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Prospective Clinical Study Evaluating The V Flap for Surgical Endodontic Treatment of Periapical Lesions.

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Abstract

The aim of this study was to evaluate the V shaped flap for surgical endodontic treatment of periapical lesions. The study included 62 patients in good general health, referred to the Department of oral surgery in the specialized center of Dentistry in Basra between March 2009 and June 2010, for surgical endodontic treatment. V shaped flap was used in all cases. Our intraoperative and postoperative clinical findings regarding the implentation of the vestibular V flap in surgical treatment of periapical diseases, have confirmed its individualy. It was perform the procedure which enabled a traumatic retraction with abundant blood supply and repositioning with a few stitches. the following day 62.9% of the patients experienced no pain, and mild swelling of the surgical site was evident in 79 % of the cases. The healing was complete, without any signs of tissue retraction and dehiscence.

Introduction

The surgical treatment of periapical chronic diseases requires good access to bone and root structures. Good surgical access is fundamentally dependent on the selection of an appropriate flap design(1).
There are general principles which every flap design must follow: It should provide an adequate access and view of the surgical field; The incision must be made with firm, single stroke; It should provide sufficient blood supply to the reflected tissues; The flap design should provide for soft tissue closure over solid bone ,it should be able to be elongated, if necessary; The design should enable passive tissue retraction and repositioning and suturing of two identical neighboring surfaces (2).
The surgical treatment of periapical chronic diseases requires unimpeded access to bone and root structures. Good surgical access is fundamentally dependent on the selection of an appropriate flap design(3).
All flaps have distinct indications, advantages and disadvantages, but the experience and the choice of the surgeon according to the situation play a major role in determining the final outcome of the procedure(4).

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Submarginal flaps are used when localized periapical diseases are in question, or when treating anterior teeth with fixed restorations and when aesthetics and health of the marginal gingiva are essential and the flap does not include the marginal or interdental tissues (5).

The loups provides magnification and illumination, essential for identifying minute details of the apical anatomy. Ultrasonic instruments, and modern microsurgical instruments facilitate the precise root-end preparation that is within the anatomic space of the canal. These technical advances permit endodontic surgical procedures to be performed with precision and predictability, thus eliminating the disadvantages inherent in traditional periradicular surgery such as large osteotomy, beveled apicectomy, inaccurate root-end preparation, and poor visualization (6). The clinical success criteria of traditional periradicular surgery with burs and amalgam root-end fillings are based on the absence of symptoms and on radiographic evidence of healing.

It has been known that individual variables including age, sex, tooth type, and preoperative signs and symptoms do not significantly affect postsurgical healing (7). However, the location of bone loss, especially a localized complete loss of marginal bone, the presence and height of the intact buccal bone covering the root, and involvement of furcation are significant contributing factors that affect the periradicular surgical outcome(8).

The V flap is a type of a submarginal vestibular flap. Since its establishment in 1980's, it has been used for surgical treatment of chronic periapical diseases when marginal and lateral periodontal tissues were uncompromised. It consists of two relaxing converging incisions made in the attached gingiva, above the tooth in question(9).

Aims of Study

To evaluating the V shaped flap for surgical endodontic treatment of periapical lesions.

Materials and Methods

Our study included 62 patients of both femal and male ((Table 1)), referred to the Department of Oral Surgery for surgical endodontic treatment of teeth with minor periapical chronic diseases and uncompromised marginal and lateral periodontium.

Patients were subjected to a meticulous clinical and radiology assessment. All the procedures were done under block anesthesia (with 2% lidocaine with 1:80,000 epinephrine, for additional hemostasis during surgery, cotton pellets soaked in 0.1% epinephrine), with additional terminal anesthesia if necessary. The V flap was used in all cases.

Once the location and the direction of the incision were determined, a single perpendicular blade entry to bone was made at the starting point Mucoperiostal incision was made with surgical blade No. 15., medially or distally to the tooth in question. The blade then proceeded, and two convergent vertical incisions were made, outlining the V shaped flap. The two releasing incisions met 4-6 mm subcrestally. Subsequently, the flap was mobilized and retracted. Surgical endodontic procedures were performed according to standard protocol(11).

The Flap was repositioned with interrupted silk sutures (4/0 Silkam) and round needle, starting from the most prominent point, and then proceeding medially and distally.

The patients were advised to apply cold compression, and to use analgesics, if necessary. The follow ups were made, and the sutures were removed after 5 days and surgical sites were assessed at several points in time. On the day of the surgery, we evaluated the surgical access and the flap repositioning, according to the surgeon's personal experience.

After the surgery, pain and swelling were evaluated using verbal rating scale (none, mild, moderate, severe)(12).
At suture removal, the healing was assessed (complete or incomplete). Achieved results were presented using a descriptive method (percentage)(13). preoperative diagnosis is 66.5% of all surgically treated teeth were diagnosed with chronic periapical periodontitis with fistula, while the rest were diagnosed with chronic periapicalgranuloma.
We achieved a good surgical access, a traumatic retraction and an easy flap repositioning with few stitches in all cases.

