



# SAINT LOUIS UNIVERSITY

## Center for Advanced Dental Education

### EMERGENCY AND FOLLOW-UP MANAGEMENT OF OTHER DENTAL ALVEOLAR INJURIES

	Concussion	Subluxation	Extrusion	Lateral luxation	Intrusion
<b>Diagnosis/clinical findings</b>	Tooth tender to touch; no displacement; no mobility	Tooth tender to touch and mobile; bleeding from gums	Tooth partially protruding from bone/jaw	Tooth displaced axially from normal position; not tender to touch or mobile – possibly locked into bone (high metallic sound upon percussion)	Tooth is displaced deeper into the bone/jaw; high metallic sound upon percussion
<b>Radiographic/clinical assessment and findings</b>	Radiographs; evaluate pulp chamber size and root development; sensitivity testing				
<b>Treatment</b>	Palliative; flexible splint (7-10 days) for comfort if needed		Reposition; flexible splint	Reposition into normal position; the tooth often must be extruded occlusally past the bony lock prior to repositioning; evaluate position with radiograph; flexible splint	Slightly luxate with forceps; with <i>incomplete root formation</i> , allow for spontaneous re-eruption; teeth with <i>complete root formation</i> , orthodontic or surgical repositioning
<b>Patient instruction</b>	1. soft diet; 2. brush with a soft tooth brush after each meal; 3. 0.12% chlorhexidine rinse every 12 hours for 1 week				
<b>Post treatment evaluation (Up to 3 weeks)</b>	Splint removal; clinical/radiographic exam; sensibility testing		Splint removal; in case of radiographic marginal bone breakdown, add 3-4 weeks to splint time; clinical and radiographic exam; sensibility testing		Initiate root canal therapy in 1-3; splint removal except in teeth with open apices that erupt spontaneously
<b>Follow-up</b>	<b>SEE GUIDELINES BELOW FOR FOLLOW-UP RECOMMENDATIONS</b>				

	Crown fracture		Crown-root fracture	Root fracture	Alveolar fracture
	<i>Uncomplicated</i>	<i>Complicated</i>			
<b>Diagnosis/clinical finding</b>	Enamel or enamel dentin fracture No pulp exposure	Enamel/dentin fracture; pulp exposed	Crown attached to gingiva and mobile; pulp may or not be exposed	Crown usually mobile and sometimes displaced	Teeth and bone mobile
<b>Radiographic/clinical assessment and findings</b>	Radiographs; evaluate pulp chamber size and root development; sensitivity testing				
<b>Treatment</b>	Cover dentin; a. glass-ionomer (temporary); b. composite resin; c. bond fragment; consider Ca(OH) <sub>2</sub> if close to the pulp	<i>Immature tooth</i> : a. pulp capping; b. partial pulpotomy with Ca(OH) <sub>2</sub> ; c. bacteria tight coronal seal <i>Mature tooth</i> : a. as with immature tooth; b. root canal therapy	Emergency–stabilize coronal fragment with acid etch/resin splint; definitive treatment–expose subgingival fracture site by; a. gingivectomy; b. orthodontic or surgical extrusion; <i>Immature tooth</i> : vital pulp therapy; <i>Mature tooth</i> : root canal therapy	Reposition coronal fragment; flexible splint 3-4 weeks	Reposition fragment; splint, 3-4 weeks
<b>Patient instruction</b>	1. soft diet; 2. brush with a soft tooth brush after each meal; 3. 0.12% chlorhexidine rinse 2x / day for 1 week				
<b>3-4 weeks</b>				Splint removal; clinical and radiographic exam; sensibility testing	
<b>6-8 weeks</b>	Clinical and radiographic exam, including sensibility testing (if indicated)				
<b>6 months</b>	Clinical and radiographic exam, including sensibility testing (if indicated)				
<b>Yearly</b>	Clinical and radiographic exam, including sensibility testing (if indicated) Follow-up for 5 years				



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### EMERGENCY AND FOLLOW-UP MANAGEMENT OF THE AVULSED (KNOCKED-OUT) TOOTH

Permanent teeth with closed apex – usually 10 years of age or older			Permanent teeth with open apex – usually under 10 years of age			
	<b>Replant tooth</b>	<b>Unable to replant</b>	<b>Unable to replant</b>	<b>Replant tooth</b>	<b>Unable to replant</b>	<b>Unable to replant tooth</b>
<b>On-site</b>	Rinse gently to remove foreign objects from tooth	Place in transport media a. special storage media b. milk c. saline d. saliva <b>Dry time &lt; 1 hour</b>	Transport media not used <b>Dry time &gt; 1 hour</b>	Rinse gently to remove foreign objects from tooth	Place in transport media a. special storage media b. milk c. saline d. saliva <b>Dry time &lt; 1 hour</b>	Transport media not used <b>Dry time &gt; 1 hour</b>
<b>Emergency facility</b>	Clean affected area with: a. water b. saline c. chlorhexidine Do not extract tooth	Rinse gently to remove foreign objects; remove coagulum from socket with saline; gently reposition socket wall if fractured; gently replant tooth with finger pressure	Remove debris and necrotic cementum; remove coagulum from socket with saline; gently reposition socket wall if fractured; soak tooth in any available fluoride solution at least 5 min; gently replant tooth with finger pressure	Clean affected area with: a. water b. saline c. chlorhexidine Do not extract tooth	Clean contaminated root and apical foramen with saline; soak tooth in ~ 100 mg doxycycline/20mg saline; remove coagulum from socket with saline; gently reposition socket wall if fractured; gently replant tooth with finger pressure	Replantation is usually not indicated
	Suture gingival lacerations					
	Clinically and radiographically verify normal tooth position					
	Flexible splint					
	<b>Antibiotics</b> a. Penicillin – 1000 mg stat and 500 mg every 6 hours for 7 days b. Doxycycline – 100 mg every 12 hours for 7 days for patients not susceptible to tetracycline staining			<b>Antibiotics</b> (use appropriate doses for patient age and weight) Penicillin – every 6 hours for 7 days		
	Tetnus booster as needed					
	Patient instruction: 1. soft diet; 2. brush with a soft tooth brush after each meal; 3. 0.12% chlorhexidine rinse every 12 hours for 1 week					
<b>7 – 10 days</b>	Remove flexible splint			If revascularization is a possibility, avoid endodontic treatment unless obvious signs of non-healing are present; sensibility may take 3 months to respond positively; if endodontic treatment is necessary, follow guidelines for teeth with closed apices until apexification is completed; obturate with gutta-percha		
	Remove pulp					
	Place calcium hydroxide paste					
<b>30 days</b>	Obturate with gutta-percha if lamina dura intact; if root resorption present, replace Ca(OH) <sub>2</sub> -evaluate and change Ca(OH) <sub>2</sub> every 3 months; then obturate with gutta-percha if lamina dura intact					
<b>6 months</b>	Clinical and radiographic exam (post-obturation)					
<b>1 Year</b>	Clinical and radiographic exam (follow-up for 5 years)					

Adopted from “Guidelines for the Evaluation and Management of Traumatic Dental Injuries” developed by the International Association of Dental Traumatology and published in Dental Traumatology, 2001;17:1-4, 49-52, 97-102, 145-8, 193-6. For additional guidelines, definitions of clinical and radiographic success/failure and references, visit the American Association of Endodontists web site at [www.AAE.org](http://www.AAE.org).