

Busting the Top Three Endo Myths

Dr. Sonia Chopra, DDS

After practicing endodontics for over a decade, I have heard several endodontic myths that dentists commonly believe. All too often, dentists think that:

- Myth #1: Big Lesions Don't Heal
- Myth #2: A J-Shaped Radiolucency Means the Tooth Is Fractured
- Myth #3: Endo Ice Is Only for Endodontists

I'm going to debunk each one of these myths so you can better serve your patients and ensure improved outcomes.

Myth #1: Big Lesions Don't Heal

I remember when I was in residency, I heard several people say that big lesions don't heal. Say what? Well, I beg to differ. The key is knowing why the lesion isn't healing and go from there. In order to do that, we have to talk about why lesions occur in the first place.

In the classic study by Kakehashi et al. it was shown that, in order to have apical bone resorption, there must be bacteria present in the canals (Kakehashi S 1965). The study looked at conventional rats and germ-free rats and found that teeth with exposed pulps only developed periapical radiolucencies in the conventional rats. What does that mean? Without bacteria, it didn't matter how exposed those pulps were, the lesions just didn't develop. To summarize the takeaway here, when you see a lesion, there's bacteria in the canals.

What happens when you do the root canal and the lesion doesn't heal? First, you have to ask yourself, "Did I really disinfect the tooth all the way? Did I find all the canals and get to the end of every canal?" Remember, a millimeter is a mile in the endodontic world, and if you don't get all the way down to the very tip, there could still be some bacteria remaining.

So, first I recommend really assessing your disinfection protocol, and my suggestion will always be to retreat first! So often, when dentists can't explain why a root canal is failing, they automatically think that the tooth is cracked, and they start thinking about replacing the tooth. But this can be overkill! Nobody is perfect and even the best of us need to retreat our own cases (ask me how I know!). So I ask that you give teeth a chance, and that usually means retreating first!



Fig. 1: Preoperative radiograph



Fig. 2: Preoperative axial view of CBCT



Fig. 3: Buccal view of surgical site



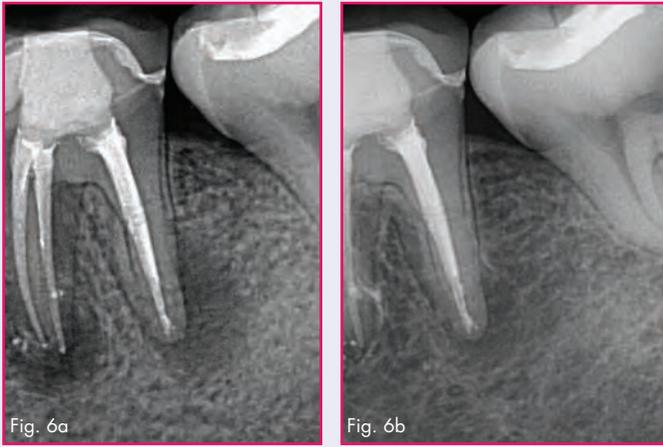
Fig. 4: Palatal view of surgical site



Fig. 5: Clinical view of bone graft



Fig. 6: Immediate postoperative radiograph



Figs. 6a - 6b: One year postoperative radiographs

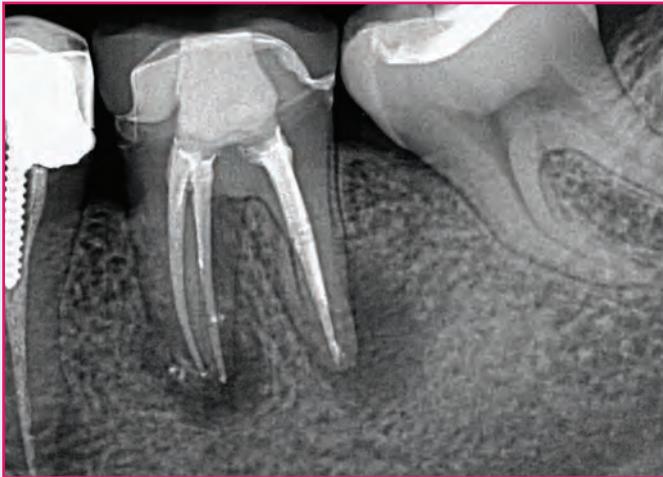


Fig. 7: Immediate postoperative radiograph



Fig. 8: One year recall radiograph

If symptoms continue to persist after the retreatment, then think about the other options like an apicoectomy. There are plenty of anatomical studies that show that, in the last 3mm of the root, there can be extensive apical ramifications and isthmuses. When these areas are hard to clean, the only option

is to physically remove it with an apicoectomy. Thank goodness they came up with this procedure, because it allows us to save even more teeth.

Just remember that an apicoectomy is not something that you want to just jump into; you want to exhaust all of your orthograde options first. Something to keep in mind when you are treatment planning is that the apicoectomy will only treat the last 6mm of the root, so if you suspect that there is bacteria in the entire root, you want to retreat first. See where I am going with this yet?

