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A Comparison between Results of Post-Operative Dressing Of Latent Wisdom Tooth with Single/Conventional Suture Techniques.

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ABSTRACT

There is not an agreement about closure as well as injury intention of primary and secondary types and their effect on reduction of latent wisdom tooth operation effects. Thus, the study aimed to compare two conventional (3-4 sutures) as well as single suture at second molar distal.36 patients (18-31 age range) who refer to Department of Maxillofacial Surgery , Faculty of Dentistry, Zahedan University , in 2011 with at least two mandible's latent wisdom teeth or similar problem, included in the study. A single suture was applied for the second molar distal operation and the wound was aimed to be healed by the secondary intention. Immediately, the third molar of the other side was extracted similarly and the conventional suturing was applied with the first suture behind the second molar, the second suture exactly on the alveolar ridge and the last suture on the mesial of the second molar papilla; and the primary intention was used for the wound. Data was collected at 6 and 24 hours and 2, 3, 4, 5 and 6 days of operation using Visual Analog Scale (VAS). Postoperative swelling severity was recorded at 2 and 6 days of operation using a 4-point VAS. Data was analyzed by applying 18th version of SPSS software and Independent t-test and Chi-square statistics. Significant difference was observed between the groups in pain severity at the both intervals ($P<0.05$); however, gender showed no significant difference ($P>0.05$). Chi-square test revealed a significant relationship between conventional suturing technique and a high rate of severe and moderate swelling at the end of the second day; however, the relationship between suturing technique and hemorrhage on the second day, was not significant ($P=0.05$).The pain severity and swelling with the single suture technique was less than the multiple suturing techniques. It is hoped that the findings promote patients' satisfaction and their life quality.

Keywords: First/second intention, Swelling, Pain, Latent wisdom tooth, Conventional/single suture

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INTRODUCTION

Latent tooth is one which does not appear in the jaw arch at the expected time due to several reasons which perverted it from a natural growth. If the tooth is not extracted by an operation, it will be latent forever. As a general rule, latent teeth should be appeared, but there is a contraindication to extract them. Otherwise, the latent teeth make topical problems such as ruining next teeth next, anatomical structures and risky and more difficult operation. On the other side, on time operation of latent tooth can prevent problems such as periodontal diseases, decay of the tooth and next teeth, swelling of the crowns surroundings, the next tooth root dystrophy and appearance of cysts and Odontogenic tumors [1]

Tooth latency has a high concordance and the maximum of the latency rate occurs in the mandible's third molars and maxilla [3], for the reason, removing the latent wisdom tooth is one of the most common operations in the field [2,3]. Wisdom tooth or third molar usually grows between 17-25 ages and there are several reasons for the latency which are listed as:

- Lack of enough mesiodistal in front of anterior edge of ramous which does not let the mandible's wisdom tooth to be grown.
- High accumulation of bone on the latent tooth.
- Genetic and environmental factors: sometimes the factors which play a role in the growth of teeth in jaw arch and placing in natural position, counted as effective elements in the latency of the tooth [1].

Wisdom tooth latency can make consequences such as periodontal ruins, damage to gum tissues of next teeth, next teeth root's decay, contact decay due to placement of the second (molar tooth and more important followed by pericoronitis or swelling of tissue and gum of the wisdom tooth; there are different beliefs and methods in this regard. Many surgeons believe that the operation time, trauma rate and severity of surgery, unsuitable mouth health, and the sophistication of the surgeon, all are effective on the concordance and severity of post-operation complications.

Around 18-40 percentage of the operations haven unwanted consequences; however, in the rest, some effects such as pain, trismus, making dry socket, and in rare cases delayed perfusion or sepsis can be occurred [2,3]. Over time, there has been different believes about suture type, primary or secondary intention and its effect on reduction of post- operation effects [3]. In the primary type, the tooth socket is closed with mucal flaps [4]; but, in the secondary intention, the socket is related to the mouth cavity and better drainage and washing is done.

Some researchers like Rehrman (1936), suggested primary intention and believed that injury closeness is completed and prevented the injury from contact to mouth contamination. For example, in flap design, making a mucus design in “V” form for making secondary intention or change in closures design, without closure operation, or putting a drain channel in the operation place, were prepared to assess the changes affect on the reduction of after operation consequences. many patients' quality life are affected by the surgeries and in many cases force them to be isolated from society, leaving job, inability of eating, diet changing, talking problems, sleep disorder, and physical appearance of the group [5].

