

Treatment Planning

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Orthodontic Diagnosis

Involves three steps:

1. Collection of data
2. Processing of the collected data
3. Drawing conclusions

Treatment Planning

The treatment plan is an integral part of orthodontic management. It should be divided into both treatment aims (**what do you want to do?**) and plan (**how are you going to do it?**).

Treatment Planning

Treatment planning is the second most important part of orthodontic management following the **patient examination**.

It is helpful to divide treatment planning into two sections, **treatment aims** and **treatment plan**. Although it is possible that orthodontic treatment can influence the skeletal form when growth-modifying (functional) appliances are used, it has little effect on soft tissues, tooth size and arch length.

It is not necessary to treat every malocclusion and **the benefits to the patient should be carefully assessed** prior to undertaking any orthodontic treatment.

Treatment aims

The following list is not comprehensive and has to be tailored to the individual case. Some of the problems that may need to be addressed during treatment are:

- Improve dental health
- Relieve crowding
- Correct the buccal occlusion
- Reduce the overbite
- Reduce the overjet
- Align the teeth

1. FORMULATION OF A PROBLEM LIST

- Formulation of a problem list is an important step and should be done in consultation with the parents and patients. For most patients, aesthetics may be the most potent factor for demanding orthodontic treatment.
- But on examination, the orthodontist has to take into consideration the general health of the patient, especially the oral health.
- The problem list should include comments on the:
 - A-periodontal condition of the patient,
 - B-His/her status of caries/restorations and vitality of teeth. Only then should the clinician formulate the orthodontic problem list.

2. SETTING PRIORITIES FOR THE ORTHODONTIC PROBLEM LIST

- Setting priorities for orthodontic problems is important, as the space requirements are limited in most cases. If the case requires a lot of space for the retraction of teeth and there is some amount of crowding also present, then a compromise might need to be arrived at, decrowding along with limited retraction or retraction to desired limit and limited decrowding.
- Similarly, priorities will have to be made regarding correction of molar relations, derotations and uprightening of certain teeth.

3. PLANNING SPACE REQUIREMENTS

Space creation and utilization is important because of the overall size of the oral cavity. Extraction of a premolar may create as less as 6 mm of space or as much as 7.5 mm of space

Space required as part of treatment for the following:

- 1- Retraction of Protruded Teeth
- 2- Correction of Crowding
- 3- Alignment of Rotated Anterior Teeth
- 4- Alignment of Rotated Posterior Teeth
- 5- Correction of Molar Relationship
- 6- Anchorage: All appliances generate tooth moving forces from certain other intraoral anchor teeth. In trying to move the malaligned teeth, certain amount of undesired movement has been noticed in the anchor teeth.

4. TREATMENT POSSIBILITIES

Correction of a particular malocclusion can be achieved in different ways , it is not always essential to treat a case; however, it is the clinicians duty to enlighten the patient regarding the consequences of not undertaking orthodontic correction.

Each treatment possibility has an advantage and a corresponding disadvantage. Compromises might have to be made regarding extraction of teeth, skeletal vs dental corrections, or amongst various dental corrections required.

Treatment possibilities should be listed and the possibility, which best serves, the particular patient at that particular age with maximum improvement in aesthetic and function should be chosen.

5. CHOICE OF MECHANOTHERAPY

The appliance should be chosen so as to attain all the possible treatment results within the least possible time with as little tissue irritation/damage as possible.

It is at times a compromise between the patient's desires and the ability of the clinician.

Factors affecting the choice of a specific treatment plan

1-THE TYPE OF TOOTH MOVEMENTS REQUIRED

- Simple tipping movements can be achieved using removable appliances.
- If multiple, complex tooth movements are desired, it is advisable to use one of the available fixed orthodontic appliances.

2-PATIENT'S EXPECTATIONS

- Patients who have high expectations are expecting ideal finishes which might not be possible using removable appliances. Such patients are concerned about their esthetics to such an extent that the labial appliances might not be an option, they might desire the use of lingual appliances or ceramic appliances.
- A compromise might need to be arrived at regarding treatment results and the patient's expectations, it is advised to inform the patient exactly what is achievable with which appliance, to the best of the clinician's ability before commencing the treatment.

