

# Intraligamental analgesia with

calaject™

Computer Assisted Local Analgesia



**RØNVIG** Dental Mfg. A/S

Periodontal ligament analgesia is commonly referred to as PDL (PerioDontal Ligament analgesia). In principle, a local analgetic solution is injected into the periodontal ligament. Previously it was believed that the solution diffused along the root surface within the periodontal ligament to the apical foramen region, where the pulpal nerve branches were anesthetized. Today, we know this is actually not correct.

Radiographic tracing of radiopaque solutions, has demonstrated that the solution very quickly diffuses into the bone surrounding the tooth. It therefore seems more appropriate to speak of a peridental analgesia. It is logical to assume that both periodontal, gingival and apical afferent sensory nerves are anesthetized by this method.

Histological studies have shown that reversible changes take place in the periodontal ligament whenever PDL is carried out, but no permanent damage to the structures has been observed, when the correct procedure is followed. If the injection is carried out too quickly, or too much pressure used, or too large a volume injected, the periodontal ligament is irritated. An inflammatory reaction follows, and the tooth will be tender to percussion and function for a few days. Too much pressure applied, the solution will leak out of the gingival sulcus, and the analgesia will be ineffective.

## INDICATIONS FOR PDL

**1**

**As a supplement to conventional local analgesia**, where this is unsatisfactory, e.g. root canal treatment in case of acute pulpitis. The PDL technique can be applied as intended into the gingival sulcus, but the injection can also be carried out directly into the exposed pulp, securing immediate analgesia, or into the apical

region directly opposite each root tip. The method can also be used in case of pain during surgical removal of teeth.

**2**

**Local analgesia of individual teeth in routine cases** i.e. cavity preparation, scaling, root canal treatment, simple extractions, etc.

**3**

**Extraction of deciduous teeth.** The advantage of the method is that concurrent soft tissue anesthesia is avoided. Attention is again drawn to the need to control the time taken to inject, especially in the case of primary teeth, as some research material has been published indicating a risk of interference with the amelogenesis of permanent teeth in the vicinity of the injection site.

**4**

**Diagnostic tool.** It is well known that it can be difficult to identify a tooth with chronic closed pulpitis, as symptoms are often referred to other regions. In the case of such difficulty, PDL should be regarded as an alternative method of diagnosis. By blocking one tooth at a time with the CALAJECT™, it is possible to identify the causative tooth. This saves time and so avoids needless removal of existing fillings or tooth substance.

**5**

**To obtain hemostasis.** By injecting into the perio-dontal ligament or into a gingival papilla, it is possible to obtain immediate hemostasis before impression-taking or placing a composite filling, where troublesome bleeding has followed preparation.

## CONTRAINDICATIONS FOR PDL

In acute infections, and when deep periodontal pockets exist, PDL should not be used.

## LOCAL ANALGETIC AND DOSAGE

A local analgetic solution containing a vasoconstrictor is recommended.

Depending on expected duration of the procedure and the length of the root, usually a dosage of 0.2-0.9 ml is sufficient.

Adequate analgesia requires that the solution infiltrates the periodontium to the apex/apices of the root/roots involved.

Splitting the dosage in two small deposits on each side of the root is recommended but not always necessary. At least two injections are needed for molars with two or more roots. Program 1 of CALAJECT™ injects 0,006 ml/sec.

## NEEDLE

It is recommended to use a 30 Gauge short needle (app. 12 mm). To reach distal locations of the gingival sulcus the needle can be bent slightly, if necessary.

## PROCEDURE

Clean the tooth or teeth to be injected with chlorhexidine 0,2%, on a gauze sponge, or any other suitable disinfectant.

Surface analgesia can be applied with a topical analgetic ointment, but is usually not necessary as PDL performed correctly gives practically no discomfort.

Each tooth should be injected corresponding to the number of roots, each root being injected along the approximal surfaces. Injections should never be given along the facial aspect, as the bone plate here is very thin, and might be damaged. Injections along the palatal aspect of the upper jaw and along the lingual aspect of the lower jaw distally to the cuspids can be performed without risk.

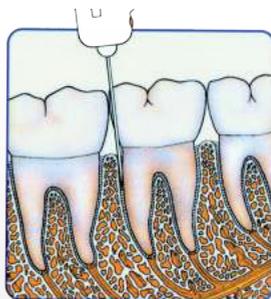


FIGURE 1

**FIG. 1:** The needle is introduced into the gingival sulcus along the tooth surface on the mesial, or distal surface, until the alveolar bone crest is contacted. Make sure that the bevel opening of the needle is facing the root. That way, the needle will slide easily with least pain and without damaging the root surface.

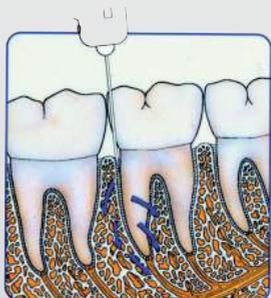


FIGURE 2

**FIG. 2:** When the needle is in place, rotate the handpiece/needle slightly to turn the bevel opening of the needle away from the root surface so it will face the alveolar bone instead. That will very often facilitate the flow.

## Activate the slow PROGRAM 1

The analgetic solution will now slowly infiltrate the tissue – it needs time to diffuse into the spongy bone. After some practice, the operator will get a tactile feeling of the optimum flow. The only visible sign of the solution correctly infiltrating the tissue (bone) is the blanching of the gingiva around the injection site.

The PDL technique requires a relatively high injection pressure. Therefore, Program 1 allows a significantly higher injection pressure / resistance than Program 2 and 3 before CALAJECT™ stops automatically as a safety precaution.

If the pressure has become so high that CALAJECT™ stops, the needle might be blocked or wedged too tightly against the root surface or alveolar bone. In such a case try to rotate the syringe/needle a few degrees or make a new injection to obtain a good flow.

If the solution leaks from the gingival sulcus, move the needle and make a new injection.

PDL is thus a delicate technique - for that reason it is important that the operator learns the correct technique and takes his time to practice it to secure optimum benefit.



## DISCLAIMER

The above-mentioned recommendations are general guidelines and RØNVIG Dental Mfg. A/S cannot be held responsible for insufficient analgesia or damages to patients following unauthorized use or inadequate use. CALAJECT™ may only be used by skilled persons with authorization to carry out dental injections, and it is the authorized user's obligation and responsibility to seek updated information from the professional dental literature and to acquire sufficient knowledge and practice in carrying out the injections in a correct manner.

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