is called (fremitus), which often an indication of excessive occlusal force. Such contacts frequently can be detected by placing the tip of the index finger in the mucobuccal fold over the root portion of the mobile tooth and asking the patient to tap the teeth together



Diagnostic casts:

Articulated diagnostic casts can provide a great deal of information for diagnosing problems and arriving at a treatment plan.

They allow an unobstructed view of the edentulous spaces and an accurate assessment of the span length, as well as the occlusogingival dimension. The curvature of the arch in the edentulous region can be determined, so that it will be possible to predict whether the pontic(s) will act as a lever arm on the abutment teeth.

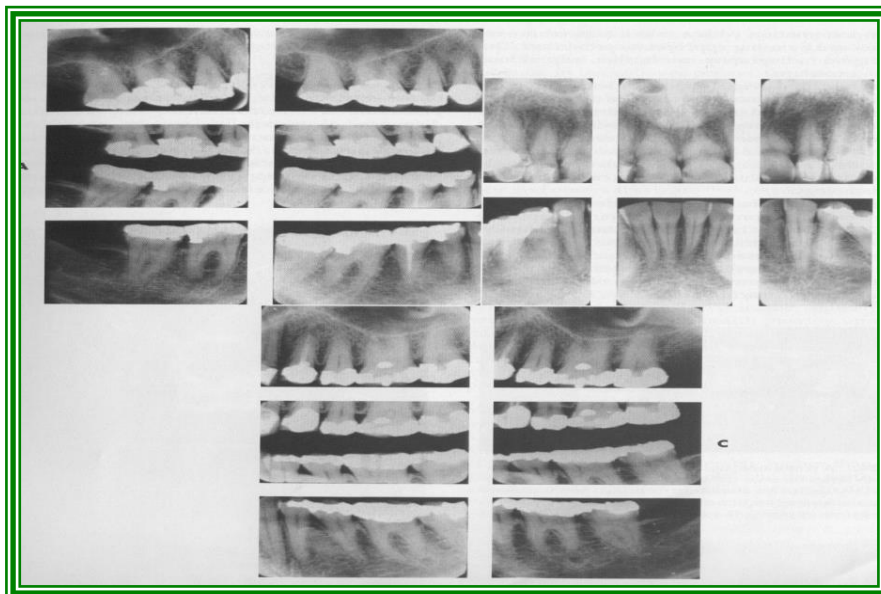
The length of abutment teeth can be accurately gauged to determine which preparation designs will provide adequate retention and resistance.

The true inclination of the abutment teeth will also become evident. Mesiodistal drifting, rotation, and faciolingual displacement of prospective abutment teeth can also be clearly seen.

Full-mouth radiographs (periapical series):

Radiographs are the final aspect of the diagnostic procedure. The radiographs should be examined carefully for:

- ✱ Signs of caries, both on unrestored proximal surfaces and recurring around previous restoration.
- ✱ The presence of periapical lesions, as well as existence and quality of previous endodontic treatment, should be noted.
- ✱ General alveolar bone levels, with particular emphasis on prospective abutment teeth, should be observed.
- ✱ The crown-root ratio of abutment teeth can be calculated.
- ✱ The length, configuration, and direction of those roots should also be examined.
- ✱ The presence of retained root tips or other pathosis in the edentulous areas should be recorded.



Reference: Contemporary Fixed Prosthodontics