3-GROWTH POTENTIAL OF THE PATIENT

Growing patients can be a boon as well as bane. Results achieved during growth are more stable yet sometimes the return of unfavorable growth pattern following completion of treatment can result in relapse of the treatment results. This is especially true for Class III skeletal pattern cases. Sufficient planning and follow up is advised in growing patients.

4-PATIENT'S ABILITY TO MAINTAIN ORAL HYGIENE

- Certain age groups or patients might not be able to maintain adequate oral hygiene with fixed appliance therapy.
- Such patients can be treated using removable appliances with compromised treatment results.

5-THE COST OF THE TREATMENT

- Fixed orthodontic treatment is more costly as compared to removable appliance therapy. Sometimes the patient might not be able to afford costly yet ideal treatment plans. The financial implications of the treatment should be considered and explained to the patient at the time of deciding upon a particular treatment plan.

6-THE SKILLS OF THE TREATING CLINICIAN

a- It is always better to work within your means and to present treatment plans that can be achieved. It is not possible for every clinician to be good at everything he/she does. Being truthful to the patient before treatment is better than being sorry for him/her following treatment.

b- It is the duty of the clinician to choose an appliance that is appropriate for the particular case and not just appropriate for the clinician. If one has to continue to treat cases, the clinicians need to upgrade their knowledge and skills with the change in developing

7-DISCUSSION WITH THE PATIENT AND PATIENT CONSENT

Patient today act as co-decision makers. Hence, it is the orthodontist legal and moral duty to discuss the risk/benefit of the treatment and alternatives as well as the risks of no treatment at all.

Informed Consent

Informed consent is the process in which a health care provider educates a patient about the risks, benefits, and alternatives of a given procedure or intervention. The patient must be competent to make a voluntary decision about whether to undergo the procedure or intervention.



Informed consent

Patient is given an information to help them to understand the:

1. Malocclusion
2. Proposed treatment and alternatives
3. Commitment required
4. Duration of treatment
5. Cost implications
6. Risk and hazard

Informed consent

Clear details about:

1. Aim of treatment
2. Risk and benefit
3. Types of appliances to be used
4. Teeth to be extracted
5. Commitment required
6. Duration of treatment
7. Financial implication
8. Retention period

Management of Orthodontic Problems

Preventive orthodontics To prevent or eliminate irregularities and malpositioning in the developing dentofacial region

Interceptive orthodontics To intercede or correct problems as they are developing

Corrective orthodontics To move teeth and correct malocclusion and malformations.

Orthodontic treatment plan phases:

- 1-Preventive Orthodontics
- 2- Interceptive Orthodontics
- 3-Corrective Orthodontics

Preventive Orthodontics

Includes all those procedures undertaken to preserve the integrity of normally developing occlusion by protecting current conditions or preventing situations that would interfere with growth

Preventive Orthodontics

1-Parent education

- Before the birth of the child:

- Mother nutrition

- After birth: bottle fed (physiologic nipple)