Results

A total of 62 patients were included in this study. The age and gender distribution are presented in Table 1. Female patients were dominant with 57.8%, between 31 and 40 years of age.
Distribution of surgically treated teeth is presented in Table 2. Surgical treatment was most frequently performed on maxillary centralincisors38.7%and maxillary lateral incisors 27.4% .
The verbal painandswelling scale noted the following day is presented in Table 3, and Table 4 respectively
62.9% of the patients experienced no pain at all, 33.9 % of them felt mild pain . Mild swelling of the surgical site was observed in 79 % of patients. While16 % of them experienced no swelling at all.
The healing was complete, without signs of tissue retraction and dehiscence in all cases.

Discussion

Continuous longterm collection of data re-garding the dental disease ,surgical techniques and type of treatment is important because it provides necessary information for the development and evaluation of preventive measures for reducing the incidence of dental diseases.
The most frequently used flaps for endodontic surgery purposes were three sided flaps, but their main disadvantages were recession and unpredictable papilla shrinkage during healing (14). To prevent the marginal recession of the gingiva, submarginal incisions were suggested . There are several submarginal flaps that surgeons can choose from, according to the case presentation and their preference. They all have advantages and disadvantages.
Once frequently used, semi-lunar flaps are not recommended nowadays. Although they do not disturb the periodontal attachment, they have the disadvantages of limited access and visibility, encroachment on and closure over osseous defects, increased potential for hemorrhage, and healing with scar formation (15). They can lead to wound dehiscence, as a result of improper design of semi-lunar incision .The selection of an adequate flap design can affect surgical access and visibility, extent and duration of the surgery and postoperative outcome.

The female predominance in our study agrees with what is reported by Luebke RG (16)
and this is because the female is more concern about here dental health.

Some surgical endodontic protocols recommend preoperative use of analgesics. They argue that it is better to prevent the pain than deal with it later (17). Others, like Saunders WP et al. suggest preoperative use of corticosteroids in their study, patients undergoing surgical endodontic treatment were evaluated for postoperative pain and swelling. They were pre- medicated with single dose of oral dexamethasone (8 mg) and two single doses (4 mg) first and second day postoperatively(18). In our study, when planning the surgical procedures, premedication was not given to any of the patients. In healthy patients there is no need for premedication with either corticosteroids or analgesics. A significant reduction in pain usually occurs on the

first post-operative day, followed by a steady, progressive decrease in discomfort each succeeding day.

Verbal rating pain scale one day following surgery, showed absence of pain in 62.9% of the patients, while 33.9% of them felt mild discomfort (Table 3). Verbal swelling scale showed mild swelling of the surgical site in 79 %of the patients (Table 4) and these results are in agreement with studies conducted by Gagliani MM et al and Grung B(19,20).

It was the V flap properties that were responsible for such results, even when no medication was issued prior to surgery.

This flap was easy to create. Due to its dimensions, the retractor held the whole mucoperiostal flap, thus preventing its collapsing and enabling a traumatic retraction.

Its wider base compared to its dimensions, obtained blood supply in abundance, compared to all other types of flaps,these findings are in a concordancewith findings reported by Altonen M and Yazdi PM et al(21,22).

Readaptation was ideal with few sutures. Suturing of the most prominent point almost completely readapted the entire flap. Additional two sutures were necessary to completely readapt the flap. Repositioning and reconstruction is easier in flap designs with vertical than in horizontal incisions. In such flap designs, the flap angles are initially sutured, which facilitates suturing of other flap parts. On the contrary, semilunar flaps lack two identical, closely related surfaces, making the repositioning and reconstruction somewhat troublesome, and demanding greater attention,similar results were mentioned by Wesson CM et al (23).

Healing was complete without tissue retraction in all cases.

Surgical endodontic procedures using theVflap demand precise diagnosis, radiological confirmation of the localization and extension of the periapical lesion, thus

preventing any unexpected need for flap extension.

Conclusion

Our postoperative clinical findings regarding the implementation of the vestibular V flap in surgical treatment of periapical chronic diseases, have confirmed its individuality. It was easy to create, enabled a traumatic retraction with abundant blood supply and repositioning with few sutures. Even without premedication, the following day 62.9 % of the patients experienced no pain, and mild swelling of the surgical site was presented in 79% of patients. The healing process was complete, without any flap retraction.

Table 1. Age and gender distribution .

Age	Male		Femal		Total	
11-20	2	3%	3	4.8%	5	7.8%
21-30	7	11%	9	14.5%	16	25.5%
31-40	16	25.8%	20	32%	36	57.8%
41-	2	3%	3	4.8%	5	7.8%
Total	27	43.5%	35	56.5%	62	100%

Table 2 . Distribution of surgically treated teeth.

Tooth	No.	%
Maxillary central incisor	24	38.7
Maxillary lateral incisor	17	27.4
Maxillary canine	8	12.9
Maxillary first premolar	4	6.4
Mandibularcentral incisor	6	9.7
Mandibular lateral incisor	3	4.9
Total	62	100

Table 3. verble pain rating scale .

Pain scale	Degree of pain	No.	%
A	None	39	62.9
B	Mild	21	33.9
C	Moderate	2	3.2
D	Sever	0	0
Total		62	100

Table 4. verbalswelling rating scale .

Swelling scale	Degree of swelling	No.	%
A	None	10	16
B	Mild	49	79
C	Moderate	3	5
D	Sever	0	0
Total		62	100

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