Results The difference between groups in terms of lesion width was not statistically significant (group 1: 2.76 mm; group 2: 2.67 mm; $P > 0.05$). The differences in lesion length (group 1: 0.79 mm; group 2: 1.20 mm), osteoid surface (group 1: 7%; group 2: 30%) and osteoclast index (group 1: 75.96 mm^{-2}; group 2: 5.35 mm^{-2}) were statistically significant ($P < 0.05$).
Conclusions Electronically controlled periapical instrumentation resulted in enlarged periapical lesion (demonstrated by greater lesion length). After a 35-day healing period enhanced healing potential was demonstrated by lower bone resorption activity (e.g. greater osteoid surface and lower osteoclast index), in the electronically controlled periapical instrument group.

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Periapical central giant cell granuloma: clinicopathologic study of four cases

Aim To ascertain the clinicopathologic features of periapically located Central Giant Cell Granulomas (CGCG) that were misdiagnosed as endodontic lesions.
Methodology Clinical and histopathologic data of biopsy specimens diagnosed as CGCGs over the past eight years were collected from the archives of the Oral and Maxillofacial Histopathology Laboratory, Geneva University, and were reviewed.
Results Four cases of periapical CGCG were found to be submitted with a clinical diagnosis of either radicular or residual cyst. In one case root canal treatment had been performed previously. The patients were two women and two men (three European, one North African). The age ranged from 31 to 85 years (mean age 59.2). Two cases were located in the mandibular premolar-molar region: one on the right side (from tooth 44 to tooth 46) and one on the left side (from tooth 33 to tooth 35). Two cases were situated in anteriorlateral region of the maxilla (one from tooth 11 to tooth 13, one from tooth 22 to tooth 23). Two lesions were submitted with a diagnosis of radicular cyst whereas the other two were submitted with a diagnosis of residual cyst.
Conclusions These data suggest that periapical CGCG may be misdiagnosed as an endodontic lesion due to its radiographic similarity to a routine inflammatory periradicular lesion. Post-treatment follow-up and routine submission of periapical surgical specimens are mandatory in order to avoid delay in the diagnosis and to perform appropriate treatment.

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Investigation of the involvement of several non-collagenous proteins in the metabolism of human odontoblast-like cells

Aim To analyze proteins, known to be involved in the anabolic hard tissue metabolism of bone, in human odontoblast like (hol) cells over the course of six weeks.
Methodology Primary cell cultures were set up from caries free impacted wisdom teeth from donors no older than 18 years. They were pre-cultivated in an incubator up to transfer phase (T)2. In T3 they were seeded on a resin support material (Thermanox, Nunc, Germany) and transferred to a perfusion cell culture system (Minucells and Minutissue, Germany). Sampling of the hol cells was completed weekly over the course of six weeks. Analysis was made by quantitative RT-PCR (iCycler, BioRad, Germany). Different, non-collagenous proteins known to be involved in the anabolic hard tissue metabolism were quantitatively determined. These are osteonectin (SPARC), osteocalcin (BGLAP), osteopontin (SPP1), alkaline phosphatase (ALPL), fibronectin 1 (FN1) and dentinsialophosphoprotein (DSPP).
Results An expression pattern for hol cells was identified showing an increased expression of the dentine specific DSPP in the course of cultivation. Human pulp derived cells differentiated into odontoblast-like cells in the perfusion cell culture system and expressed dentine specific, non-collagenous proteins.
Conclusions The experimental model was established to compare expression patterns of odontoblast-like cells with those of anabolic hard tissue metabolism of bone to allow differences and similarities of the mineralization processes to be identified.
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Development of a protocol for *in vitro* culture of pulpal cells

Aim To apply previously established protocols for cell culture to human pulpal cells and to optimise them; and to use Relative Quantification-Real time PCR to detect and quantify the expression of dentine sialophosphoprotein (DSPP) by the cultured cells, over time.
Methodology Pulp tissue from 12 human extracted third molars was removed and cultured *in vitro*. The protocol for culture was modified until cell growth was obtained and confirmed by microscopy. After sub-culturing to 100%

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