TABLE 4

Radiographic Characteristics of Teeth

Of all 275 teeth that were referred to periodontist for crown lengthening procedures		Percentage (number)	
Teeth that lack poor radiographic characteristics		61%	(168)
Teeth with poor radiographic characteristics	Restorative criteria not met	0.4%	(1)
	Furcation exposure likely	23%	(63)
	Poor crown-to-root ratio likely	26%	(70)
	Excessive bone removal needed	5.8 %	(16)

This table lists radiographic characteristics of teeth referred for crown lengthening. Poor characteristics are those that were considered not conducive for crown lengthening. Percentages do not add to 100 percent as many teeth had more than just one characteristic that made them poor candidates for crown lengthening.

TABLE 5

Radiographic Characteristics and Outcome of Teeth With Crown Lengthening Needs

Teeth	Radiographic characteristic(s) conducive to crown lengthening	Poor radiographic characteristic(s)
Restored	64	8
Extracted	14	57
If a tooth has radiographic characteristics conducive to crown lengthening, the likelihood of tooth being restored was ...		88.9%
If a tooth had at least one poor radiographic characteristic, the likelihood of extraction was ...		80.3%

Retrospectively, radiographic characteristics were determined for all 143 teeth that originally were identified to need crown lengthening by a general dentist, and where treatment was completed as either restoration or extraction. As seen here, radiographic characteristics correlate well with treatment outcome.

diabetes mellitus. In all cases, these were controlled enough to have little effect on dental treatment. The majority of cases needed treatment or maintenance procedures for plaque-associated gingivitis and mild generalized chronic periodontitis along with crown lengthening and restorative procedures. The characteristics of patients were slightly different from the average dental clinic patient, with a notably higher prevalence of hypertension. Case characteristics did not change at each stage of treatment, indicating no case selection bias between general dentists and periodontists.

As seen in **TABLES 3A** and **3B**, the most common tooth receiving crown lengthening procedures in our clinic was a posterior tooth with deep caries. The tooth surface needing crown lengthening was an interproximal tooth surface in nearly all cases, and in the majority of cases, recurrent caries on existing restorations triggered the need for crown lengthening. No significant differences were observed between right and left sides or maxillary and mandibular teeth in the number of teeth receiving crown lengthening. The proportion of tooth types for teeth with crown lengthening needs did not change significantly during the treatment process and neither did the restorative reason for crown lengthening between initial identification of crown lengthening needs, evaluation by a periodontist and actual surgery. Interestingly, mandibular canines and incisors were never considered for crown lengthening procedures (**TABLE 3A**). The need for crown lengthening was triggered by many restorative reasons, as listed in **TABLE 3B**, but at the time of crown lengthening, reasons other than caries were limited to concerns about biologic width invasion, short crowns, tooth fractures, missing restoration and open margins.

What Radiographic Characteristics Are Most Associated With Extraction of Teeth That Have Crown Lengthening Needs?

As shown in **TABLE 4**, for teeth that were referred to a periodontist for crown lengthening, the most common radiographic characteristic associated with tooth extraction was poor crown-to-root ratio and proximity of the furcation to the proposed restoration. As shown in **TABLE 5**, in patients who completed dental treatment, 89 percent of teeth that had radiographic characteristics conducive to crown lengthening were restored. In contrast, 80 percent of teeth that had at least one poor radiographic characteristic were extracted.

Does Crown Lengthening Improve Restorative Success?

In our setting, one-year success rates were nearly twice as high (44 percent) if a tooth with crown lengthening needs was managed by a general dentist and periodontist, compared to teeth with crown lengthening needs managed by general dentists alone (24 percent) (**TABLE 6**). Restorative success was defined if the tooth in question was in function, the restoration still in place with no new caries or replacement planned, probing depths equal or less than 4 mm and no bleeding on probing. Teeth with crown lengthening needs that received crown lengthening procedures also had higher rates of restoration regardless of follow-up time. Importantly, differences in extractions, teeth with periodontal problems after restoration and dropout rates were not significantly different between teeth with crown lengthening needs that were managed by restorative dentists or those jointly managed by restorative dentists and periodontists. We also followed teeth where crown lengthening was recommended but not performed and found that the majority of