

# RADIOGRAPHIC STUDY ON THE RESORPTION OF IODOFORM PASTE IN THE APICAL LESION

Koo, Cheong Mo, D.D.S.

*Department of Operative Dentistry*

*Graduate School, Seoul National University*

*Directed by Prof. Kim, Yung Hai, D.D.S., Ph.D.*

## 齒根端病巢에서의 요도포르름糊劑(iodoform paste)의 吸收에 關한 X-線學的 考察

서울대학교 大學院 齒醫學科 保存學 專攻

(指導 金 英 海 教授)

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.....> 국문초록 <.....

著者は 18歲부터 24歲의 男女 5名의 齒根端病巢가 있는 前齒에 iodoform paste로 根管過剩充填을 한 後 X-線像으로 그 吸收 現象을 觀察 하였던 바 다음과 같은 結論을 얻었다.

- 1) 비록 同種의 根管充填用 糊劑(paste)로 根管充填治療를 하였어도 各齒牙에서의 吸收率에는 큰 差異가 있었다.
- 2) 요도포르름糊劑의 吸收率은 3, 4週에서 보다 1, 2週에서 더 빠르게 나타났다.
- 3) 齒根管內에서의 吸收率은 상당히 느렸으며 2週에 吸收가 나타난 例도 있었다.
- 4) 治療後 4週間에는 擴散性, 浸潤性症狀이 X-線像에 나타났으나 3個月後에는 뚜렷한 境界를 가진 病巢部를 볼 수 있었으며, 齒槽骨構造의 變化는 病巢部의 周圍에 新生骨의 緻密한 增殖으로 連續的인 白線이 形成된 것을 볼 수 있었다.

### INTRODUCTION

Iodoform paste as a root canal filling material was introduced in the practice of endodontics by Rose.<sup>1)</sup> The use of various kinds of absorbable and nonabsorbable pastes has been reported. Absorbable pastes have been used for short periods of time.

Histologic studies on human teeth, rats' and dogs' when absorbable pastes were employed as root canal filling material, have been performed by many investigators.<sup>2-7, 12-14)</sup>

Nowadays, it is the general assumption that absorbable pastes used as root canal fillings remain bland, dissolve or become resorbed fairly quickly, and exert their pharmacologic

\* 本 論文의 要旨은 1971年 11月 26日 第15回 大韓齒科 保存學會에서 發表하였음.

action as long as they are present.

The behavior of the living tissues which come in contact with the absorbable pastes, either in the periapical zone or in the root canal, is not well known.

Recently Jorge Erausquin and coworkers,<sup>9)</sup> studied the tissue reaction to root canal fillings with absorbable pastes such as Walkhoff's paste,<sup>3)</sup> Maisto's paste,<sup>9)</sup> Palazzi's paste, and found that the resorption rate of different pastes was not uniform. He found that there was also a great difference in the speed of resorption in specimens in which the same root canal paste was employed.

The purpose of this study was to determine the resorption of the iodoform paste in the apical lesion.

## MATERIAL AND METHODS

Root canal filling material employed was iodoform paste.

All root canal treatments were carried out in the central or lateral incisors of 5 young persons with apical lesion, aged from 18 to 24 years.

The plan of treatment was routine endodontic therapy. Formocresol was used as a root canal disinfectant.

The paste, then applied the excess paste in the pulp chamber with warm temporary stopping, was overfilled by means of slight pressure from a flat-faced instrument.

The entrance to the canal was filled with gutta-percha, and obturated with zinc oxide-eugenol. In order to show the behavior of the resorption of iodoform paste, a roentgenogram was taken every 7 days for a month after treatment.

## RESULTS

Resorption of the overfilled paste;

Resorption of the paste appeared most active in a week and 2-week postoperative periods.

In most of the cases, total resorption of the overfilled paste was observed for 2 weeks and 3 weeks postoperative periods. (Fig. 1)

As shown in Fig. 3, in a case of a 23-years-old man total resorption of the overfilled paste was found within a week of postoperative periods.

In cases of a 24-years-old man and a 18-years-old girl the overfilled paste could be found still as long as even after 4 weeks. (Fig. 4. 5)

As shown in Fig. 4, the overfilled paste was transformed and immigrated.

Behavior of absorbable pastes within the root canal;

In most of the cases, resorption was not occurred even after 4 weeks.

In two cases from 20-years-old man, one showed resorption within 2 weeks and the other 3 weeks of postoperative periods. (Fig. 6)

Radiological change of the apical lesion after 3 months;

Diffuse and infiltrative sign are appeared on roentgenogram for 4 weeks after treatment. (Fig. 2)

After 3 months, well defined outline of the lesion is noticed with regenerative change on this area. (Fig. 2)

Area of the lesion also was much decreased. (Fig. 2)

## DISCUSSION

As previously mentioned, it is generally assumed that soluble ingredients of absorbable pastes diffuse in the tissue fluids, while the insoluble ones are phagocytized by the macrophages.

The findings reported in this study show that absorbable iodoform pastes were not consistently removed as was expected. Resorption of the paste took place at the very early stage after treatment.

Erausquin and coworkers<sup>8)</sup> reported that in some 30- and 90- day Wistar rat specimens the paste was seen entirely resorbed; and occasionally it persisted within the canal, although total or partial resorption of the overfilled material occurred in the periapical area.