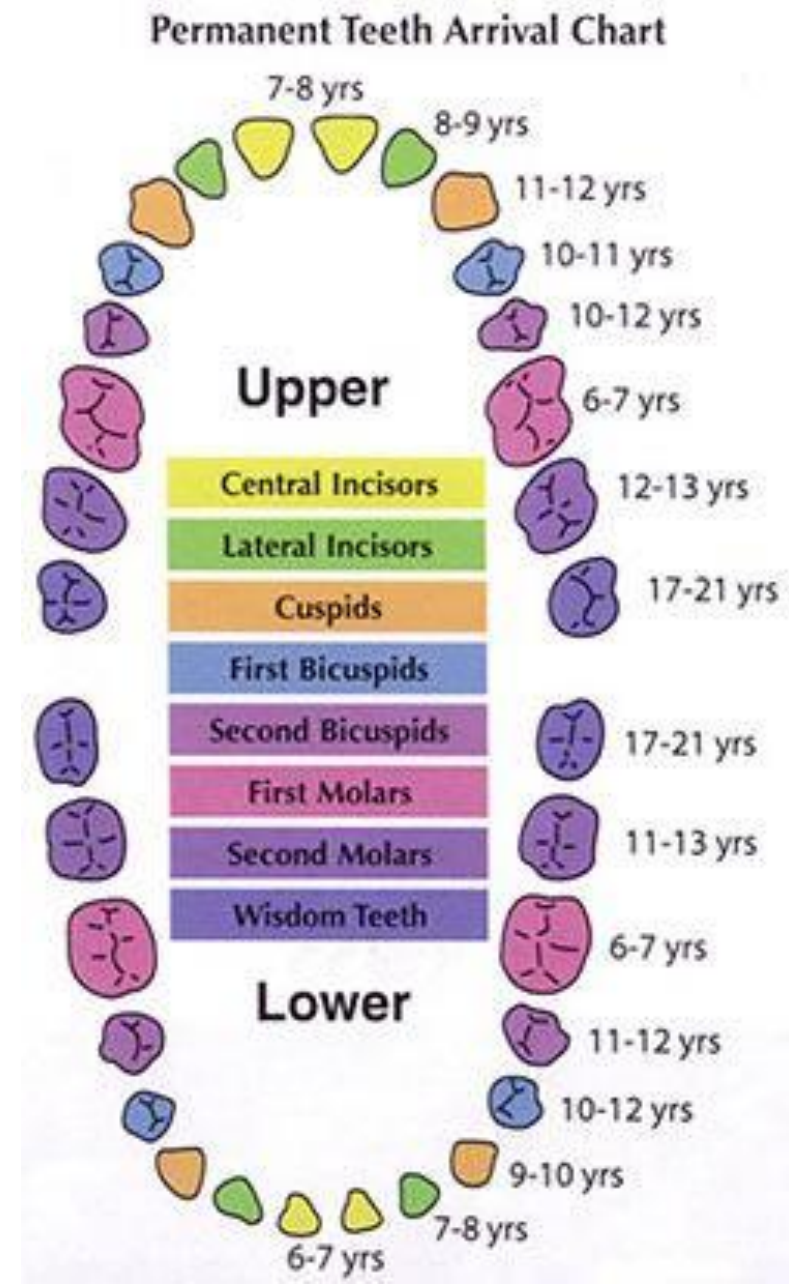
- Maintaining good oral hygiene of the child's oral cavity



Preventive Orthodontics

2- Maintenance of shedding and eruption timetable

		Age tooth comes in	Age tooth falls out
Upper teeth	Central incisor	8-12 mos.	6-7 yrs.
	Lateral incisor	9-13 mos.	7-8 yrs.
	Canine (cuspid)	16-22 mos.	10-12 yrs.
	First molar	13-19 mos.	9-11 yrs.
	Second molar	25-33 mos.	10-12 yrs.
Lower teeth	Second molar	23-31 mos.	10-12 yrs.
	First molar	14-18 mos.	9-11 yrs.
	Canine (cuspid)	17-23 mos.	9-12 yrs.
	Lateral incisor	10-16 mos.	7-8 yrs.
	Central incisor	6-10 mos.	6-7 yrs.



Preventive Orthodontics

3 -Management of premature loss of deciduous teeth

Regular dental check up (Primary and mixed dentition)



Preventive Orthodontics

4- Management of ankylosis of deciduous teeth

Management consists of maintaining it until an interference with eruption or drift of other teeth begins to occur, then extracting it and placing a space maintainer if needed



Preventive Orthodontics

5- Prolonged retention of deciduous teeth



Preventive Orthodontics

6-Extraction of Supernumerary Teeth



Preventive Orthodontics

7- Management of Oral Habits



Preventive Orthodontics

8-Management of deeply locked first permanent molars

Occasionally the deciduous second molar have a prominent distal bulge which prevents the eruption of the first permanent molars. Slicing these distal surface helps in guiding the eruption of first permanent molars.



Preventive Orthodontics

9-Treatment of Occlusal Prematurities



Preventive Orthodontics

10-Management of Abnormal Frenum Attachment

Thick and fleshy maxillary labial frenum leads midline diastema.

Diagnosis → Blanch test.

