

The Fixed Twin Block 2.0™  
is your Class II solution.

Fixed Twin Block represents a breakthrough in Fixed/Functional Therapy. Developed in cooperation with DynaFlex® by Dr. William J. Clark, inventor of the Twin Block. Fixed Twin Block is the next logical step in the evolution of Functional Orthopedic Technique.



# FTB 2.0™

## Fixed Twin Blocks

### Development of Fixed Twin Blocks

Dr Clark has enjoyed the cooperation of Dynaflex in developing the Fixed Twin Block. Six years of clinical testing has confirmed that this technique produces rapid correction of distal occlusion with a full time fixed functional appliance that is comfortable to wear and can be combined with fixed appliances at any stage of treatment. Occlusal blocks bonded to the teeth produce consistent results similar to those observed in treatment with removable Twin Blocks or a fixed Herbst appliance.

### Guidelines For Case Selection

#### Orthopaedic Correction

Early permanent dentition is an ideal stage for favourable growth, and treatment at this stage simplifies clinical management. This stage of development also allows integration with fixed appliances. If patients are treated in mixed dentition the transitional stage should be avoided when deciduous teeth are being shed.



Guidelines for case selection are similar to those for removable Twin Block appliances.

Typical features of a candidate for the Fixed Twin Block for *Orthopaedic* correction are Class II division I malocclusion with mandibular retrusion having a favourable growth potential for mandibular advancement. The profile should improve with the mandible postured forward with the lips lightly closed together. The patient should have good arch form and complete dental arches before treatment with a distal occlusion and an increased overjet. Any irregularity in the posterior segments should be corrected before fitting Fixed Twin Blocks.

It is recommended that correct arch-form is established in both dental arches as a preliminary to fitting Fixed Twin Blocks for functional orthopaedic correction. If the arches are irregular or crowded an initial phase of treatment is required, either by arch development or conventional fixed appliances to correct arch form prior to fitting the Fixed Twin Blocks. This ensures that the arches will occlude together correctly when the mandible is translated to a forward position. In an uncrowded Class II Division I malocclusion Fixed Twin Blocks may be fitted as the first step in treatment.

For **orthopaedic** correction of a Class II malocclusion with a Class II skeletal relationship it is recommended that the blocks stay in place for 6 to 9 months, again related to the severity of the malocclusion. This is to allow sufficient time for bony remodelling in the condyle and glenoid fossa.. Before removing the blocks a panoramic radiograph should confirm that the condyles are relocated in the glenoid fossa <sup>1</sup>.

## Orthodontic Correction

Less severe Class II malocclusion requiring *orthodontic* correction can also be treated by wearing Fixed Twin Blocks for a shorter period. The full time functional appliance gives rapid correction of distal occlusion and modifies muscle behaviour in the early stages of treatment. This is sufficient to treat a mild Class II Division 1 or Class II Division 2 malocclusion without producing orthopaedic effects. The shorter period of treatment does not allow time for significant bony remodelling, but is effective in correcting the distal occlusion.

For **orthodontic** correction of a class II malocclusion Fixed Twin Blocks are in place for 3 to 6 months, depending on the severity of the distal occlusion.

## Protocol for Indirect Technique

The FTB 2.0 is suitable for preparation as an indirect technique if the doctor prefers to have the appliance customized in the laboratory and delivered ready to fit in the mouth in order to simplify the chairside technique.

The subtleties of placement can be handled in the laboratory environment, leading to better-positioned blocks and significantly reduced chairtime to seat the blocks. The process of fitting the Fixed Twin Block is as easy as fitting a band or a fixed appliance by indirect bonding.

- 1) The lab requires upper and lower impressions (or models) with a construction bite for class II correction.
- 2) The construction bite is similar to that recorded for a removable Twin Block.
- 3) Place the blocks on the models using a sticky plastic adhesive in a trial set up to bring the molars to a class I or super-class I relationship. This is to check the fit of the blocks on the models and to make minor adjustment to the blocks if required.
- 4) Apply a vacuum formed Essix positioning tray over the blocks.
- 5) The upper tray crosses the palate clear of the anterior teeth and covers the blocks.
- 6) The lower tray may cap the incisors or extend lingual to the incisors to cover the blocks.
- 7) The appliances are delivered to the doctor ready to fit.
- 8) The delivery trays are retained by the patient. If a block comes loose they can replace it in the tray and continue to wear the blocks until the next visit. This avoids an emergency appointment.
- 9) If additional fixation is required the Essix tray may be extended to cover the blocks and the buccal surfaces of the teeth. All four blocks are cut out in the laboratory ready to fit at chairside. A band cement can be used to fit the blocks. This method gives complete cover over the posterior teeth with improved fixation and the process of fitting the blocks is as simple as fitting a band.

This approach is designed to simplify the fitting of the fixed blocks in a busy practice environment where auxiliaries may be involved in the process. Dr Clark recommends the indirect technique for easy and accurate fitting of the Fixed Twin Block.

## **Second Generation Fixed Twin Blocks (FTB 2.0)**

A simpler improved version of Fixed Twin Blocks is designed to fit with or without molar bands.

The FTB 2.0 is suitable for direct or indirect technique.

### **Occlusal inclined planes**

The FTB 2.0 is the second generation of Fixed Twin Blocks and it is designed to bond directly to the occlusal and lingual surfaces of the teeth. The upper blocks extend distally from the second premolars to cover the first and second molars. The internal surface of the blocks is contoured to fit the teeth for easy placement. The lower block covers the first and second premolars and has lingual extensions to engage the lower canines and first molars. Again it is contoured to fit the teeth for easy placement. The blocks may first be placed on models to check the fit, and when they are attached to the teeth they guide the mandible forward on a 45° inclined plane to a super class I occlusion. Bands are not required, but the blocks will fit over the lingual surface of bands or will bond directly to the teeth, allowing for the option of bonded buccal tubes.

