

https://dspace.org/

The treatment of chronic periapical inflammatory lesions by means of a pectin-lincomycin mixture. A report of two cases

Barbakow, F

1972

http://hdl.handle.net/10539/19934

Barbakow, F. 1972. The treatment of chronic periapical inflammatory lesions by means of a pectin-lincomycin mixture. A report of two cases. Journal of the dental association of South Africa; 27(2):33-6

Downloaded from a DSpace repository. https://dspace.org/

J. Dent. Ass. S. Afr., Vol. 27, pp 33-36.

The Treatment of Chronic Periapical Inflammatory Lesions by Means of a Pectin-Lincomycin Mixture. A Report of Two Cases

F. Barbakow,

Dental Research Unit of the University of the Witwatersrand, Johannesburg, and the South African Medical Research Council.

SUMMARY

Two patients with chronic periapical lesions which did not respond to prolonged conventional endodontic therapy, were treated with a pectin-lincomycin mixture prior to root canal filling. Radiographic evidence of periapical bone repair is presented. A disadvantage of this technique was a severe, transient postoperative pain.

OPSOMMING

Twee pasiënte met chroniese periapikale letsels wat nie op langdurige gewone endodontiese terapie gereageer het nie, is met 'n pektien-linkomisien mengsel voor wortel-vulling behandel. Radiografiese bewyse van periapikale been genesing word voorgelê. 'n Nadeel van hierdie tegniek was dat kwaai, kortstondige naoperatiewe pyn deur die pasiënt ondervind was.

INTRODUCTION

There is no way of determining radiographically whether a periapical radiolucent area is due to the presence of an apical granuloma or a radicular cyst, even if a contrasting medium is injected (Cunningham and Penick, 1968). In addition, should such a periapical radiolucent area show radiographic evidence of repair after endodontic therapy, it is not possible to assess what form of pathology existed prior to therapy (Shafer, Hine and Levy, 1963).

According to Seltzer *et al* (1968), the proliferation of epithelium derived from cell rests of Malassez may be encouraged when instrumentation is performed through the root apex during endodontic therapy. Furthermore, when debris and non-absorbable medicaments are extruded into the periapical area, this epithelium may proliferate and surround these objects. Further proliferation of this now active epithelium may occasionally result in cystic change.

Seltzer, Soltanoff and Bender (1969) also endodontically treated dogs teeth which had pre-existing periapical radiolucent areas. They showed that the healing of radicular cysts may be possible even if they are not excised. As a possible mechanism the authors postulated that after endodontic therapy the epithelium degenerates having been enclosed by regenerated collagen elaborated during the repair process.

This paper reports two cases in which there was healing of apical radiolucent areas following endodontic therapy with a pectin-lincomycin mixture. This medicament was used as an intermediary antiseptic agent prior to root-canal sealing.

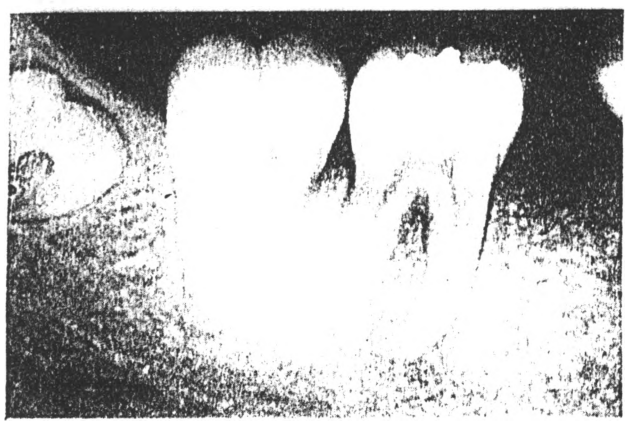
PREPARATION OF PECTIN-LINCOMYCIN MIXTURE

The pectin-lincomycin mixture is prepared in the Dental Research Unit and consists of a pectin-gel containing 3gms sterile sitrus pectim in 50 sterile water to which 750 mg of lincomycin is added. This solution is gelled in saturated calcium chloride. The gel is washed thoroughly in sterile water and stored at 4° C until required.