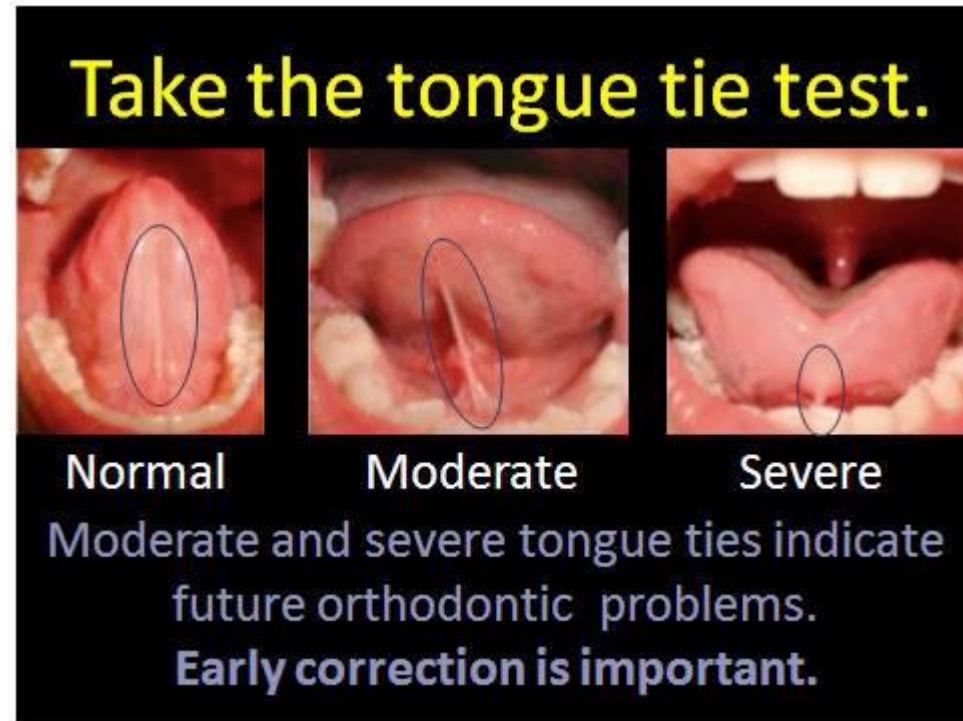
Treated by Frenectomy at an early stage for prevention.



Preventive Orthodontics

10-Management of Abnormal Frenum Attachment

Ankyloglossia or tongue tie → Abnormal development of Lingual frenum → Difficulty in speech and swallowing Surgically treated.



Preventive Orthodontics

11- Space maintainers:



Interceptive Orthodontics

Interceptive orthodontics is undertaken at a time when malocclusion has already developed or developing. The difference between preventive and interceptive orthodontics lies in the timing of the services rendered.

Preventive orthodontic procedures are undertaken when the dentition and occlusion are perfectly normal, while the interceptive procedures are carried out when signs and symptoms of a developing malocclusion are evident.

