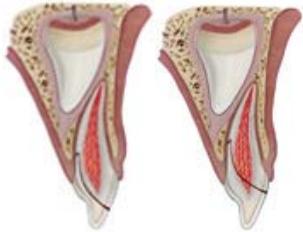


INJURIES IN THE PRIMARY DENTITION

1. Treatment guidelines for fractures of teeth and alveolar bone

				Follow-up Procedures for fractures of teeth and alveolar bone	Favorable and Unfavorable outcomes include some, but not necessarily all, of the following:	
ENAMEL FRACTURE	Clinical findings	Radiographic findings	Treatment		Favorable Outcome	Unfavorable Outcome
	<ul style="list-style-type: none"> Fracture involves enamel. 	<ul style="list-style-type: none"> No radiographic abnormalities 	<ul style="list-style-type: none"> Smooth sharp edges. 			
ENAMEL DENTIN FRACTURE	Clinical findings	Radiographic findings	Treatment		Favorable Outcome	Unfavorable Outcome
	<ul style="list-style-type: none"> Fracture involves enamel and dentin; the pulp is not exposed. 	<ul style="list-style-type: none"> No radiographic abnormalities The relation between the fracture and the pulp chamber will be disclosed 	If possible, seal completely the involved dentin with glass ionomer to prevent microleakage. In case of large lost tooth structure, the tooth can be restored with composite.	3-4 weeks C		
CROWN FRACTURE WITH EXPOSED PULP	Clinical findings	Radiographic findings	Treatment	Followup	Favorable Outcome	Unfavorable Outcome
	<ul style="list-style-type: none"> Fracture involves enamel and dentin and the pulp is exposed. 	<ul style="list-style-type: none"> The stage of root development can be determined from one exposure. 	<ul style="list-style-type: none"> If possible preserve pulp vitality by partial pulpotomy. Calcium hydroxide is a suitable material for such procedures. A well-condensed layer of pure calcium hydroxide paste can be applied over the pulp, covered with a lining such as reinforced glass ionomer. Restore the tooth with composite. The treatment is depending on the child's maturity and ability to cope. Extraction is usually the alternative option. 	1 week C 6-8 weeks C+R 1 year C+R	<ul style="list-style-type: none"> Continuing root development in immature teeth and a hard tissue barrier. 	<ul style="list-style-type: none"> Signs of apical periodontitis; no continuing root development in immature teeth. Extraction or root canal treatment