In many cases, signs such as pain, swelling, and trismus are observed post-operation. According to health services' report for counting recovery period and contemporary rest of people at work, the cost of the third molar operation is increased to 25%. The problems and their effects on the life, lead to less satisfaction of the operation, reduction in its quality and finally, the patient's confrontation with so many problems [6]. One of the effective factors on the reduction of pain, swelling and effects of operation, is the type of intention (primary or secondary) which is selected. In conventional method, at first a suture is done in the fixed tissue of behind the second molar, then another is exactly put after the first one on the alveolar crest and finally, the third one is applied on mesial papilla of the second molar. The releasing incision is also closured. Here, the injury is improved by the primary intention method [7].

Difference between wound intention with primary and secondary methods is examined in several studies. Among the studied factor in the researches can be referred to pain rate, swelling and perfusion which all end to the post-operation's patients' dissatisfaction. The factors are assessed in terms of primary or secondary intention.

Osunde et al. (2007) examined two methods of single and multi-suture among different gender and age groups with applying comparative criteria such as latency type, prediction of the problem before and during operation. The rate of pain, swelling and trismus showed significant differences at the first, second and third days of operation; however, in the fifth and seventh days of the operation no significant difference was observed in terms of the variables. They also concluded that pain, swelling and trismus in single method were much less than the other [8].

Cerqueira and colleagues [2004] compared the effect of drain channel in mandible's latent wisdom tooth on pain and swelling after operation with single-suture method and concluded that applying drain channel causes drastic reduction in swelling during 24 and 72 hours of operation; however, the pain did not change significantly. The drain channel reduces swelling by making better drainage. Finally, they concluded, the channel helps to control swelling, but not affect on pain and trismus [9].

They study aimed to compare two closure method, conventional with 3-4 sutures, and a single-suture in the distal of the second molar. In fact, the method leads to two intention method, the primary and secondary respectively. The final aims of this study are reduction in post-operation effects, promotion of patients' quality life, reduction of imposed costs on the society and health system.

RESEARCH MOTODOLOGY

This study was done in interventional clinical mode and the data was collected via clinical observation as well as administration an especial form to assess patients' pain statistical community included all clients to operation unit of Faculty of Dentistry, Zahedan University during 2010 who want to extract their wisdom root. All the people had two mandible's latent wisdom tooth, without any systemic disease.

The age range of the group was 18-31. Among the group 36 people (20 males and 16 females) were selected, their mean age was 23.62± 3.8. The study was under supervision of the ethical committee of Faculty of Dentistry, Zahedan University(No. 1867-89).

The entire group had two latent wisdom teeth with similar situation which makes their operations difficulty the same. In fact, their teeth were completely or relatively, latent in the bone. The similarity factors were checked by clinical visit as well as panoramic radiography. The participants had good dental health and nobody had smoking. No infections in mouth cavity or contraindication for medicine or anesthetic factors were reported.

At first, aims and administration process were described for the group and follow-up dates reported to them. An hour before the surgery, the patients had an Ibuprofen dose (400 mg), and their mouth washed with Chlorhexidine 12% for one minute. All the participants had anesthesia in inferior alveolar neural block mode in addition to a long bucal insertion of lidocaein 2% as well as Epinephrine 0.00001.

To releasing, envelop muco- periosteal flap is removed with distal incision. The minimum ostectomy was done with applying round bur or number 8 in addition to washing with much of normal saline. Whenever it was necessary, dental suction was done. After completing operation, the tooth's socket Curettage was done with using 20ml of normal saline washing.

In the technique 1, for all patients the flap was put on its original place and only one silk suture (0-3) ,produces by Sopa company, was done at the distal of the mandible's second molar, then the wound leaved to be healed via secondary intention. For all the patients immediately after the wisdom tooth operation in one side, the other side's molar is extracted, similarly. However, the applied technique (2) was conventional which included one suture at the fixed tissue of behind the second molar, the second closure exactly after the first one on the alveolar ridge and the other closure on the papilla mesal of the second molar. The releasing incision is closed with closure. In this case, the injury was improved by the first intention method.