One other reason why your lesion may not heal is because the lesion is actually a cyst and not an abscess or a granuloma. We all learned in dental school that the term “cyst” is a histological definition, and it is impossible to determine what your lesion is unless you biopsy the area. Well, let’s review the clinical significance of the cyst. You can do the most beautiful root canal and not get resolution of your lesion, because the body has created an epithelial lining or wall around that lesion (that’s the definition of a cyst!). Now, that lesion must be enucleated before you will see any resolution. This type of surgical intervention is necessary for about 3-8% cases (Bhaskar SN 1966, Nair PNR 1986, Nair PNR 1996). The interesting thing here is that you don’t always need to do the apicoectomy in these cases, you just need to clean out that bony crypt.

Check out this example that shows complete healing and bone regeneration in the area of the lesion after complete enucleation of the area with no apicoectomy. The root canals were done by me and the surgery was done by a periodontist (Dr. Mehul Gadhia). We worked as a team to help this patient. Note, these types of lesions are more typical in the anterior region of the mouth.

One year later the patient has fully regenerated his bone and the periapical lesion has resolved (Images 6a and 6b).

Big lesions also need a dose of time to heal completely, sometimes as long as four years depending on the size, so be patient. Bone is particularly slow to heal. I don’t even want to see my patients back for at least one year after treatment since I know that there will be little change on the radiograph.

When you are evaluating whether your root canal is working and healing is taking place, make sure you always compare your recall radiograph with your preoperative radiograph and assess carefully. It’s totally normal if the lesion is not fully resolved at the one year mark, as long as it is getting smaller. So don’t fret and don’t assume that the root canal is failing because I bet it just needs more time to heal.

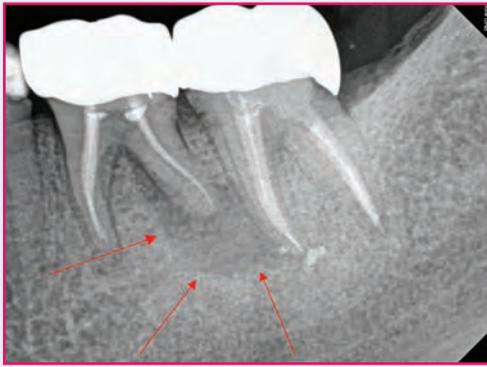


Fig. 9: Preoperative radiograph

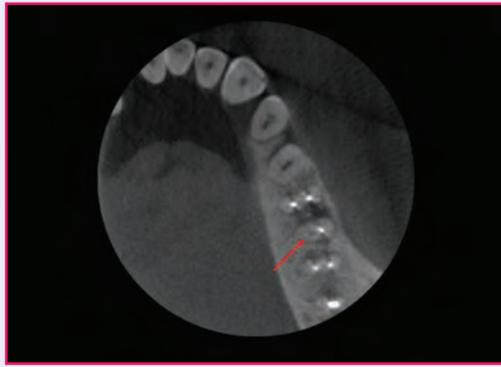


Fig. 10: Axial view of CBCT



Fig. 11: Preoperative radiograph

Check out this example. The first image is the immediate postoperative radiograph (Image 7) and the second image is the one year recall radiograph (Image 8).

The lesion is still there, but it is significantly smaller than before. So give your treatments the time they need to heal.

Going back to our myth, do big lesions heal? Absolutely, and quite well. You just need to understand the etiology and give it time, that's all. It's really that simple.

Myth #2: A J-Shaped Radiolucency Means the Tooth Is Fractured

If I could do away with one concept that is taught in dental school it's the idea that a J-shaped radiolucency is synonymous with a vertical root fracture. That is simply not true.

When I see a J-shaped radiolucency it means one of two things: either the tooth has a draining sinus tract coming from an endodontic infection or, yes, the tooth is fractured. The problem is that the two look exactly the same clinically. So what are you supposed to do? Take out every tooth I see with this problem? I think not! In this situation, it is so important that you truly understand the etiology of the whole tooth story to get the big picture, and you need to be very confident with your endodontic diagnostic skills.

How do you get good at endodontic diagnosis? The answer is endo ice, my friends. Endo ice is such an important tool in your dental armamentarium, and you should be using it every single day in your practice (even if you don't do any endo!). It is probably the cheapest investment you can make in being the best dentist you can be. This tool can single-handedly change your treatment plan in an instant.

Let's say you have confirmed that the tooth does not respond to a cold test and that the tooth is necrotic. Know that the necrotic pulp can cause your tooth to behave like it is cracked. This means that the probing that you see going down the root or that J-shaped radiolucency that you see on the radiograph can cause some serious confusion. It could be cracked, or this simply could be the sinus tract draining through the sulcus that will resolve itself after the root canal or the retreatment. Let's look at this radiograph that shows this exact scenario: the J-shaped radiolucency.

At first glance, many people would think they need to extract this tooth because it has a textbook appearance of a vertical root fracture and this area probes to 9-10mm along the distal root (Image 9). However, when you review the CBCT, you see that there is another possible etiology of failure: an untreated distal canal (Image 10).

