

# The Perils of “Thin\Scalloped” Gingiva - A Restorative Perspective

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**T**tissue Biotype" has become a popular word in dentistry. If tissues are thin and friable around crowns, we worry that tissues may recede away from crown margins. Great care with regard to tissue management during tooth preparation, tissue retraction during final impressions, maintenance of biologic width and marginal integrity are essential to maintain tissue health but often, despite great care, thin tissue will still recede around crowns or veneers.

Periodontists can increase our patient's zone of attached gingiva prior to crown fabrication. Alternatively connective tissue grafts may be placed under the mucosa to bulk up thin tissue. Not every patient however, will agree to undergo elective periodontal surgery prior to prosthetic treatment. Further, surgical procedures have been developed to move oral tissues coronally following tissue recession but results have been inconsistent with this treatment approach.

A restorative solution to soft tissue migration is the "Porcelain Margin Repair". This procedure must be completed prior to final cementation of crowns or veneers and is described below.

## Dental History

Our patient is a mid twenties female with thin attached gingiva, a class two occlusion with severe crowding (Fig. a). She has initially undergone orthodontic treatment (Fig. b) and fabrication of splinted provisional crowns in the maxillary arch following orthodontic treatment (Fig. c). Mandibular anterior teeth were splinted with ligature wire to avoid crown relapse following orthodontic treatment.

At insertion, "all-ceramic" crowns are tried-in, however, soft tissue recession is noted to be apical to the existing crown margins on abutments #12,13 (Fig. d). The goal of the porcelain margin repair will be to extend the apical buccal



Fig. a



Fig. b



Fig. c



Fig. d

Fig. a: Pre-treatment view of dentition illustrating severe crowding and thin, scalloped gingival.

Fig. b: Treatment view during orthodontics with abutments #14 and #41 removed to allow for correction of crowding.

Fig. c: Provisional stage with temporary acrylic crowns placed on all maxillary and some mandibular teeth.

Fig. d: Initial insertion of splinted crowns #13, 12, 11. At gingival crest, soft tissue apical migration is noted on abutments #13, 12.



Fig. e



Fig. f



Fig. ga



Fig. gb

Fig. e: Tray adhesive compatible with elastomeric impression material is coated both on the inside and outside of the porcelain surface in the region where the new porcelain is to be applied.

Fig. f: Following tooth preparation, a thin retraction cord with hemostatic agent is inserted below the crest of gingival in the region of the tooth preparation.

Fig. g: Elastomeric impression material is syringed at the gingival crest and air is blown lightly at the impression material to help direct the flow of impression material under the crown margin and the retracted tissue. THE RETRACTION CORD IS LEFT IN THE MOUTH FOR THE IMPRESSION. Impression material is applied to a thickness of at least 4 mm in order to prevent tearing of impression material when the tooth is removed from the mouth.

porcelain slightly below the crest of the gingiva for a more aesthetic result.

Crown margin extension involves both a chairside dental procedure and a laboratory procedure. Both procedures are described below as the ceramist and dentist must work together to correct the soft tissue problem.

## Chairside Dental Procedure

### Appointment One:

1. Administer adequate local anaesthesia on the buccal side.
2. Coat the porcelain with tray adhesive in the region where new porcelain extension will be required. (Fig. e)
3. Using end cutting diamond burs or chamfer burs, extend the crown margin apically and

subgingivally in the area where tissues have receded.

4. Insert one thickness of thin retraction cord (Pascal #1) with diluted hemostatic agent (ferric sulphate) into the sulcus in the area only where crown extension has been completed. (Fig. f)
5. Inject light body elastomeric impression material and blow down gently into the area where the tooth has been re-prepared. Add additional impression material for thickness. (Fig. ga-b)
6. Carefully, peel away the porcelain crown and the impression material from the teeth in the mouth. Cut away (with scissors) any extra impression material. (Fig. h) Submit to lab along with the patient's master cast for laboratory procedure.