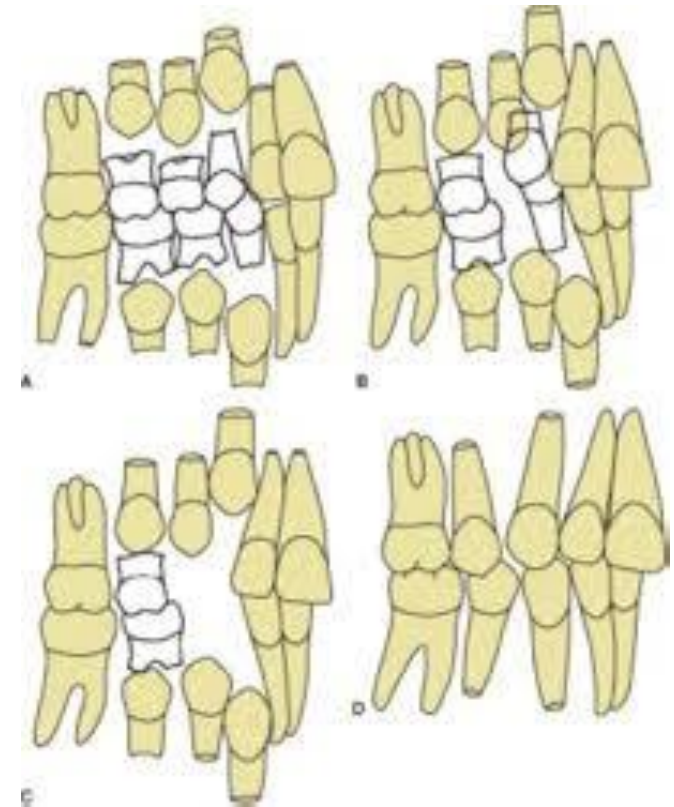
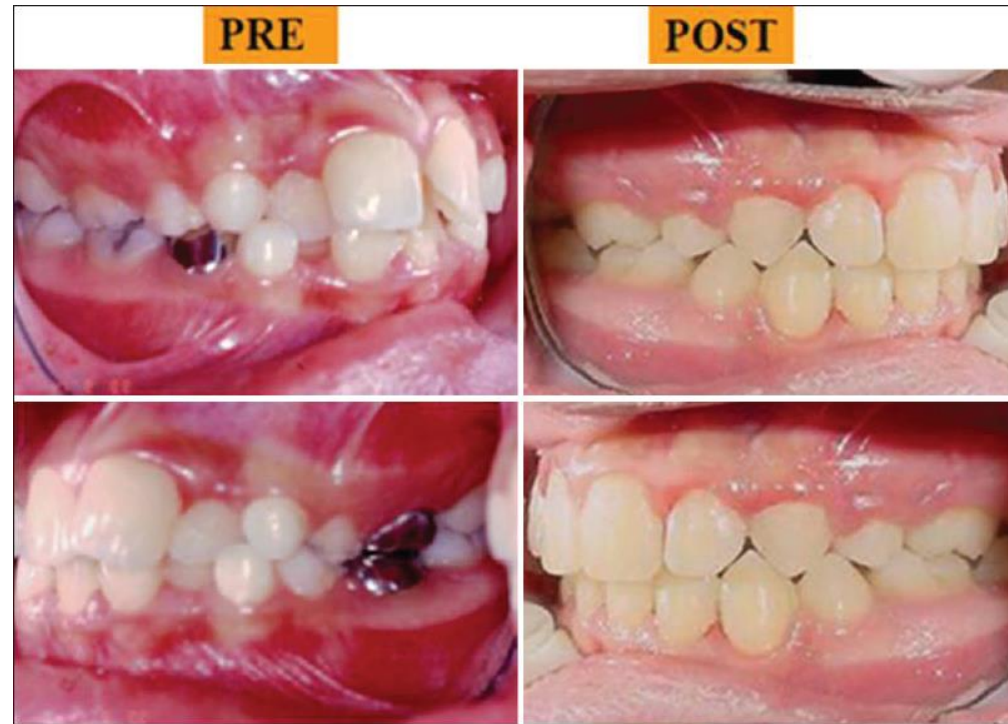
Interceptive orthodontic procedures may include:

- 1-Serial extraction/guidance of occlusion
- 2-Correction of developing crossbites
- 3-Control of abnormal oral habits: Correction of deleterious oral habits (Thumb sucking, tongue thrusting and mouth breathing)
- 4-Proximal stripping of deciduous teeth to facilitate the eruption of adjacent permanent teeth
- 5-Interception of skeletal malrelations
- 6- Space regaining
- 7-Muscle exercises
- 8-Removal of soft tissue and bony barriers

Interceptive Orthodontic Procedures

1-Serial extraction/guidance of occlusion

1. Dewel's method
2. Tweed's method
3. Nance method



Interceptive Orthodontic Procedures

2-Correction of developing cross-bites



Interceptive Orthodontic Procedures

3-Control of abnormal oral habits: Correction of deleterious oral habits (Thumb sucking, tongue thrusting and mouth breathing)



Interceptive Orthodontic Procedures

4-Proximal stripping of deciduous teeth to facilitate the eruption of adjacent permanent teeth



