Sheet #8

Refer to Laura Mitchel

Written by: Noura Al-Natour

RETENTION AND RELAPSE

When we plan for any treatment we first have to take history and put objectives and then discuss the treatment plan with your patient, discuss if you are going to extract or not, how long the treatment takes, if the treatment requires retainers, after discussing all parts you obtain consent before starting the treatment.

The patient have to know that after treatment he/she might need permanent or temporary retainers and if he/she didn’t wear them relapse will occur, no evidence about relapse it may or may not occur(any patient can relapse even if the case is simple)

Retention: the phase that follows active ortho treatment and aims for stabilization of ortho correction, it’s done with certain appliances.

Relapse: is the return of the features of the original malocclusion after active ortho treatment, it might not retain as severe as it was but any change from the final tooth position after treatment is considered relapse.

There are some causes of relapse: gingival and periodontal factors, occlusal factors, soft tissue factors, and growth.

If you have good interdigitation between teeth you’ll have stable teeth and relapse won’t occur but this is theoretical, no evidence to support this.

\*Occlusal factors:

1-Interincisal angle: to achieve a correct and stable overbite and to prevent relapse of OB it shouldn’t exceed 150, try to keep it within a normal range (135 plus/minus)

2-Edge/Centroid relationship, drop a line from lower incisal edge perpendicular to the maxillary plane. That line should be anterior to the centroid of the maxillary incisor.

\*Soft tissue factors:

Neutral zone: lower incisors specially are affected, tongue against lips, and cheeks, they produce pressure so balance should be there to prevent proclination or retroclination.

\*gingival factors:

Elasticity of the gingival fibers cause tooth movement (elastic recoil)

Reorganization of periodontal fibers after treatment takes time, principal fibers takes a month to reorganize so retainers should be used during this time.

Gingival fibers take longer time (Supracrestal fibers), collagen fibers take 6-7 months or more to reorganize. Elastic supracrestal fibers need 8 months to one year. This is why we need to retain for a long period of time, at least one year.

Both soft tissue and gingival factors can cause intra-arch irregularities. E.g. Class 2 div 2 and the lower lips don’t properly support the incisors (incompetent or low lip line) relapse will occur.

\*Growth:

Class 3 patient but he/she is still growing relapse will occur.

A deep bite was corrected for example and then anterior growth rotation occurs so more deepening of the bite will occur.

Studies show that even after 10 years post retention there’s some degree of relapse.

Ask the patient to remove retainers while eating, because mastication stimulates the PDL and gingival fibers.

If there is relapse, it’s usually in the direction of the original tooth position.

We ask the patient to start wearing retainers full time then part time.

If the patient is still growing ask him/her to wear retainers until growth is complete.

Transverse growth continues until age 12, A-P growth in girls continues until 15 and in boys until 18, Vertical growth is the last to cease. If the problem is vertical we wait until the late teens to start the treatment.

Late lower incisor crowding will occur even with treatment.

What do we use after functional appliance as retainers?

We use the same functional appliance at night. If followed by fixed, use the functional for 3 months the fixed, for 9 months if no fixed is to be used, or until the growth spurt ends.

After class 2 treatment if it’s (can’t hear this word) problem we use functional appliance or head gear.

Class 2 div 1 and the patient is still growing then we use functional appliance.

After camouflage treatment if we procline or retrocline teeth we need permanent retention.

If class 3 and it’s simple or pseudo class 3 where the patient has achieve and edge to edge we can correct it by bringing the upper incisors forward then the OB is stable, but if it’s a skeletal problem and the mandible is still growing it’s difficult to control leave it until the growth ceased.

If you correct a deep OB you can use a removable appliance which has a potential bite plane, you don’t separate the posterior teeth when you construct this bite plane just make sure that the lower incisors are occluding with the appliance without separation.

If anterior open bite, you have to keep preventing the posterior teeth from erupting so we can use posterior bite plane to control molars eruption.

Retention of lower incisors alignment: not related to third molars and sometimes late lower incisors crowding will occur, a study was made 70% of patients had relapse, only 30% maintain good alignment, 20% had marked crowding so you have to tell the patient that we can’t guarantee stability and we have to use retainers.

Corrected anterior cross bite where there is adequate OB, if we have let’s say reverse OJ and we correct and achieve adequate OB then we probably don’t need retainers.

Interdigitation between the molars and we didn’t tip them that much, we just expand then we don’t use retainers.

Where we have spontaneous alignment after extraction for example we don’t need retainers.

Stability depends on skeletal, dental, and soft tissue factors.

Types of retainers: removable and fixed.

Removable retainers could be active or passive.

Most commonly used retainer in the past was the Hawley retainer which is a labial bow and Adam’s on 6s.The bow can be activated. Still used because it has advantages, it can be an active retainer, it allow (can’t hear) of occlusion because no acrylic covering the occlusal surface, and also it’s good for holding any transverse expansion.

Clip on retainer: wire labially and palatally could be used for the whole arch and it’s very rigid and used for movements of minor relapse. Indicated for teeth with periodontal breakdown or if we have anterior spacing, can be used to correct some malalignment we do some stripping then the retainer is used. Mainly used in the lower anterior region and can be well tolerated.

The most commonly used retainer nowadays is Essix retainer it’s easy to construct but because it covers the posterior teeth it prevent settling of the normal occlusion and we can’t close residual spaces with this retainer and it may not be comfortable for the patient with no control over expansion, it’s not that rigid. Normally it’s constructed from 0.75 mm plastic sheet and it’s used at night time only, there are variations in the wearing time, upper for 2 days then night time only, lower for 4 weeks and then night time only for one year, but mainly it’s used at night.

Active retainers for example spring retainers for teeth alignment.

Fixed retainers are wires, rigid or flexible, used for long term retention or permanent retention. We can use reinforced fibers bonded by composite to teeth.

Retention for tipping movement: we ask for 3 months full time wear and other 3 months night time wear, for bodily movement we ask for 6 months.

Recent study indicates that wearing only night time is enough.

Diastema and spacing, change in lower teeth more than 3 mm, teeth with periodontal problems, anterior cross bite with insufficient OB, class 2 with no soft tissue control, sometimes class 2 div 2, all need permanent retention.

How do you minimize relapse for severely rotated teeth?

We can do over correction or we can do supracrestal fiberotomy (cut the supracrestal gingival fibers because the take long time to reorganize)

Good luck ☺