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Step-by-Step Guide to Creating a Maxillary PFM Maryland Bridge to Replace a Lateral Incisor as Interim Retainers

This guide incorporates the steps for a two-wing design in a maxillary PFM (porcelain-fused-to-metal) Maryland bridge, also known as a resin-bonded fixed partial denture. The two wings bond to the lingual surfaces of the central incisor and canine abutments, providing splinting to stabilize the teeth and prevent root migration or orthodontic drift in the edentulous space. This is particularly useful as an interim prosthesis in younger patients (e.g., adolescents) with a missing lateral incisor, maintaining space and esthetics until skeletal maturity allows for definitive replacement with dental implants (typically around age 18-23, depending on growth cessation verified by radiographs like hand-wrist films).

The shallow overbite reduces occlusal forces on the bond, enhancing longevity. Non-precious metal (e.g., nickel-chromium) perforated wings (Rochette style) offer mechanical retention via resin flow-through perforations, as base metals aren't reliably acid-etchable. Minimal tooth preparation preserves enamel, minimizes sensitivity, and supports reversibility for future implants. Survival rates for two-wing anterior Maryland bridges are high (90-95% over 5-10 years), with debonding as the main issue (often re-bondable without remake).

Indications and Contraindications:

- Indications: Missing maxillary lateral incisor, shallow overbite (<4 mm), adequate enamel on both abutments (central



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and canine, ~30-40 mm² total bonding area per wing), no parafunction, good hygiene, and need for splinting to prevent migration in growing patients awaiting implants.

- Contraindications: Deep overbite, heavy occlusion, inadequate space/enamel, mobile abutments, high caries risk, or if implants are imminent.
- Advantages: Conservative, esthetic, splints abutments to maintain alignment, reversible for implants.
- Disadvantages: Risk of debonding; requires monitoring; not permanent.

Materials and Tools Needed: Same as before, with emphasis on dual-wing framework design.

Step 1: Initial Assessment and Planning

- Clinically and radiographically evaluate: Confirm space for the lateral incisor pontic (~6-7 mm mesiodistal). Assess both abutments (central incisor and canine) for health, enamel quantity, and no lingual restorations.
- Occlusion check: Shallow overbite confirmed; use articulating paper to ensure no interference on the planned pontic/wings. Articulated study models or diagnostic wax-up to simulate the two-wing bridge, verifying splinting effect and light/no pontic contact in ICP.
- Growth assessment: Verify patient's age and use cephalometric radiographs to estimate time until implant placement; design bridge as interim (e.g., 3-7 years).
- Shade selection and photos.



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- Informed consent: Emphasize temporary nature, splinting benefits for preventing migration (e.g., central drifting distally, canine mesially), and implant transition plan.
- If needed, minor orthodontic space adjustment or tissue training with temporary resin for ovate pontic.

This ensures the two-wing design addresses migration risk.

Step 2: Minimal Tooth Preparation

Prepare both abutments conservatively (ideally no preparation) on lingual surfaces only:

- Isolate with rubber dam or cotton rolls.
- Lightly roughen lingual enamel (diamond bur or 30-50 μm alumina sandblast) without dentin exposure.
- Design for parallelism between abutments; keep preps supragingival and <0.5 mm deep total. No labial/incisal reduction.
- Clean and verify fit space for wings (wings should wrap $\sim 180^\circ$ without bulk).

The dual prep splints the teeth, minimizing independent movement.

Step 3: Impressions and Provisionalization

- Impressions /Scan: Polyvinyl siloxane or digital scan of prepared abutments, opposing arch, and bite.
- Capture ridge for ovate pontic (convex for gingival esthetics; minor ridgeplasty if flat).



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- Lab instructions: Two-wing PFM Maryland bridge, non-precious metal framework (0.7 mm thick), perforated wings (1-2 mm holes for resin retention), porcelain pontic matching shade/shape, connectors rigid but minimal (3 mm height), no pontic occlusion, seating tag.
- Provisional: Acrylic splint or Essix retainer to maintain space and prevent initial migration; essential for splinting intent.

Step 4: Laboratory Fabrication

- Lab casts framework with two perforated wings for mechanical interlocking.
- Fuse porcelain to pontic for anterior esthetics.
- Wings: Positioned lingually on central (distal wrap) and canine (mesial wrap), staying 2 mm from incisal to avoid show-through.
- Sandblast intaglio; add lug for try-in.
- Ensure design splints abutments rigidly to counter migration forces.

Step 5: Try-In and Adjustment

- Seat bridge: Verify passive fit on both wings, no rocking, proper splinting (abutments feel connected).
- Check esthetics, occlusion (no pontic contacts in excursions; minimal on retainers), and emergence profile.
- Adjust/polish as needed; confirm shallow overbite compatibility.

Step 6: Bonding and Cementation



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- Isolate both abutments with rubber dam.
- Clean/etch enamel (35% phosphoric acid, 15-30 sec), rinse/dry.
- Bridge prep: Sandblast wings (50 μ m alumina).
- Cement: Dual cure resin on wings; seat with pressure, cure, remove excess. Floss perforations for cleanability.
- Final occlusion/esthetics check; instruct on maintenance (soft diet initially, hygiene, avoid trauma) and recall for monitoring migration/debonding.
- Transition plan: At implant age, debond bridge (often with ultrasonic scaler), assess space (splinting prevents closure), proceed to implant.

Post-op: Weekly then biannual recalls; radiographs to monitor roots. This two-wing approach effectively splints for stability until implants.

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