CASE REPORT (A)

A 14 year old female presented for treatment in February, 1970, complaining of a persistent "gum boil" which frequently become swollen and burst. In addition she complained of pain on mastication during these episodes.

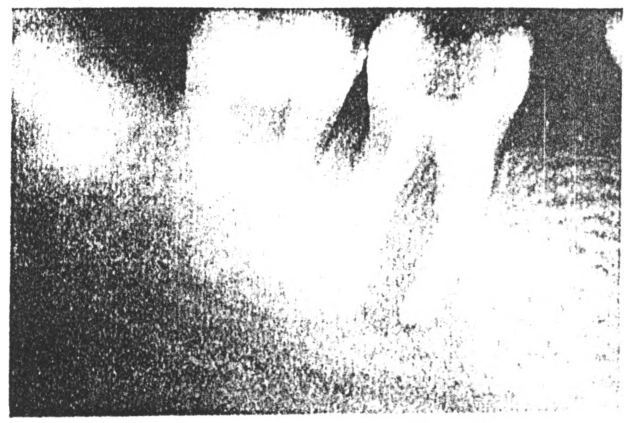
General examination revealed a well-nourished female with slight right submandibular lymphadenitis. Intra-oral examination showed a fistula discharging into the buccal sulcus related to the lower right first permanent molar. This tooth was tender to percussion and rather mobile, whilst pressure on the buccal gingivae resulted in an exudation of pus from the fistula. A radiograph showed an apical radiolucent area (Fig A1) and therefore a diagnosis of a superimposed acute infection in chronic periapical lesion was made and endodontic therapy decided upon.



A1. Periapical and inter-radicular areas of bone destruction with widening of the periodontal space prior to treatment (February 1970).

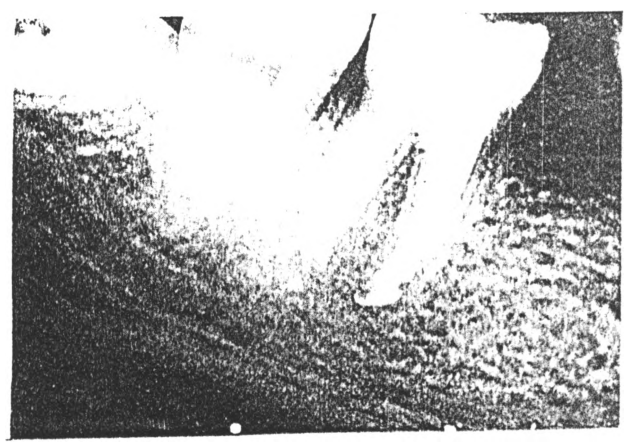
Drainage of pus and necrotic matter was obtained after wide opening of the pulp chamber. Three days later biomechanical cleansing was done using Endoprep (Premier Dental Products Co., Philadelphia) and a 5 per cent sodium hypochlorite solution. This process was repeated at regular intervals alternating the antiseptic solutions with Kri 3 liquid (Pharmachemie A.G. Zurich) and Cresanol (Premier Dental Products Co., Philadelphia). Despite continuing this regime for more than eight weeks, the buccal fistula recurred twice. At this stage it was decided to use a pectin-lincomycin mixture instead of the above antiseptic agents, and in preference to surgical intervention.

After biomechanical cleansing of the root canals the pectin-lincomycin mixture was introduced by means of a hypodermic syringe into the openings of the canals. In an attempt to get it as near to the root apices as possible, paper points were vigorously massaged up and down the length of the root canals. The pectin was sealed in the canals for three days following which this treatment was repeated. On both occasions the patient experienced severe postoperative pain after the pectin-lincomycin mixture had been in place for some hours. The pain lasted for approximately one day. After the second visit a radiograph was taken prior to sealing the apices and root canals. This did not differ significantly from the original pre-operative radiograph. Clinically there was no pain or fistula present at this stage although the tooth was still mobile. The root canals were sealed with Diaket (ESPE Seefeld/Oberbay) some of which extended through the apices into the periapical radiolucent areas (Fig A2).



