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## International Association of Dental Traumatology

# Volume 2, issue 2 **IADT Newsletter**

### EDITORIAL

#### **Dear Members,**

Next page you will find the IADT's Financial Report for the year 2009. This report can also be consulted at the IADT's website.

Additionally, as promised, the brainstorming over the clinical situation and quiz presented in our last issue continues here with a discussion on treatment options and prognosis.

This specific clinical case was chosen to inaugurate brainstorming within the Newsletter because it is of extremely common occurrence in a dental office and yet there are quite divergent approaches in the management of this type of injury.

It is my pleasure to announce that from now on the IADT's Newsletter will also be available online in the website ([www.iadt-dentaltrauma.org](http://www.iadt-dentaltrauma.org)). The previous issues of the Newsletter can also be found in the website.

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**Int'l Association of Dental Traumatology  
Statement of Revenue, Expenses  
and Changes in Net Assets - Cash Basis  
for the Year Ended December 31, 2009**

|                                     | <u>Amount</u>       | <u>Percent</u>        |
|-------------------------------------|---------------------|-----------------------|
| <b>Revenue</b>                      |                     |                       |
| Membership Dues                     | \$ 63,678.00        | 98.53 %               |
| Interest Income                     | <u>951.90</u>       | <u>1.47</u>           |
| Total Revenue                       | <u>64,629.90</u>    | <u>100.00</u>         |
| <b>Expenses</b>                     |                     |                       |
| Bank Fees                           | 1,703.08            | 2.64                  |
| Legal & Accounting                  | 2,285.00            | 3.54                  |
| Member Subscriptions                | 42,556.99           | 65.85                 |
| Office Supplies                     | 1,452.00            | 2.25                  |
| Postage                             | 246.00              | 0.38                  |
| Professional Services               | 1,334.35            | 2.06                  |
| Taxes and Licenses                  | 80.00               | 0.12                  |
| Miscellaneous                       | <u>117.50</u>       | <u>0.18</u>           |
| Total Expenses                      | <u>49,774.92</u>    | <u>77.02</u>          |
| <b>Excess Revenue Over Expenses</b> | <b>14,854.98</b>    | <b><u>22.98</u> %</b> |
| <b>Net Assets, Beginning</b>        | <u>45,050.39</u>    |                       |
| <b>Net Assets, Ending</b>           | <u>\$ 59,905.37</u> |                       |

**Assets**

|                       |              |                            |
|-----------------------|--------------|----------------------------|
| <b>Current Assets</b> |              |                            |
| Cash                  | \$ 59,846.68 |                            |
| Receivable from FTB   | <u>58.69</u> |                            |
| <b>Total Assets</b>   |              | <b><u>\$ 59,905.37</u></b> |

**Net Assets**

|                         |                     |                            |
|-------------------------|---------------------|----------------------------|
| <b>Net Assets</b>       | <u>\$ 59,905.37</u> |                            |
| <b>Total Net Assets</b> |                     | <b><u>\$ 59,905.37</u></b> |

## Remembering the Clinical Case – Quiz Presented in the Last Issue



A 9 year-old girl, Audrey, hit her left central incisor on the corner of a marble table while playing with her brother at home. There was no injury to her chin or any other part of her face. She arrived at the dental office 2 hours after the injury.

Clinical examination reveals a crown fracture with pulp exposure on the left central incisor. There is no abnormal mobility of this tooth or of the other upper and lower anterior teeth. No lacerations of the gums are present. All upper and lower anterior teeth are responding normally to palpation and percussion. The teeth respond to cold testing and EPT (electric pulp testing), but the left central incisor shows a slightly delayed response. No other signs of trauma are visible, including on the posterior teeth.

Radiographic examination reveals a crown fracture with pulp exposure on the left central incisor and that all upper anterior teeth are immature.

Diagnosis is thus crown fracture with pulp exposure (complicated crown fracture) of the left upper central incisor.

**Question 1- What is the best treatment option for this immature (open apex) left central incisor?**

- a- Direct pulp capping
- b- Partial pulpotomy (Cvek's pulpotomy)
- c- Pulpotomy
- d- Root canal treatment (apexification)
- e- Pulpal revascularization

**Question 2- If the above injured tooth were mature (closed apex) instead of immature, would you change the treatment you recommended in question 1? If yes, which treatment would you choose?**

- a- Direct pulp capping
- b- Partial pulpotomy
- c- Pulpotomy
- d- Root canal treatment

**Question 3- If the injured tooth were a primary tooth and the patient' age was 4 years old, which treatment would you recommend?**

- a- Direct pulp capping
- b- Partial pulpotomy
- c- Pulpotomy
- d- Formocresol pulpotomy
- e- Root canal treatment for primary tooth

## **Discussion:**

### **Questions 1 and 2:**

One of the aims of treatment in dental traumatology is preservation of vital, non-inflamed pulps. This is of special importance in the case of immature permanent teeth, where a vital pulp is needed to promote continued root development and strengthening of the root walls.

Therefore, the best treatment option for the clinical situations described in the quiz is either a pulp capping or a pulpotomy procedure (ideally Cvek's partial pulpotomy). No consensus exists on which approach is better, but both treatments have the advantage of being conservative and of not excluding the use of more extensive procedures in the event of non-healing.

Several materials have been suggested for pulp capping and pulpotomy, but the most studied and popular materials are calcium hydroxide and MTA. The minimum requirement for a pulp capping material is that it is biocompatible and capable of promoting pulp repair. A bacteria tight seal as a part of the restoration is also essential to prevent bacterial contamination of the pulp. The use of aseptic techniques and rubber dam are mandatory to improve the treatment's success rate as they prevent bacterial contamination and also ensure adhesion of the restorative materials to dentin.