That brings me to my next tool that will help you see the whole tooth story, your CBCT. If you have a CBCT, you should use it to help you identify if there are any other etiologies of root canal failure. When there is bacteria, there are lesions (Kakehashi, 1965). The bacteria remaining in this canal is causing that apical bone resorption to mimic that of a vertical root fracture. It only looks that big because it's been there for some time, and the infection found its path of least resistance out of the body via a sinus tract.

All this tooth needs is another root canal to get it back into health because it has a necrotic untreated canal.

Myth #3: Endo Ice Is Only for Endodontists

What do you do when you see a lesion that encompasses two teeth? Choice A: They both need endo. Choice B: You

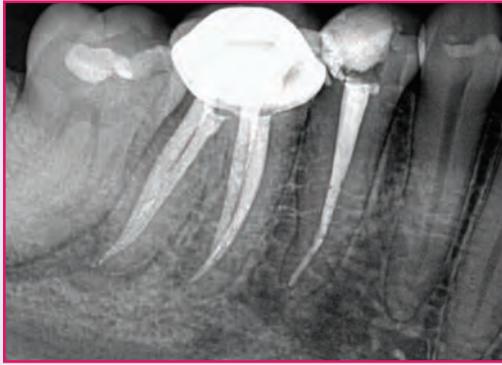


Fig. 12: Immediate postoperative radiograph

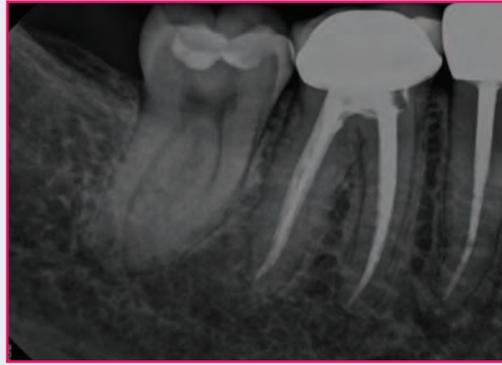


Fig. 13: One year recall radiograph



Fig. 14: One year recall sagittal view CBCT

whip out your endo ice to give you the answers that you need. The answer is choice B.

Let's take a deeper look, shall we? In this case, we have a large lesion that expands from tooth #30 to 31 (Image 11).

Well if you know that a periapical radiolucency can only be associated with a tooth that has a necrotic pulp or has been previously treated, you will understand just how important your cold test is once again. If you use that handy dandy endo ice, you will see that tooth #31 is completely vital and responds really well to cold. Therefore, you will know that it has no contribution to the endodontic lesion. From there you can develop a treatment plan to only retreat tooth #31. That's what I did in this case.

From the postoperative radiograph, you can see that there was another distal canal. Once that was treated (Image 12), the lesion was able to heal (Image 13).

The sagittal CBCT image at one year (Image 14) shows the regeneration of the bone a little more clearly.

I achieved an excellent outcome in this case, and it's all thanks to endo ice helping me make the right diagnosis and develop a treatment plan that truly served the patient.

Mythbusting: Endo Edition

What could start as idle dental school chatter can become harmful endodontic myths that really impact dentists and their patients.

Have faith in the healing power of your patients' lesions, remember that J-shaped radiolucencies don't always mean

the tooth is cracked, and make sure you stock up on endo ice!

By making the proper diagnosis, using the valuable tools at your disposal, and understanding the basics, you'll go a long way and save a ton of teeth for your patients. I hope you can see why I'm so passionate about my mission to #giveteethachance — it's not just for endodontists! ■

References

- Bhaskar SN. Periapical lesion - types, incidence and clinical features. *Oral Surgery, Oral Medicine and Oral Pathology*. 1966;21(5):657-71. DOI: 10.1016/0030-4220(66)90044-2. Accessed August 19, 2020.
- Kakehashi S. The effects of surgical exposures of dental pulps in germ-free and conventional laboratory rats. *Oral Surgery, Oral Medicine and Oral Pathology*. 1965;20(3):340-9. [https://doi.org/10.1016/0030-4220\(65\)90166-0](https://doi.org/10.1016/0030-4220(65)90166-0). Accessed July 9, 2020.
- Nair PNR, Pajarola G, Schroeder HE. The types and incidence of human periapical lesions obtained with extracted teeth. *Oral Surgery, Oral Medicine and Oral Pathology*. 1996;81(1):93-102. DOI:10.1016/s1079-2104(96)80156-9. Accessed August 19, 2020.
- Nair PNR, Schmid-Meier E. An apical granuloma with epithelial integument. *Oral Surgery, Oral Medicine and Oral Pathology*. 1986;62(6):698-703. [https://doi.org/10.1016/00304220\(86\)90266-5](https://doi.org/10.1016/00304220(86)90266-5). Accessed August 19, 2020.

About the author



Sonia Chopra, DDS, is a board-certified endodontist and owner of Ballantyne Endodontics in Charlotte, North Carolina. She is the founder of E-School, an innovative, online continuing education course in endodontics that has trained hundreds of general dentists. She trains dental residents at Atrium Medical Center in Charlotte, regularly speaks at professional events like the Association of American Endodontists, and contributes to scholarly journals, podcasts, and media outlets for dentists. Additionally, she is co-founder of A Night for Smiles, an annual gala to support Charlotte-area dental health initiatives.