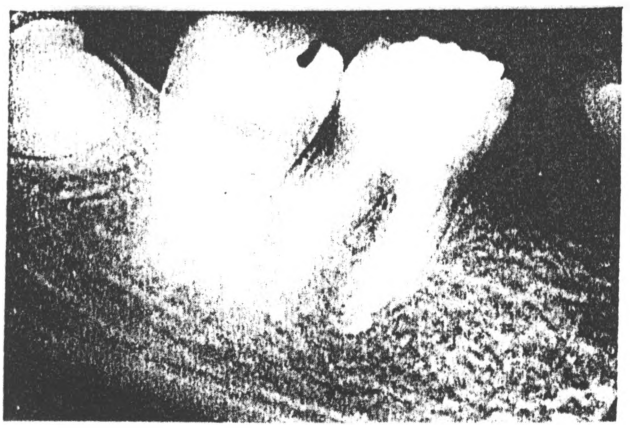
A2. Root canals filled with extrusion of filling material through the apices (May 1970).

The patient returned 8 months later in January, 1971, for routine dental examination and follow-up of the endodontic therapy. The tooth in question was firm and the surrounding gingivae appeared clinically healthy. Since the root filling had been completed there had not been any further episodes of pain or swelling. A radiograph showed some resorption of the apex of the distal root, while trabeculae of new bone could be seen filling in the previously large radiolucent areas both periapically and interradicularly. (Fig A3). A permanent restoration was inserted.



A3. Trabeculae of new bone in the periapical and interradicular regions together with resorption of the distal root apex (January 1970).

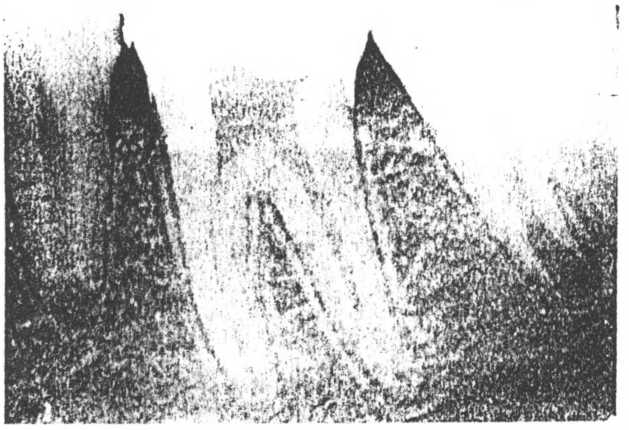
Ten months later, in November, the tooth was symtomless and firm. A radiograph at this stage showed further formation and consolidation of bone trabeculae about the apices and in the interradicular area. The width of the periodontal membrane was now within normal limits but resorption of the distal root was continuing (Fig A4).



A4. Normal width of the periodontal space restored and further resorption of the distal root apex (November 1971).

CASE REPORT (B)

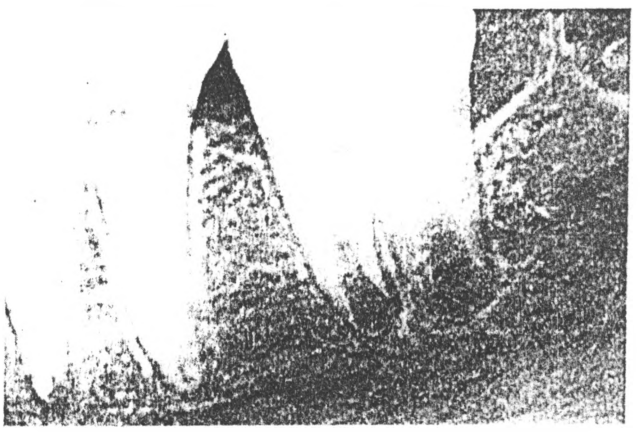
A 12 year old female presented in March 1970 with vague pains in her left ear. The history revealed that this pain had begun some two years previously, shortly after a vital pulpotomy was performed on a lower left first permanent molar. A radiograph indicated a radiolucent area with loss of the distinct radio-opaque limit of the mesial periapical area and widening of the distal periapical space (Fig. B1).



