

Table 2
Chemical Retraction Agents Typically Used in Clinical Practice (Vasoconstrictors, Hemostatics, and Astringents)³¹⁻³³

AGENT	CONCENTRATION	ACTION	COMMENTS
Racemic Epinephrine	8%	Vasoconstrictor	Possible hemodynamic changes (hypertension and tachycardia); monitor blood pressure and heart rate closely. Use with caution in patients with existing cardiac disease. A 2.5-cm piece of epinephrine-impregnated cord can release one-third of the maximum recommended dose (mrd) for a healthy patient, and twice the mrd for a cardiac patient. Consider alternatives if multiple teeth are involved or multiple impressions are needed.
Aluminum Chloride	5% to 25%	Astringent	Effective for local hemostasis and drying of the sulcus. Do not exceed 10-minute application, especially in concentrations >10%. Can be associated with a 0.1 mm loss of crestal gingiva. Has been reported to impair the setting of polyvinyl siloxane impression materials; to prevent this possible reaction rinse thoroughly with water after cord is removed.
Aluminum Sulfate	25%	Astringent	May have an irritating and even caustic effect on tissues. Aluminum chloride may be preferred. May retard the setting of polyvinyl siloxane impression materials; rinse thoroughly after use.
Alum	100%	Astringent	AKA potassium aluminum sulfate; good hemostasis but less pronounced than epinephrine. To avoid local tissue injury limit use to 10 minutes or less. May be considered a viable alternative to epinephrine if systemic effects are a concern. May retard the setting of polyvinyl siloxane impression materials; rinse thoroughly after use.
Ferric Sulfate	13.3% to 15%	Hemostatic (styptic)	Solutions greater than 15% have a higher incidence of postoperative dentin sensitivity; can cause black or bluish tissue discoloration for one to two days after application. Can be used with aluminum chloride but not with epinephrine (if combined with epinephrine a blue precipitate will form). Should be used for 1 to 3 minutes; do not exceed 10 minutes. Can impair setting of polyether and polyvinyl siloxane impression material; rinse thoroughly after use. Use during the impression stage or at delivery may cause a grayish/black discoloration under glass ceramic restorations.