The blocks can be fitted at any stage of fixed appliance therapy to combine orthodontic and orthopaedic forces when correction of the distal occlusion is required.

Clinical testing was carried out to determine the best method of fixation. Ideally the bonding material should be strong enough to attach the blocks to the teeth and remain in place through approximately 6 to 9 months active treatment, while at the same time allowing easy removal after treatment.

The consistency of the bonding material is important in loading the blocks prior to placement in the mouth. The best results were obtained using the following bonding materials:

- Reliance Light Bond with Assure drying agent and sealant
- Ortho Organizers Mini Illuminate Light Cure Kit – Refill syringes are available

One syringe of material will fit all four blocks and both materials contain fluoride.

The blocks are first prepped with a plastic conditioner to allow the materials to adhere by a chemical union to the blocks

## **Protocol for Direct Technique**

Direct technique is an option, especially for the second generation Fixed Twin Blocks. The fitting surface of the blocks is contoured to facilitate correct placement on the teeth. It is recommended that the blocks are first tried on the models using a soft plastic material to hold them in place to check the fit and the occlusion of the blocks before trying in the mouth. If necessary minor adjustment may be made to the inclined planes or the fitting surface to adapt the blocks on the models. A wax squash bite registered on the anterior teeth on the model may be used as a guide when positioning the blocks in the mouth.

### **Bonding Fixed Twin Blocks**

The blocks are prepared for bonding by applying a plastic conditioner to the fitting surface. This is to enhance the chemical bond of the fixative to the blocks. The composite bonding paste should have a consistency similar to bracket bonding material, so that it stays in place on the blocks when transferred to the mouth. After applying plastic conditioner the composite is applied to the entire fitting surface of the blocks, including the lingual extensions of the lower block on the molar and canine.

## **Bonding Technique**

The blocks may be fitted using an etch or non etch technique. The etch technique is followed by the application of a sealant. Alternatively a non etch technique uses a drying agent, which is painted on the teeth twice, then blow dry before applying the blocks. This is to ensure that the blocks are bonded to a clean, dry tooth surface. Either a light cure or chemical cure composite may be selected for the bonding process.

The buccal button is useful both in fitting and removing the blocks. The block is held in fine pointed bracket tweezers when applying cement or composite on fitting the blocks.

There are two options in the bonding procedure.

- 1) The lower blocks may be fitted first to establish the position of the inclined planes over the second premolars. Finger pressure is applied, ensuring that composite flows between the lingual extensions on the molars and canines. Excess composite is removed with cotton buds, allowing a small amount to flow in the interdental areas between the teeth on the buccal aspect for additional retention, before light curing the blocks for secure fixation. The upper blocks are then fitted to occlude with the lower blocks.
- 2) Alternatively if a wax bite has been registered on the models on the anterior teeth this may be used as a guide in positioning the blocks. This allows the upper and lower blocks to be fitted on one side, using Dry Tips to control a dry field before moving to the other side. This method may reduce the time required in bonding the blocks

When used with fixed appliances the Fixed Twin Block is effectively a temporary anchorage device as it delivers excellent anchorage control by three dimensional fixation to the posterior segments. Correction of overjet, overbite and alignment of the labial segments is facilitated by the improved anchorage, without any invasive techniques.

## **Clinical Management**

Bucco-lingual stability is enhanced by using elastic chain between the molar tube and cuspid bracket, or between premolar brackets, stretching it to engage the buccal button on the blocks. This is a valuable feature, ensuring that even if a block comes loose it stays on the teeth and does not present an emergency. Normally it will stay comfortably in place until the patient's next visit.

After fitting the blocks the patient may attend for an inspection visit after two weeks, by which time they are eating and speaking comfortably with the blocks. In some cases light Class II elastics may be placed for a few days initially while the patient adapts to the forward posture, which quickly becomes an established pattern leading to rapid muscle adaptation, followed in time by bony adaptation<sup>1,2</sup>. Typically in Twin Block therapy the patient establishes competent lips at an early stage in treatment as the full time appliances advance the mandible to encourage lip closure.

Cleaning is no more difficult than cleaning a fixed appliance. Indeed only the buccal surfaces of the posterior teeth are exposed. As with all fixed appliances, a hand held water jet is an effective addition to oral hygiene during treatment.

## **Removing Fixed Twin Blocks**

Band removing pliers are used in debonding the blocks, first applying leverage to the buccal button and the occlusal surface of the block. This may loosen the block and the plier is then applied on the lingual at the gingival edge of the block, levering against the occlusal surface to remove the block.

Typically when the blocks are removed the posterior molars are in contact and the molar occlusion is fully corrected, while a small open bite remains in the premolar region. Vertical box elastics are applied to premolar brackets and the open bite is quickly resolved, allowing the occlusion to settle within a few days. In treatment of a severe malocclusion light class II elastics may be added until the posterior occlusion is established.

### **Evaluation of Results**

Fixed Twin Blocks integrate fixed and functional therapy, producing consistent correction of class II malocclusion by combining orthodontic and orthopaedic forces to encourage a favourable mandibular response to treatment in growing patients.

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<sup>1</sup> Chintakanon, K, Turker, K.S, Sampson, W, Wilkinson T, & Townsend G, (2000) A prospective study of Twin-block appliance therapy assessed by magnetic resonance imaging. 118, 494 – 504

<sup>2</sup> Wadhavan, Kharbanda et al. (2008) Temporomandibular Joint adaptations following two phase therapy: a MRI study : J. Orthodontics & Craniofacial Research

Please visit my website for further information and illustration of Fixed Twin Blocks

**Author's website:**     [www.twinblocks.com](http://www.twinblocks.com)

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