B1. Radiolucent area around mesial root apices and widening of the periodontal space around the distal root (March 1970).

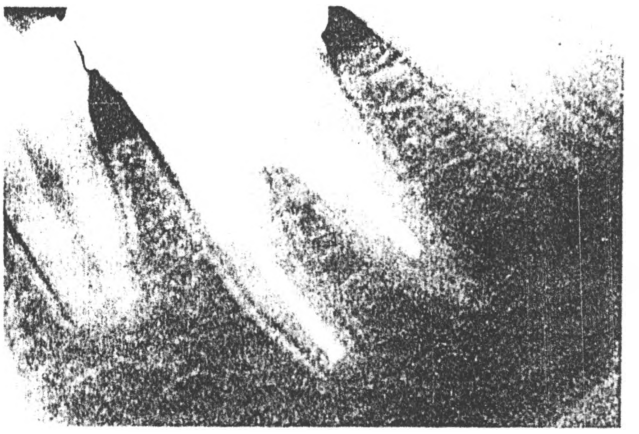
A diagnosis of a superimposed acute infection in a chronic periapical lesion was made and endodontic therapy was therefore instituted.

Initially Endoprep and a 5 per cent sodium hypochlorite solution were used for biomechanical cleansing in conjunction with Kri liquid and Cresanol. This was repeated at weekly intervals for one month but the pain gradually worsened. Ledermix Paste (Lederle Pharmaceuticals, Munich) was inserted and the pain subsided for a short while but recurred again following instrumentation of the canals and the use of the antiseptic agents. It was then decided to use the pectin-lincomycin mixture. This mixture was introduced twice into the root canals in the same manner as in the previous case. This patient also experienced severe pain following the use of the mixture. The root canals and apices were finally filled with Kri Paste and a radiograph taken in August 1970 (Fig B2). This showed some extrusion of the paste through the apex of the mesial root.



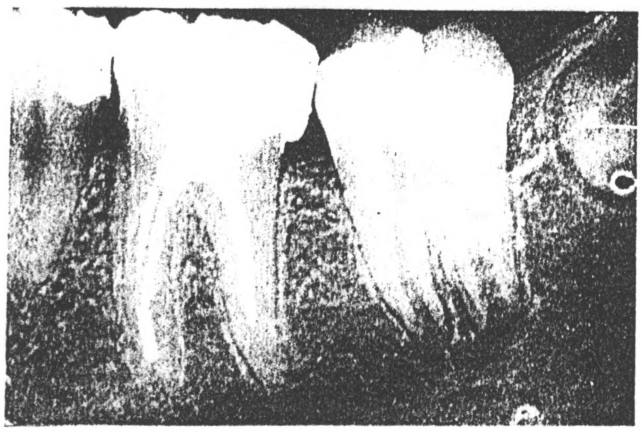
B2. Root canals filled. Absorbable paste extends through the mesial apices. Distal canal filled to furthest point reamed (August 1970).

In March 1971, the tooth in question was firm, not tender to percussion and there had not been any pain since the root canals were sealed. A radiograph showed that there had not been any noticeable pathologic change about the distal apex and that the mesial periapical area was much reduced in size (Fig B3). In November 1971 a second follow-up



B3. Size of mesial periapical radiolucency reduced, as well as absorption of filling material. Some reduction in size of distal radiolucent area (March 1971).

radiograph showed bone deposition and trabeculae formation about the mesial and distal roots. Absorption of the root filling material from the mesial canals was apparent, as well as some apical root resorption. The distal radiolucent area was also almost completely reduced (Fig B4).