In this study, however, the resorption of the paste within the root canal was minimal or did not occur.

Erausquin stated, "some ingredients of the absorbable pastes and eugenol provoked polymorphonuclear infiltration in the growing tissue differentiated within the canal. This infiltrate appeared as a dense layer located between the paste and the newly formed tissue; later, the macrophages, which ingested dead polymorphonuclear leukocytes, thickened this layer which hindered resorption of the remaining paste.

He stated, also, "removal of the paste occurred faster in areas having a rich blood supply, such as the periapical tissues."

Gutter-percha resorption has been reported by J. H. Gutierrez<sup>10)</sup> and associates who concluded that gutta-percha is disintegrated in contact with tissues and exudates and is removed later by phagocytic cells such as macrophages, as reported by Feldman and associates.<sup>11)</sup>

All the clinical and experimental observations cited above are in agreement with findings of many other investigators, and also, support the general assumption as previously mentioned and the results of this study.

## SUMMARY AND CONCLUSION

Resorption of the iodoform paste used as a root canal material was observed radiologically. Root canal overfillings were accomplished in the upper and lower incisors (total 5 cases) from 5 young persons aged 18 to 24 years.

A roentgenogram was taken every 7 days for a month after treatment.

Radiographic observations lead us to draw the following conclusions:

1. There was a great difference of resorption rate, although the same root canal paste was employed.
2. Resorption rate of the paste seemed faster on the 1st and 2nd week than the 3rd and 4th week.
3. Resorption rate in canal was quite slow and noticed only after on the 2nd week
4. Diffuse and infiltrative sign was appeared on roentgenogram for 4 weeks after treatment, but well defined outline of the lesion was noticed after 3 months with regenerative change on this area. Area of the lesion also was much decreased.

=ACKNOWLEDGEMENT=

The author sincerely express appreciation to Prof. Kim, Soo Chul, Prof. Kim, Yung Hai for his critical review of this paper.

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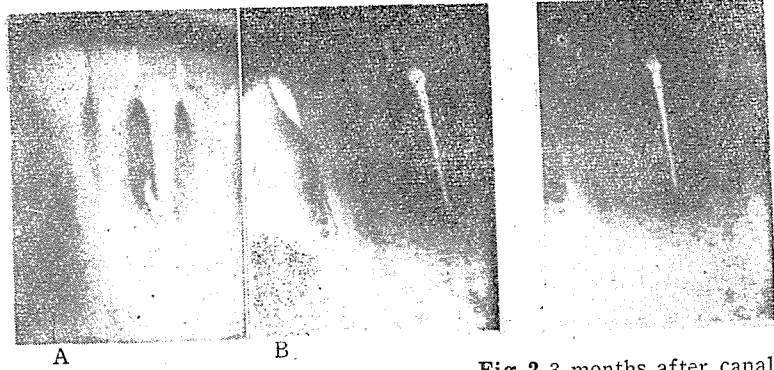


Fig. 1. A: After canal filling.  
B: 2 weeks after canal filling.

Fig. 2. 3 months after canal filling.

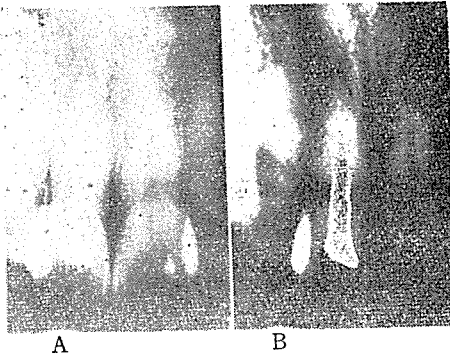


Fig. 3. A: After canal filling.  
B: A week after canal filling.

Fig. 4. A: After canal filling.  
B: 4 weeks after canal filling.

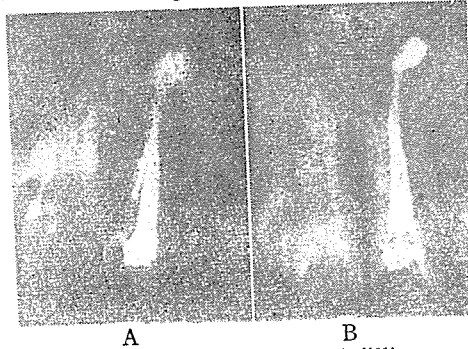


Fig. 5. A: After canal filling.  
B: 4 weeks after canal filling.

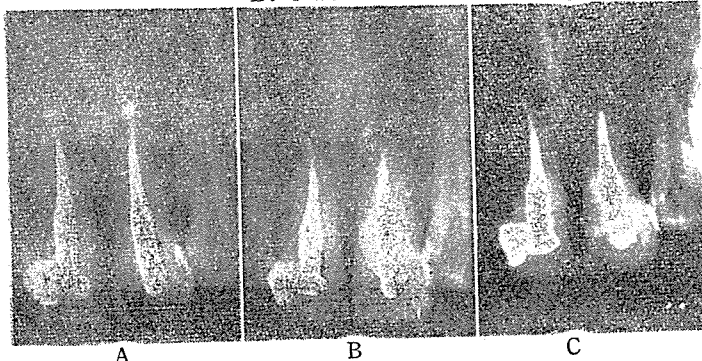


Fig. 6. A: After canal filling.  
B: 2 weeks after canal filling.  
C: 3 weeks after canal filling.