

**Traumatic intrusion of primary teeth  
and its effects on the permanent  
successors:**

**A clinical follow-up study**

## **Introduction:**

- Trauma to oral and facial structures is a significant problem that may have serious medical, esthetic, and psychologic consequences on both children and their parents.
- The effects of trauma on primary teeth vary and include pathologic changes such as pulp necrosis, internal and/or external root resorption, ankylosis ankylosis, and obliteration of the pulp canal.
- Primary tooth intrusion may result in a variety of pathologic alterations to permanent teeth, including hypoplasia, crown dilaceration, root dilaceration, partial or complete arrest of root formation, and disturbances in eruption.

## **Aim of the study:**

The aim of the present study was to evaluate the epidemiologic aspects related to severe intrusive trauma to primary teeth, which is a frequent occurrence among children aged 1-4 years.

Clinical examination and monitoring of patients were conducted in a pediatric dentistry clinic to examine the effects of intrusion on primary teeth and consequently on their permanent successors.

# MATERIALS AND METHODS

- This observational study was based on an analysis of patient records obtained at initial diagnosis and at regular follow-up examinations of children treated for intrusive injuries of primary incisors at a hospital pediatric dentistry clinic.
- Over a 7-year period 78 patients with 138 teeth were available for follow-up.
- Patients were scheduled for clinical and radiographic recall examinations every 6-12 months until complete eruption of the permanent successors were observed.

# RESULTS

- There was no significant difference between the number of boys and girls.
- Most injuries occurred between the ages of 13 and 36 months.

- Distribution of intruded primary teeth

<b>Tooth FDI system</b>	<b>53</b>	<b>52</b>	<b>51</b>	<b>61</b>	<b>62</b>	<b>63</b>
<b>n</b>	<b>0</b>	<b>15</b>	<b>57</b>	<b>48</b>	<b>9</b>	<b>0</b>
<b>n</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>4</b>	<b>0</b>	<b>0</b>
<b>Tooth FDI system</b>	<b>83</b>	<b>82</b>	<b>81</b>	<b>71</b>	<b>72</b>	<b>73</b>

Maxillary incisors accounted for 93.47% of all intruded primary teeth, with right central primary incisors accounting for 41.3% of all intruded primary teeth.

# Over the 7-year follow-up period

- Distribution of re-eruption by age group:

Re- eruption	13 - 24 mo	25 - 36 mo	37 – 48 mo
Total re-eruption	<b>87.2%</b>	80%	60%
Partial re-eruption	12.8%	12.5%	21.7%
No re-eruption	0	7.5%	<b>17.4%</b>

- The highest rate of total spontaneous re-eruption occurred in teeth injured at 13-24 months of age.
- For teeth injured at 25-36 months and 37-48 months, the rates of total spontaneous re-eruption decreased.
- In addition, the likelihood of no spontaneous re-eruption occurring increased with age.

## Consequences of intrusive injury on primary teeth by age group

Consequence of injury	13 – 24 mo	25 – 36 mo	37 – 48 mo
Pulp necrosis	66.7%	75%	<b>88.2%</b>
Internal and/or External resorption	<b>33.3%</b>	16.7%	0
Ankylosis	0	8.3%	5.9%
Obliteration of the pulp canal	0	0	5.9%

The incidence of **pulp necrosis** increased significantly with age .

