

# On root-filling quality in general dental practice

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av

**Lisbeth Dahlström**

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Odontologiska fakulteten, Malmö högskola

Avhandlingen baseras på följande delarbeten:

- I. Dahlström L, Molander A, Reit C  
Introducing nickel-titanium rotary instrumentation in a public dental service: The long-term effect on root filling quality  
*Oral Surg Oral Med Oral Pathol Oral Radiol Endod (2011);112:814-819*
- II. Dahlström L, Molander A, Reit C  
The impact of a continuing education programme on the adoption of nickel-titanium rotary instrumentation and root-filling quality amongst a group of Swedish general dental practitioners  
*European Journal of Dental Education 19 (2015):23-30*
- III. Dahlström L, Lindwall O, Rystedt H, Reit C  
"Working in the dark": Swedish general dental practitioners on the complexity of root-canal treatment  
*In manuscript*
- IV. Dahlström L, Lindwall O, Rystedt H, Reit C  
"It's good enough": Swedish general dental practitioners on reasons for accepting sub-standard root-filling quality  
*In manuscript*



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# On root-filling quality in general dental practice

Lisbeth Dahlström

Department of Endodontology, Institute of Odontology  
Sahlgrenska Academy at University of Gothenburg, Göteborg, Sweden

## ABSTRACT

In Sweden, 250,000 root fillings are performed every year. The outcome of root canal treatment (RCT) is strongly correlated to the technical quality of the root filling. Epidemiological studies show high frequencies of suboptimal technical quality. Within the Swedish population, there are about 2,500,000 root-filled teeth with persistent periapical infections. There is therefore a discrepancy between the results that can be achieved and what is actually achieved in general dentistry. RCT is technically complicated, but new technology for instrumentation appears to have facilitated the procedure, as well as the technical results. **Study I** is a long-term follow-up of an implementation programme in the Gothenburg Public Dental Health Service (DHS), where all the dentists were educated in the new technology. The initial improvement in root-filling quality as seen in the radiographs remained. However, poor quality root fillings were still performed. In **Study II**, a different educational approach was investigated among all the dentists in the Södra Älvsborg DHS. The aims were to activate local networks at the clinics and enable the hands-on training to be performed by an educated dentist from each clinic. The results corresponded to the results in the Gothenburg study. Most dentists adopted the new technique and the frequency of good quality root fillings improved, albeit without any concomitant decrease in poor quality cases. It seems obvious that dentists fairly frequently accept inadequate technical results. With a view to understanding the reasons and decision-making related to suboptimal treatment, Studies III and IV used focus-group discussions with dentists within the Gothenburg DHS. Before the interviews, the dentists assessed the root-filling quality in a number of cases. The three cases causing the most divergent opinions were chosen for further discussions in the focus groups. Seven interviews were video taped, transcribed and analysed using qualitative content analysis. In **Study III**, the attitude to RCT was highlighted. The treatment was often associated with negative feelings, such as stress and frustration. The treatments were perceived as complex and technically difficult, often performed with a feeling of loss of control. Most dentists stated that they were not able to complete a case within the allotted time. Often "good enough" was seen as a realistic goal instead of optimal quality. The idea of "good enough" was further explored in **Study IV**. The analysis showed that the radiographic image was not a sufficient basis for whether or not to accept a poor root filling. Instead, it was always the specific situation in which the root filling was made that was decisive. These situations were related to pulpal or periapical health, risk assessments or personal or economic resources.

**Keywords:** root-filling, nickel-titanium rotary instrumentation, implementation, hands-on, social network, focus groups, qualitative content analysis, general dental practitioners, stress

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