C=Clinical examination; R=Radiographic examination

				Follow-Up Procedures for fractures of teeth and alveolar bone	Favorable and Unfavorable outcomes include some, but not necessarily all, of the following:	
CROWN-ROOT FRACTURE	Clinical findings	Radiographic findings	Treatment		Favorable Outcome	Unfavorable Outcome
	<ul style="list-style-type: none"> • Fracture involves enamel, dentin and root structure; the pulp may or may not be exposed. • Additional findings may include loose, but still attached, fragments of the tooth. • There is minimal to moderate tooth displacement 	<ul style="list-style-type: none"> • In laterally positioned fractures, the extent in relation to the gingival margin can be seen. <p>One exposure is necessary to disclose multiple fragments</p>	<p>Depending on the clinical findings, two treatment scenarios may be considered:</p> <ul style="list-style-type: none"> • Fragment removal only. If the fracture involves only a small part of the root and the stable fragment is large enough to allow coronal restoration. • Extraction in all other instances 	<p>In cases of fragment removal only:</p> <p>1 week C 6-8 weeks C+R 1 year C(*)</p>	<ul style="list-style-type: none"> • Asymptomatic; continuing root development in immature teeth 	<ul style="list-style-type: none"> • Symptomatic; signs of apical periodontitis; no continuing root development in immature teeth.
ROOT FRACTURE	Clinical findings	Radiographic findings	Treatment	Follow-Up	Favorable Outcome	Unfavorable Outcome
	<ul style="list-style-type: none"> • The coronal fragment may be mobile and may be displaced. 	<ul style="list-style-type: none"> • The fracture is usually located mid-root or in the apical third. 	<ul style="list-style-type: none"> • If the coronal fragment is not displaced no treatment is required. • If the coronal fragment is displaced, extract only that fragment. The apical fragment should be left to be resorbed 	<ul style="list-style-type: none"> • No displacement: 1 week C, 6-8 weeks C, 1 year C+R and C(*) each subsequent year until exfoliation. • Extraction: 1 year C+R and C(*) each subsequent year until exfoliation. 	<ul style="list-style-type: none"> • Signs of repair between fractured segments. • Continuous resorption of the left apical fragment 	<p>None</p>
ALVEOLAR FRACTURE	Clinical findings	Radiographic findings	Treatment	Follow-Up	Favorable Outcome	Unfavorable Outcome
	<ul style="list-style-type: none"> • The fracture involves the alveolar bone and may extend to adjacent bone. • Segment mobility and dislocation are common findings. • Occlusal interference is often noted. 	<ul style="list-style-type: none"> • The horizontal fracture line to the apices of the primary teeth and their permanent successors will be disclosed. • A lateral radiograph may also give information about the relation between the two dentitions and if the segment is displaced in labial direction 	<ul style="list-style-type: none"> • Reposition any displaced segment and then splint. • General anesthesia is often indicated. • Stabilize the segment for 4 weeks. • Monitor teeth in fracture line 	<p>1 week C 3-4 weeks S+C+R 6-8 weeks C+R 1 year C+R and C(*) each subsequent year until exfoliation.</p>	<ul style="list-style-type: none"> • Normal occlusion • No signs of apical periodontitis. • No signs of disturbances in the permanent successors 	<ul style="list-style-type: none"> • Signs of apical periodontitis or external inflammatory root resorption of primary teeth. • Signs of disturbances in the permanent successors require follow-up until full eruption.

S=Splint removal C=Clinical examination; R=Radiographic examination; (C*)=Clinical and radiographic monitoring until eruption of the permanent successor

2. Treatment guidelines for luxation injuries

				Follow-Up	Favorable and Unfavorable outcomes include some, but not necessarily all, of the following:	
CONCUSSION	Clinical findings	Radiographic findings	Treatment		Favorable Outcome	Unfavorable Outcome
	<ul style="list-style-type: none"> The tooth is tender to touch. It has normal mobility and no sulcular bleeding. 	No radiographic abnormalities. Normal periodontal space.	<ul style="list-style-type: none"> No treatment is needed. Observation. 	1 week C 6-8 weeks C	<ul style="list-style-type: none"> Continuing root development in immature teeth 	<ul style="list-style-type: none"> No continuing root development in immature teeth, periradicular radiolucencies. Crown dark discoloration. No treatment is needed unless a fistula develops.
	<ul style="list-style-type: none"> The tooth has increased mobility but has not been displaced. Bleeding from gingival crevice may be noted. 	Radiographic abnormalities are usually not found. Normal periodontal space. An occlusal exposure is recommended in order to screen for possible signs of displacement or the presence of a root fracture. The radiograph can furthermore be used as a reference point in case of future complications.	<ul style="list-style-type: none"> No treatment is needed. Observation. Brushing with a soft brush and use of chlorhexidine 0.12% alcohol-free topically to the affected area with cotton swabs twice a day for one week. 	1 week C 6-8 weeks C Crown discoloration might occur. No treatment is needed unless a fistula develops. Dark discolored teeth should be followed carefully to detect sign of infection as soon as possible	<ul style="list-style-type: none"> Continuing root development in immature teeth Transient red/gray discoloration. A yellow discoloration indicates pulp obliteration and has a good prognosis 	<ul style="list-style-type: none"> No continuing root development in immature teeth, periradicular radiolucencies. A dark persisting discoloration indicating pulp necrosis.
	<ul style="list-style-type: none"> Partial displacement of the tooth out of its socket. The tooth appears elongated and can be excessively mobile. 	Increased periodontal ligament space apically.	<ul style="list-style-type: none"> Treatment decisions are based on the degree of displacement, mobility, root formation and the ability of the child to cope with the emergency situation. For minor extrusion (< 3mm) in an immature developing tooth, careful repositioning or leaving the tooth for spontaneous alignment can be treatment options. Extraction is the treatment of choice for severe extrusion in a fully formed primary tooth. 	1 week C 6-8 weeks C+R 6 months C+R 1 year C+R Discoloration might occur. Dark discolored teeth should be followed carefully to detect sign of infection as soon as possible.	<ul style="list-style-type: none"> Continuing root development in immature teeth. Transient red/gray discoloration. A yellow discoloration indicates pulp obliteration and has a good prognosis. 	<ul style="list-style-type: none"> No continuing root development in immature teeth, periradicular radiolucencies. A dark persisting discoloration indicating pulp necrosis.

