Global Journal of Medical research: J
Dentistry and Otolaryngology
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Dental Extractions, Antibiotics and Curettage - First, Do no Harm

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Abstract- *Background:* Gentle curettage of the socket and/or postoperative antibiotics are standard protocols after an extraction of a tooth with a periapical radiolucency, but there are risks associated with these procedures.

Methods: A retrospective chart analysis of simple dental extractions of teeth with periapical radiolucencies and without postoperative curettage was conducted in a multidentist private practice. There were 31 cases that met the criteria, which included extraction site X rays at least three months postoperatively to check radiographic healing.

Results: Of 31 extractions with periapical radiolucencies and without socket curettage, all showed complete healing at least 3 months postoperatively. None was given preoperative antibiotics, and only three were given postoperative antibiotics for five or six days.

Conclusions: Complete radiographic healing occurs without postextraction curettage in teeth with periapical raidiolucencies and without preoperative or postoperative antibiotic therapy in most cases.

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GJMR-J Classification : *FOR Code: QV 50, WU 20.5*

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Dental Extractions, Antibiotics and Curettage – First, Do no Harm

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Clinical implications: Socket curettage or antibiotic therapy in patients without significant swelling after simple extractions of teeth with periapical radiolucencies should not be routine. The risks of damage to adjacent structures, excessive bone removal, and postoperative pain exceed the benefits of postextraction curettage of the socket for teeth with periapical radiolucencies, and the risks of antibiotic therapy often exceed the benefits.

Keywords: extraction, curettage, antibiotic.

I. Introduction

A general principle of medicine and dentistry that dates back many centuries is the concept of *primum non nocere* or "first, do no harm."[1] The Code of Professional Conduct of the American Dental Association states, "The dentist has a duty to refrain from harming the patient."[2] In other words, before intervening with medical or dental care, a physician or dentist should consider the potential for harm from the intervention itself.

Gentle curettage of the socket is a standard protocol after a dental extraction. One oral surgery textbook states, "If a periapical lesion is visible on the preoperative radiograph and there was no granuloma attached to the tooth when it was removed, the periapical region should be carefully curetted to remove the granuloma or cyst."[3] Other authors make similar recommendations.[4-6]

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The purpose of curetting an extraction socket with a radiographic lesion is at least theoretically to break up the granuloma or cyst to allow for better and/or faster healing, but there are potential risks with curettage. Adjacent anatomical structures can be disturbed. For example, excessive bone removal, sinus perforation, nerve injury, and increased postoperative pain can occur by curettage. Although good visibility is a hallmark of good extraction technique, postextraction "blind curettage" is typically the only option as the periapical area is usually too small, bloody, and distant from the coronal area of the socket to permit visibility. The tip of the curette must be small enough to reach through the periapex (often only 2mm or less) but large enough to break up the periapical granuloma or cyst, which is often much larger than the periapex itself. Sometimes it is impossible to curette the lateral aspects of the lesion without removing healthy periapical bone for access. If a smaller curette is used, more force can be concentrated in the smaller tip, but it is less likely to reach lateral aspects of the lesion. If a larger curette is used, it is less likely to reach into the periapical lesion because of its size.

Similarly, antibiotics carry inherent risks, including antibiotic resistance on an individual as well as global scale, and they should only be prescribed when necessary.[7-9]

In the authors' multidentist general dental practice, sockets are not curetted after extractions. Preoperative or postoperative antibiotic therapy is rarely administered. Antibiotics are administered based on the clinician's judgment if there is significant preoperative swelling (therapeutic antibiotics) or if there is a heart condition requiring prophylactic antibiotics to prevent endocarditis.

There are typically two choices when a patient presents with an infected tooth that shows a periapical radiolucency: root canal therapy or extraction. Usually, either treatment will lead to resolution of the periapical radiolucency. While postoperative curettage is possible with extractions, preoperative, perioperative, or postoperative curettage is virtually impossible with endodontic therapy. In spite of the impossibility of curettage, most periapical lesions heal after successful endodontic therapy. Our hypothesis was that if periapical lesions can heal after endodontic therapy and without curettage, then they should also be able to heal without postextraction curettage.