## Laboratory Procedure

1. Cut away the buccal region of the tooth die that corresponds to the region where the tooth modifications have been made.
2. While holding the porcelain crown and impression material on the tooth die, pattern resin or duralay acrylic is flowed with a small brush into the space between the tooth die and the impression material. After the pattern resin has hardened, excess resin is ground away and the new margin is outlined with a graphite pencil. (Fig. i)
3. Tray adhesive is now removed and the area is prepared to receive shoulder porcelain using a lift off technique. (Fig. j)
4. Two or more applications of shoulder porcelain will be required to successfully apply the new

porcelain. Any undercuts created in the porcelain that may interfere with seating in the mouth are reduced with a diamond bur prior to returning to the dentist for crown insertion. (Fig. k)

## Insertion of Crown with Porcelain Margin Repair

1. Hydrofluoric Acid is applied to the inside of the crown to prepare the porcelain surface if a bonding technique is to be used followed by a silane coupler and unfilled resin.
2. Crown luting agent is applied and excess cement removed. Oral hygiene care is discussed with patients as they must clearly understand that thin soft tissues may continue to migrate away from the new crown margin. Daily rubber tipping and massage of soft tissues in the region is highly recommended (Fig. k).



Fig. h

Fig. h: Internal view shows the area of the extended crown margin. Carefully, this is transported to the lab along with the master cast for porcelain addition.

(i) Pattern Resin is applied to the tooth dies and excess resin is removed. Graphite pencil clearly indicates the new margin that porcelain is to be applied to.

(j) The tray adhesive must be removed prior to the application of the shoulder powder. A porcelain release agent is applied over the resin to allow the porcelain to lift off the tooth die during the porcelain application.



Fig. i



Fig. j

## Conclusions

A combined laboratory\chairside procedure is described to extend porcelain margins on either “all-ceramic” crowns or on porcelain bonded to metal crowns where the buccal finish line will be in porcelain. The procedure may be considered either when the crown margin is deemed to be short of the existing tooth margin or when it is necessary to create a new finish line on an altered tooth die. **[1]**

### About the author



**Dr. Morley Stephen Rubinoff** is a graduate of the Faculty of Dentistry, University of Toronto (1974).

Dr. Rubinoff completed a post-doctoral program in Prosthodontics from the State University of New York at Buffalo in 1984.

Dr. Rubinoff has served as the President of the Association of Prosthodontists of Ontario and Canada and is the founding president of the Canadian Dental Protective Association. Dr. Rubinoff is a Canadian ITI Fellow.



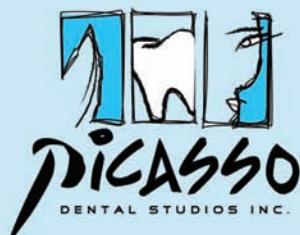
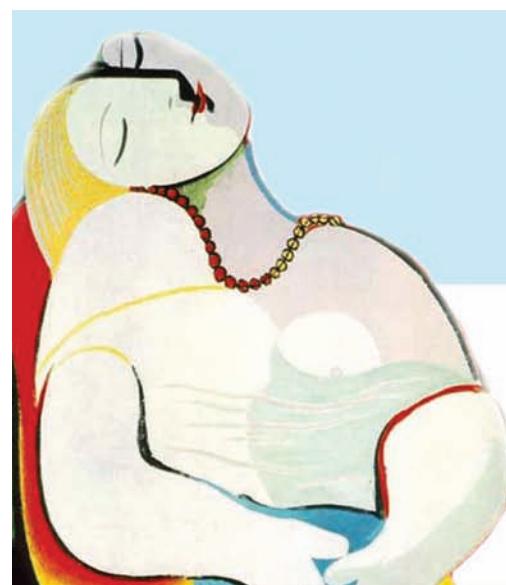
Fig. k - End Result

Fig. k: Crowns are bonded or cemented in the dentition. Oral hygiene care is stressed and no promises are made that thin tissue will not continue to recede despite great oral health care.

### Acknowledgment



Artistry has been done by Masoud Niknejad R.D.T  
at Picasso Dental Studios.



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