B4. Further absorption of filling material from mesial canals, and trabeculae of bone evident periapically. Almost complete reduction of distal radiolucent areas (November 1971).

DISCUSSION

In the treatment of non-vital teeth manifesting periapical radiolucency, the success of the treatment rendered is assessed by the ability of the surrounding bone to regenerate and to replace the radiolucent area with new bone (Torneck and Tulananda, 1969). In both cases described there were recurrent episodes of acute inflammation superimposed on chronic pathology in multi-rooted teeth which did not respond to conventional antiseptic therapeutic measures. However, in both cases when the pectin antibiotic mixture was used as a dressing and after the root canals were finally sealed, there was evidence of clinical and radiographic healing. These findings agree with those of Heling and Tamshe (1970) who reported that intracanal antibiotic medication was more desirable than simple antiseptic medication. In retrospect it is assumed that in both cases probably no cystic change occurred and that the radiolucent areas represented apical granulomata.

A disturbing feature was the post-operative pain experienced in both cases. The use of a pectin antibiotic mixture in other infected lesions in bone has been associated with less post-operative pain than was expected (Retief, 1971). It was thus felt that pectin *per se* might have local analgesic properties. The severe pain experienced after the endodontic therapy with pectin may be due to the increased osmotic pressure in the periapical area with its abundant nerve supply. This may mask any analgesic action of the pectin itself.

The pectin-antibiotic mixture probably aided healing be releasing the lincomycin as breakdown of the pectin occurred and possibly also through a direct effect of the pectin itself. Lincomycin was chosen because of its stability in an acid medium, the pH of the pectin solution being below 4. In addition lincomycin diffuses not only into normal bone but also into chronically infected bone (Herrell, 1969).

The action of pectin is not yet fully elucidated. It appears to depend on the macromolecular structure being hydrolysed to micromolecules thereby creating osmotic pressure imbalances. This enhances fluid flow into the pathologic areas.

ACKNOWLEDGEMENTS

I wish to thank both Professor D.H. Retief and Dr. P. Cleaton-Jones for their invaluable assistance in the preparation of this paper. The assistance of the photographic department of the School of Dentistry, University of the Witwatersrand is gratefully acknowledged.

REFERENCES

Cunningham, C.J. & Penick, E.C. (1968). Use of a roetgenographic contrast medium in the differential diagnosis of periapical lessions. *Oral Surgery, Oral Medicine and Oral Pathology*. **26,** 96-102.

Heling, B. & Tamshe, A. (1970). Evaluation of the success of endodontically treated teeth. *Oral Surgery, Oral Medicine and Oral Pathology*. **30,** 533-536.

Herrell, W.E. (1969). *Lincomycin* 1st ed. Ch. 3, p. 56. Chicago: Modern Scientific Publications.

Retief, D.H. (1971). Personal communication.

Seltzer, A., Soltanoff, W., Sinai, I., Goldberg, A. & Bender, I.B. (1968). Biological aspects of endodontics. *Oral Surgery, Oral Medicine and Oral Pathology*,, **26,** 534-546.

Seltzer, S., Soltanoff, W. & Bender, I.B. (1969). Epithelial proliferation in periapical lesions. *Oral Surgery, Oral Medicine and Oral Pathology*. **27,** 111-121.

Shafer, W.G., Hine, M.K. & Levy, B.M. (1963). *Textbook of Oral Pathology*. 2nd. ed., pp. 386-391. Philadelphia: W.B. Saunders.

Torneck, C.D. & Tulananda, N. (1969). Reaction of alveolar bone and cementum to experimental abscess formation in the dog. *Oral Surgery, Oral Medicine and Oral Pathology*. **26,** 404-416. ■