II. Methods

All patient charts were retrospectively reviewed in a multidentist private general dental practice between 1999 and 2011 of those who had undergone simple extractions of teeth with preoperative radiolucent lesions and who were seen at least three months postoperatively for a periapical radiograph in the course of receiving their routine dental care. After most extractions, patients were not routinely scheduled for postoperative X rays or even postoperative visits. The preoperative X rays were necessary for the extraction, but the postoperative X rays were coincidental with each patient's routine dental care. A full mouth X ray or a periapical X ray of an adjacent tooth on a patient several years after an extraction would qualify as a postoperative X ray of the extraction site. As a result, the median recall time was rather lengthy. Many patients may have moved away or gone to other dental practices before returning for a postoperative periapical radiograph.

III. Results

There were 31 patients who met the criteria, ranging in age from 17 to 85 years old (median age: 47 years; average age: 46.2 years). [See Table 1.] The lesions ranged from 1 mm^2 to 99 mm^2 (median: 15 mm^2; mode: 25.7mm^2).

Of the 31 patients, none was administered preoperative antibiotics, and only three were administered postoperative antibiotics. A 37-year-old man was given 21 tablets of Penicillin VK 500 mg after the extraction of tooth number two with a 4 mm^2 periapical radiographic lesion. Two patients were administered antibiotics for postoperative infections, one starting on the 2nd postoperative day and the other starting on the 6th postoperative day. All patients showed complete radiographic healing/bone fill at their recall appointments, which ranged from 4 months to 72 months (median 29 months; mode 30.2 months). [See Figures 1 through 4. Figure 1: preoperative #31 X ray showing periapial radiographic lesion. Figure 2: 5-month postoperative Xray #31 showing complete radiographic healing. Figure 3: #30 preoperative X ray showing periapical radiographic lesion, Figure 4: #30 48-month postoperative X ray showing complete radiographic healing.] In addition, two patients (a 24-year-old two days after #30 was extracted and a 62-year-old six days after #31 was extracted) were seen for postoperative fibrinolytic alveolitis and possible infections were prescribed amoxicillin 500 mg three times a day for 6 days.

IV. Discussion

The results clearly show that neither postextraction curettage nor preoperative, perioperative, or postoperative antibiotic therapy is necessary to achieve complete radiographic healing of periapical lesions. A weakness of our study is that it was retrospective, and as a result, patients were not scheduled back periodically to monitor the speed of healing. In a prospective study, it would have been possible to schedule patients periodically and measure the decrease in lesion size accordingly. It is possible that antibiotic therapy or postoperative curettage may speed healing time, but it does not appear to improve the healing itself as all our patients achieved complete healing without it.[10]

V. Conclusion

Postextraction curettage carries inherent risks but few benefits. As is the case after successful endodontic therapy, periapical radiographic lesions heal completely without postextraction socket curettage. Practitioners should consider eliminating postextraction curettage of the socket. Similarly, preoperative, perioperative, and postoperative antibiotic therapy does not improve healing of periapical lesions of erupted teeth, and practitioners should consider eliminating such antibiotics unless indicated by the patient's symptoms (eg, preoperative swelling) or medical condition (eg, artificial heart valve).[11,12]

Table 1 : Extractions without curettage

	Gender	Age	Tooth number	Recall (#months)	Antibiotic	Approximate lesion size (mm^2)
1	M	47	18	36	none	80
2	M	85	8	36	none	20
3	M	44	2	46	none	4
4	M	49	7	26	none	99
5	F	20	17	12	none	15
6	F	49	21	13	none	48
7	M	67	20	44	none	42
8	M	48	31	16	none	54
9	F	74	30	16	none	12
10	F	20	14	4	none	24
11	M	57	19	72	none	7.5
12	M	40	14	12	none	25