C=Clinical examination; R=Radiographic examination

					Follow-Up	Favorable and Unfavorable outcomes include some, but not necessarily all, of the following:	
LATERAL LUXATION		Clinical findings	Radiographic findings	Treatment		Favorable Outcome	Unfavorable Outcome
		<ul style="list-style-type: none"> The tooth is displaced, usually in a palatal/lingual or labial direction. It will be immobile. 	<p>Increased periodontal ligament space apically is best seen on the occlusal exposure. And an occlusal exposure can sometimes also show the position of the displaced tooth and its relation to the permanent successor</p>	<ul style="list-style-type: none"> If there is no occlusal interference, as is often the case in anterior open bite, the tooth is allowed to reposition spontaneously. If minor occlusal interference, slight grinding is indicated. When there is more severe occlusal interference, the tooth can be gently repositioned by combined labial and palatal pressure after the use of local anesthesia. In severe displacement, when the crown is dislocated in a labial direction, extraction is the treatment of choice. 	<p>1 week C 2-3 weeks C 6-8 weeks C+R 1 year C+R</p>	<ul style="list-style-type: none"> Asymptomatic Clinical and radiographic signs of normal or healed periodontium. Transient discoloration might occur 	<ul style="list-style-type: none"> Symptoms and radiographic sign consistent with periodontitis. Grey persistent discoloration
INTRUSIVE LUXATION		Clinical findings	Radiographic findings	Treatment	Follow-Up	Favorable Outcome	Unfavorable Outcome
		<ul style="list-style-type: none"> The tooth is usually displaced through the labial bone plate, or can be impinging upon the succedaneous tooth bud 	<p>When the apex is displaced toward or through the labial bone plate, the apical tip can be visualized and appears shorter than its contra lateral.</p> <p>When the apex is displaced towards the permanent tooth germ, the apical tip cannot be visualized and the tooth appears elongated</p>	<p>If the apex is displaced toward or through the labial bone plate, the tooth is left for spontaneous repositioning</p> <p>If the apex is displaced into the developing tooth germ, extract</p>	<p>1 week C 3-4 weeks C + R 6-8 weeks C 6 months C+R</p> <ul style="list-style-type: none"> 1 year C+R and (C*) 	<ul style="list-style-type: none"> Tooth in place or erupting. No or transient discoloration. 	<ul style="list-style-type: none"> Tooth locked in place Radiographic signs of apical periodontitis Persistent discoloration Damage to the permanent successor.

C=Clinical examination; R=Radiographic examination; (C*)=Clinical and radiographic monitoring until eruption of the permanent successor

Primary dentition Guidelines

AVULSION	Clinical findings	Radiographic findings	Treatment	Follow-Up	Favorable Outcome	Unfavorable Outcome
	<p>The tooth is completely out of the socket</p>	<p>A radiographic examination is essential to ensure that the missing tooth is not intruded.</p>	<p>It is not recommended to replant avulsed primary teeth.</p>	<p>1 week C 6 months C + R • 1 year C + R and (C*)</p>		<p>Damage to the permanent successor.</p>

C=Clinical examination; R=Radiographic examination; (C*)=Clinical and radiographic monitoring until eruption of the permanent successor