Long term studies have shown high success rates of pulp capping and partial pulpotomy with respect to pulp survival (1,2,3). Cvek and coworkers (1) have reported 96% success with pulp capping and pulpotomy using calcium hydroxide on traumatically exposed pulps. The size of the exposure or the time between injury and treatment was not critical as long as the superficially inflamed pulp tissue was removed before pulp capping. It is important to note that these studies included both mature and immature teeth.

Subsequent investigations have confirmed these findings (4,5). Teeth with partial pulpotomies that presented as clinically healed showed no major pathological changes when these pulps were examined histologically (6). In a long-term follow-up study (2) of partial pulpotomies in permanent teeth, those judged to be healed at 3 years, remained healed 10 to 15 years later.

Some factors may influence pulp survival and the choice of treatment after a traumatic pulp exposure: e.g. the stage of root development, the size of the exposure and the time elapsed between the injury and the emergency treatment. However, other factors potentially detrimental to the pulp status should be considered, such as the presence or absence of a concomitant luxation injury and history of previous trauma.

It can be assumed that the pulp, in this case, was healthy prior to trauma. Also, the time elapsed between the injury and treatment is small (2 hours) and no added injuries such as luxation or subluxation seem to have occurred. Thus, it is likely that the above exposed pulp has a high healing potential: it is worth trying to keep it alive.

Follow-ups should be performed on a regular basis for at least 3 years. The involved tooth should be asymptomatic and radiographically show no signs of pathosis, but preferably show the presence of a hard tissue barrier related to the pulp exposure site and continued root development in the case of an immature tooth.

### **Question 3:**

There is no agreement or consensus in how to treat a crown fracture with pulp exposure in primary teeth. Each of the treatment options suggested in the quiz has its defenders and some clinicians would also suggest extraction as an alternative. However, if the child is cooperative, it is definitely worth it to adopt a conservative approach and select pulp capping or partial pulpotomy in the clinical situation described above. MTA as the capping agent might be a good alternative rather than calcium hydroxide as it has been suggested to cause internal root resorption in primary teeth.

## References:

1. **Cvek M.** A clinical report on partial pulpotomy and capping with calcium hydroxide in permanent incisors with complicated crown fracture. *J Endod* 1978; 4: 232–237.
2. **Cvek M.** Results after partial pulpotomy in crown fractured teeth 3 to 15 years after treatment. *Acta Stomatol Croat* 27: 167, 1993.
3. **Fuks AB, Gavra S, Chosak A.** Long term follow up of traumatized incisors by partial pulpotomy. *Pediat Dent* 15: 334, 1993.
4. **Fuks A, Chosak A, Eidelman E.** Partial pulpotomy as an alternative treatment for exposed pulps in crown-fractured permanent incisors. *Endod Dent Traumatol* 3: 100, 1987.
5. **Heide S, Mjör IA.** Pulp reactions to experimental exposures in young permanent monkey teeth. *Int Endod J* 16: 11, 1983.
6. **Cvek M, Cleaton-Jones P, Austin J et al.** Pulp reactions to exposure after experimental crown fractures or grinding in adult monkeys. *J Endod* 8: 391, 1982.

## Other references:

7. **Lauridsen EF, Hermann NV, Gerds TA, Ahrensburg SS, Andreasen JO.** Crown fractures Part 4 - Healing complications of the pulp in permanent incisors following crown fractures with concurrent extrusion or lateral luxation injury. *Dent Traumatol* 2009; 25.
8. **Stålhane I, Hedegård B.** Traumatized permanent teeth in children aged 7–15 years. Part II. *Swed Dent J* 1975; 68: 157–169.
9. **Ravn JJ.** Follow-up study of permanent incisors with complicated crown fractures after acute trauma. *Scand J Dent Res* 1982; 90: 363–372.
10. **Fuks AB, Bielak S, Chosak A.** Clinical and radiographic assessment of direct pulp capping and pulpotomy in young permanent teeth. *Pediatr Dent* 1982; 4: 240–4. 13.
11. **Kupietzky A, Holan G.** Treatment of crown fractures with pulp exposure in primary incisors. *Pediat Dent* 25: 241, 2003.
12. **Flores MT, Andersson L, Andreasen JO, Bakland LK, Malmgren B, Barnett F, Bourguignon C, DiAngelis A, Hicks L, Sigurdsson A, Trope M, Tsukiboshi M, von Arx T.** Guidelines for the management of traumatic dental injuries. I. Fractures and luxations of permanent teeth. *Dent Traumatol* 23: 66–71, 2007.

## Answers to the quiz questions:

**Question 1 – a**

**Question 2 – a**

**Question 3 – a**

**Upcoming events:**

**European Association for Osseointegration (EAO)-**

19th Annual Scientific Meeting-  
Glasgow- October 6–9, 2010.

**German Society of Endodontology-**

Annual Meeting-  
Munich, Germany- October 21–23, 2010.

**Trans-Tasman Endodontic Conference-**

Christchurch, New Zealand- November 4–6, 2010.

**German Society of Dental, Oral and Craniomandibular Sciences-**

Frankfurt/Main, Germany- November 10–13, 2010.  
“INTERDISCIPLINARY DENTISTRY”

**IADT Symposium in Oral Traumatology-**

Dubai-United Arab Emirates- 1 – 2 February 2011.

**UK “Pan-Dental Society Meeting”-**

Liverpool, UK- November 11–12, 2011.

**IADT’s 17th World Congress in Dental Traumatology-**

Rio de Janeiro, Brazil - 2012.

Please become a member or renew your membership to show your support to the IADT.



## MEMBERSHIP RENEWAL 2010

I hereby wish to renew my membership in the  
**International Association of Dental Traumatology**  
for the year **2010**

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