Interceptive Orthodontic Procedures

5-Interception of skeletal malrelations



Interceptive Orthodontic Procedures

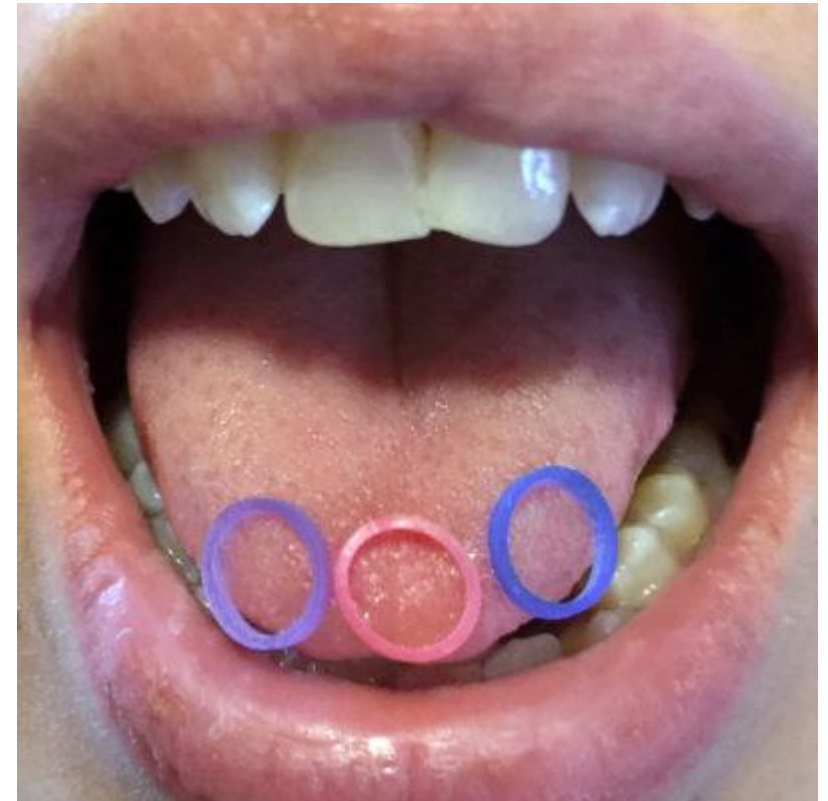
5- Space regaining



Interceptive Orthodontic Procedures

7-Muscle exercises

elastics are placed on the tongue during various exercises. They act as gentle reminders to keep the tongue in the correct location and serve as a signal to maintain the correct resting posture



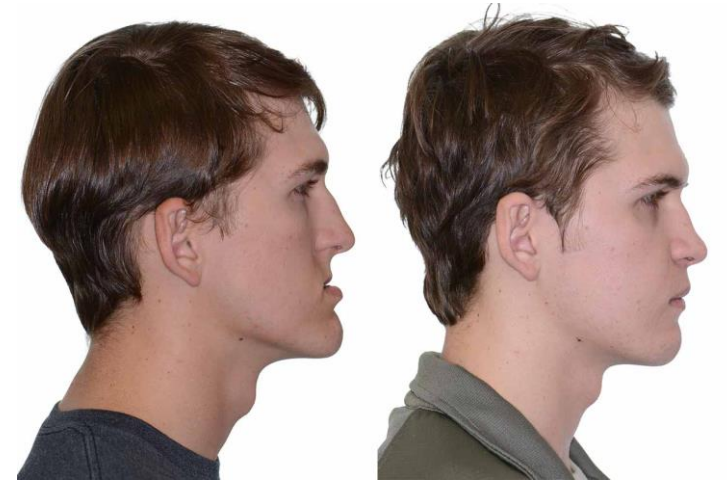
Interceptive Orthodontic Procedures

8-Removal of soft tissue and bony barriers



Corrective Orthodontics

Corrective orthodontics recognizes the existence of malocclusion and the need for employing certain technical procedures to reduce or eliminate the problem and attendant sequelae . These procedure may be **mechanical, functional or surgical** in nature.



Corrective Orthodontics

Aims of orthodontic treatment

1. Functional efficiency .
2. Structural balance .
3. Aesthetic harmony .
4. prevention speech defect .
5. Correction of mouth breathing .
6. Caries prevention .
7. Periodontal disease prevention .
8. Prevent trauma to anterior teeth .
9. Prevention of risk of follicular cyst .
10. Prevention of risk of root resorption .
11. Prevention of complication of prosthetic treatment .
12. Prevention and management of TMJD

Reference

- Textbook of Orthodontics edited by Gurkeerat Singh P 223-226