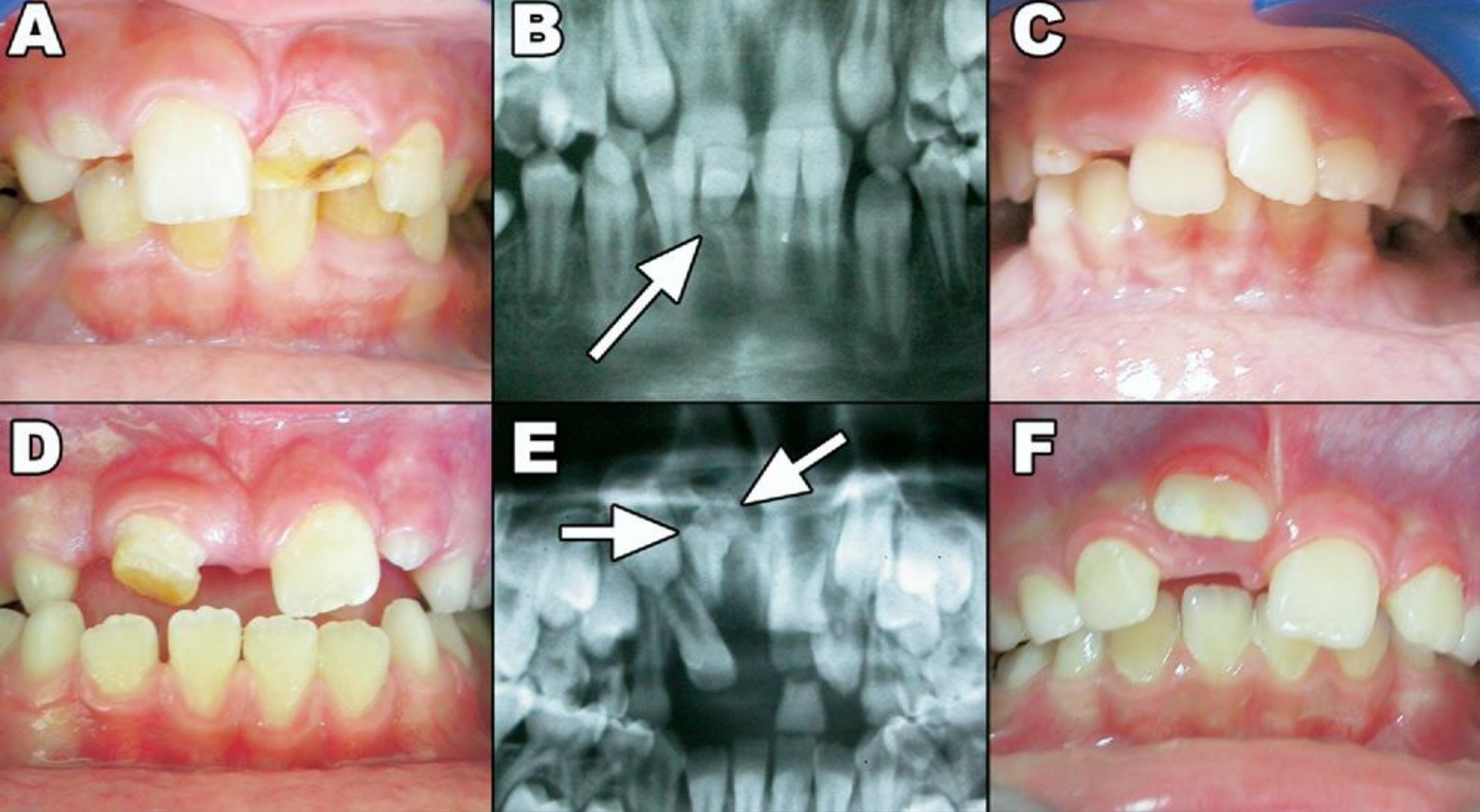
The incidence of **internal/external resorption** decreased, but not significantly.



# Distribution of developmental disturbances by age group

<b>Sequela</b>	<b>13 – 24 mo</b>	<b>25 – 36 mo</b>	<b>37 – 48 mo</b>
Hypoplasia	25%	34.7%	24.3%
Deformation of crown and/or root	19.2%	18.4%	10.8%
Ectopic eruption	25%	10.2%	13.5%

There was no significant correlation between age of intrusion and frequency of subsequent developmental disturbances.



**Typical examples of the effects of primary tooth intrusion on permanent teeth.**  
A, Enamel hypoplasia. B, Deformation of root. C, Ectopic eruption. D, Deformation of crown + hypoplasia. E, Deformation of crown + ectopic eruption. F, Ectopic eruption + hypoplasia.

# CONCLUSIONS

1. The frequency of intrusive injury in primary teeth was not affected by gender.
2. The right central maxillary incisor was the most frequently intruded primary tooth.
3. Pulp necrosis was the most common consequence of intrusive injury.
4. Severe intrusive injury to a primary tooth will commonly result in a developmental disturbance to the permanent successor.
5. Enamel hypoplasia was the most common developmental disturbance after traumatized primary dentition.
6. There was no significant correlation between age of intrusion and frequency of subsequent developmental disturbances.

**THANKS  
FOR  
LISTENING**