

## THE ROLE OF ANTIBIOTICS IN REGENERATING BONE

Scaling and root planing (SRP) removes subgingival bacteria and resolves infection in order to regain lost attachment levels. But 10-20% of the time, attachment loss still persists. This is primarily because the bacterial pathogens reside in areas not accessible to our instruments or because they have embedded into the root surface.



The rationale for the use of antibiotics to control periodontitis and enhance bone regeneration is to support the host defense system by killing subgingival bacteria not affected by physically cleaning the root surface.

Antibiotics can be administered systemically and/or locally. Traditionally, Amoxicillin is given systemically, however, the combination of Amoxicillin with Metronidazole is proven to be most affective against the most aggressive forms of periodontitis in the face of a lack of obvious bacterial accumulation.

Local antibiotics in this country are dominated by one company in the form of Arestin minocycline microspheres. These are injected into a



periodontal pocket after scaling and root planing, or placed under the flap on the root surface at the time of flap debridement. The minocycline is actively killing bacteria for one month from the time that it is placed.

## GUIDED TISSUE REGENERATION

Bone is lost from around the teeth as a result of trauma or most commonly from a bacterial infection, either endodontic or periodontal in nature. Periodontally, bacteria populate the root surface, and for those of us who are genetically susceptible, bone will run away from the bacteria as a result.

Bone loss can also be in the osseous ridge, a result of an extracted tooth or a past trauma, in which case the ridge is now deficient.

Regenerating bone is generally accepted to involve the introduction of bone grafting material into the void where the bone is missing and covering it with a membrane. And while this is the most common and probably fastest way to regenerate bone, bone can be replaced by:

1. Simply excluding the soft tissue from growing into a fresh defect (by proper placement of a membrane), or
2. Adding biologic materials other than bone such as Emdogain or Bone Morphogenetic Protein to encourage bone healing, or
3. Creating a clean and healthy environment after removing bacteria as much as possible to an acceptable threshold to allow the body time to regenerate on its own.

The last option in particular may be necessary if a patient is averse to surgical therapy, or unable to endure complex surgical treatment.

Please enjoy this issue of **ProbeTips** which will review a few cases where bone was regenerated without the use of bone grafting material.

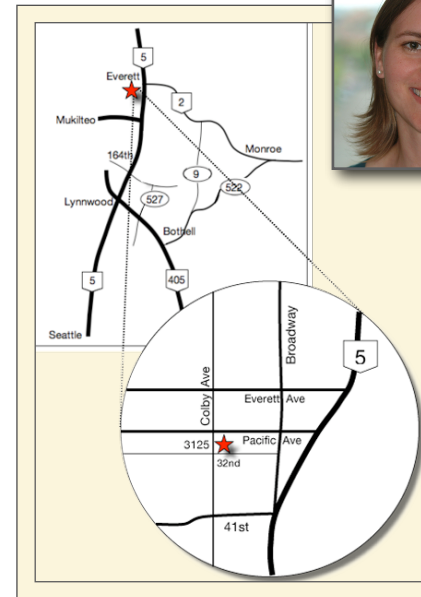
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Pamela Nicoara is a Board Certified Periodontist practicing in Everett since 2007. She is a UW Perio graduate, and a transplant from Dallas, Texas.

She is driven to achieve esthetic and predictable outcomes, particularly for anterior implant cases, and is always looking to improve processes and results. You can email her directly below with questions, comments, or suggestions for future newsletters.



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# PROBE TIPS

A QUARTERLY PERIODONTAL  
NEWSLETTER

BY PAMELA NICOARA DDS MSD

## Bone Grafting without Bone



VOLUME 17, No. 1

JUNE 2024



# Bone Regeneration without Bone Grafting

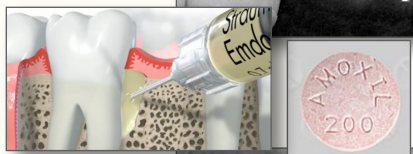
## CASE 1

The first case is a 73 year old woman with Alzheimers disease. Her husband and care giver was interested in maintaining as many teeth as possible as predictably as possible and with as few appointments as possible.

You can see from the pre-operative radiograph the amount of calculus on the root surfaces and the severe amount of bone loss on both #13 as well as the entire apex of the distofacial root of tooth #14. Root canal therapy would have been required to save #14, but with a poor long term prognosis, tooth #14 was extracted instead. Tooth #13 was not mobile, and during surgery all root surfaces were accessible.



You can see post-operatively the amount of calculus removal accomplished, and the severity of the bone loss. Emdogain was used on the root of #13 in addition to a systemic antibiotic to enhance wound healing.



At 26 months, note the significant amount of bone regeneration just by creating a bacteria free environment to allow the bone to regenerate.



## CASE 2

This next case involves a patient in my practice for 15 years. I first saw him in 2009 and initiated care with scaling and root planing of teeth #25 and #27 in particular. Tooth #27 had an 11mm probing. At the first 3 month maintenance visit after scaling, Arestin was used as the probing was still in the 5-6mm range. But every visit after that the probing was 3mm and the patient's home care was excellent. Even though radiographically the bone had not regenerated fully when the probing was 3mm, you can see eventually over time how the bone regenerated on the mesial of #27 on it's own.



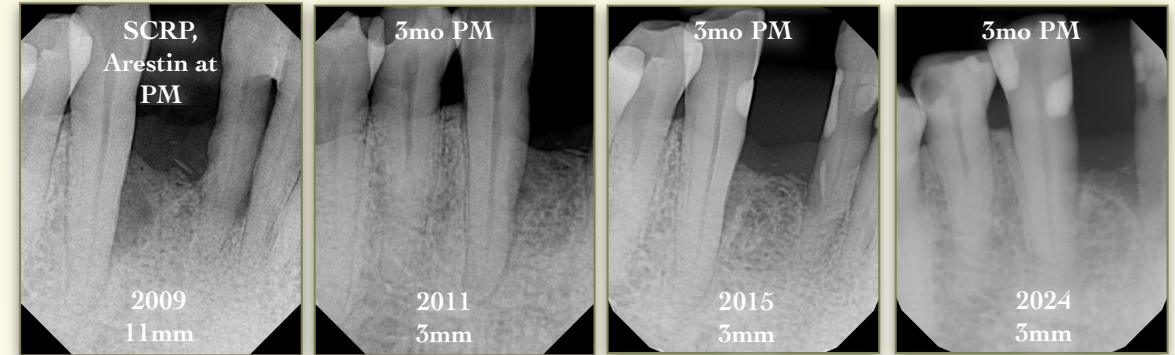
In 2024 the patient returned to the practice after having left in 2020. He was seen for evaluation for implant replacement of #22 and 26 as he was tired of his mandibular removable partial denture.

The condition of #25 had deteriorated both in regards to bone loss and caries, and with class III mobility, it needed to be removed. Tooth #24 also required endodontic treatment to manage the apical lucency and ensure the health of the adjacent bone and teeth during the surgical phase of his care.

Teeth #22 and 26 were restored with implants, and #25 was replaced with a cantilever off of implant #26. Bone grafting was used at this stage of his care to rebuild the ridge at site #25 in particular, as well as to bolster the bone facially at each implant at #22 and 26.

All cases are patients of Dr. Pamela Nicoara  
Find more online at [www.nicoaraperio.com](http://www.nicoaraperio.com)!

## Bone Regeneration on the mesial of #27 with Scaling, Arestin and Periodontal Maintenance Only.



## Tooth #27 well maintained for 15 years, with adjacent successful implant replacement.