13	F	43	8	34	none	1
14	F	41	31	18	none	3
15	M	37	2	40	Penicillin VK 500 mg tablets were prescribed after the extraction for 5 days, four times a day for preoperative swelling.	4
16	M	47	30	24	none	2
17	F	38	30	41	none	7.5
18	M	23	19	35	none	20
19	M	32	30	50	none	5
20	F	25	19	29	none	7.5
21	F	39	18	3	none	4
22	M	62	31	12	On 6th postop day, patient was treated for postop infection and/or dry socket and given amoxicillin 500 mg three times per day for 6 days	5
23	M	75	2	20	none	41
24	F	27	18	17	none	11
25	F	51	19	10	none	64
26	F	24	30	9	On 2nd postop day, patient was treated for postop infection, swelling, and/or dry socket and given amoxicillin 500 mg three times a day for 6 days.	48
27	F	17	19	7	none	56
28	M	72	22	33	none	20
29	F	50	12	3	none	9
30	M	63	18	3	none	49
31	M	67	12	4	none	10

Figure 1 : preoperative #31 X ray showing periapial radiographic lesion

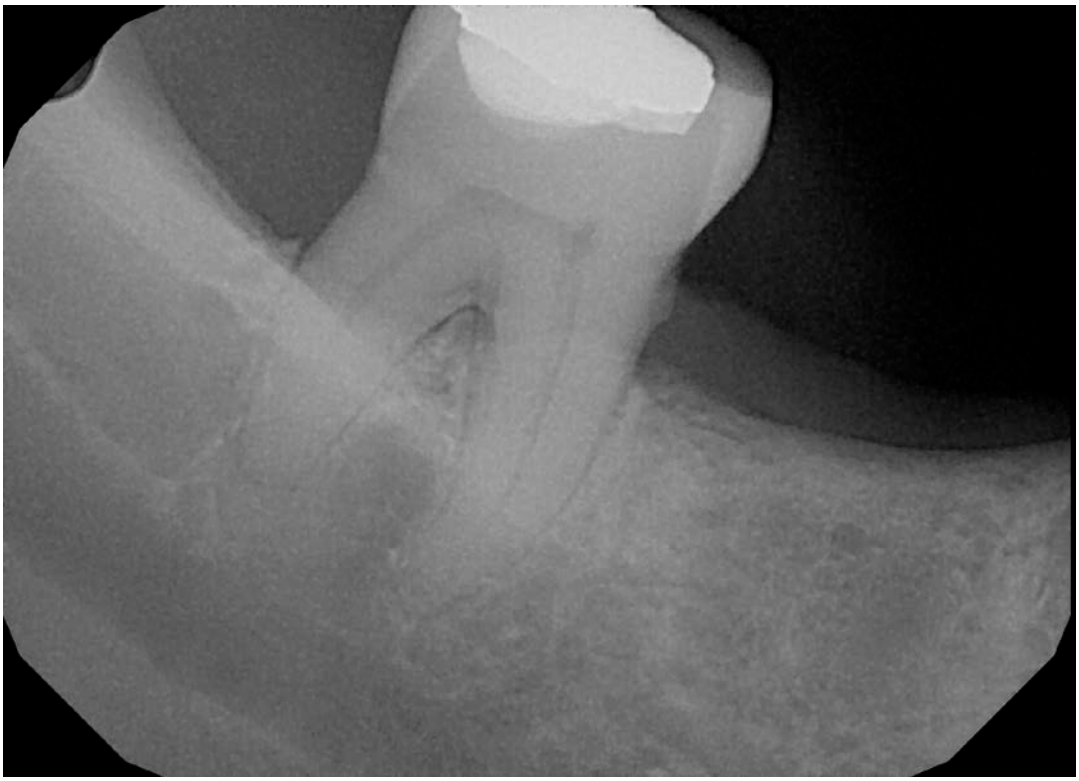

Figure 2 : 5-month postoperative Xray #31 showing complete radiographic healing

Figure 3 : #30 preoperative X ray showing periapical radiographic lesion

Figure 4 : #30 48-month postoperative X ray showing complete radiographic healing

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