The surgeon used the techniques (1, 2) in the right or left sides of the patient's mouth, randomly. To be sure of the result, a double-blind technique was applied which observer as well as the patient did not know about the place of the 1, 2 techniques through.

All the operations were done by just one surgeon and the process for each tooth endured 10-20 minutes. All the patients had training as following: Putting an icepack during the first 24 hours of post-operation every other 20 minutes, having soft diet for the period and usual mouth health the day after the operation. Other suggestion was mouth washing with Chlorhexidine 12% two times daily for one week. The prescribed medicine included Amoxicillin 500 mg every 8 hours for one week and Ibuprofen 400 mg every 4 hours for 3 days.

The data gathered at 6 and 24 hours and the second, third, fourth, fifth and sixth days of operation with applying Visual Analogue Scale (VAS). In the method, patients report their pain in a scale which is between 0-10 (0= no pain, 10= sever pain).

The values have been collected by call. Also, the swelling rates at the end of the second and sixth days of operation were collected in a 4-point scale by VAS (1= no swelling, 2= mild swelling (inner mouth swelling and edema at the surgery place), 3= medium swelling, (swelling and edema both inside and outside of mouth), 4= severe swelling (swelling and edema at inside and outside of mouth as well as facial appearance). The patients reported their bleeding whether due to tooth brushing or spontaneous.

Patients have been observed to be sure about the dry drain at fourth days of operation. Moreover, the patients came back to remove their suture at the end of sixth days of operation and visited by the researcher. Data analysis was done with applying independent t. test, and chi-square statistics (18th version of SPSS software).

RESULTS

In this study which was done to compare consequences of mandible's latent wisdom tooth operation with applying single or conventional methods. Totally, 36 people (20 males and 16 females) in age ranges of 18-31 (mean age=23.62±3.80) examined. Each person had two teeth operations and each method of closing injury applied for one tooth. In sum, 36 teeth had single-suture and the same amount had conventional suture method.

Results showed a significant difference between pain rate of the groups at 6th and 24th hours ($p<.05$). In fact, post- operation pain rate in single-suture was less than conventional method. There was also no significant difference between pain rate at the second, third, fourth, fifth and sixth days of operation with applying single and conventional methods of suture ($p<0.05$).as shown in table 1.

Table 1: Mean distribution and standard deviation of pain rate of after operation

Assessment Time	Closure Type		T.test
	Single Closure	Conventional Closure	
	Mean and SD of pain	Mean and SD of pain	P-value
6 hours	64.1± 86.3	43.1± 70.4	0.025
1 day	61.1± 58.3	52.1± 53.4	013
2 days	89.1± 97.2	22.1± 14.3	658
3days	19.2± 69.2	45.1± 33.2	412
4 days	49.2± 92.1	40.1± 44.1	325
5 days	01.2± 11.1	05.1± 64.0	216
6 days	30.1± 69.0	76.0± 33.0	15.

Results of pain rate assessment showed no significant difference between gender and type of suture ($p>0.05$).as shown in Table 2.

Pain rate assessment at the end of the second and sixth days of operation via VAS and applying chi-square showed significant relationship between using conventional suture and moderate and severe swelling at the end of the second day among the participants. There was also the relationship between males and females after controlling gender variable ($p<0.05$). In fact, the moderate and severe swelling due to applying conventional method was higher than single-suture at the end of the second day.as shown in Table 3,4.

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Table 2: Mean distribution and SD of pain rate of after operation with respect to gender

Assessment Time	Gender	Closure Type		T.test
		Single Closure	Conventional Closure	
		Mean and SD of pain	Mean and SD of pain	P-value
6 hours	Male	80.1± 10.4	35.1± 05.5	35.1± 05.5
	Female	41.1± 56.3	45.1± 29.4	45.1± 29.4
1 day	Male	70.1± 80.3	51.1± 79.4	51.1± 79.4
	Female	49.1± 31.3	52.1± 23.4	52.1± 23.4
2 days	Male	07.2± 20.3	38.1± 36.3	38.1± 36.3
	Female	66.1± 69.2	99.0± 88.2	99.0± 88.2
3 days	Male	16.2± 65.2	46.1± 63.2	46.1± 63.2
	Female	29.2± 75.2	41.1± 00.2	41.1± 00.2
4 days	Male	04.2± 45.1	12.1± 47.1	12.1± 47.1
	Female	92.2± 50.2	70.1± 41.1	70.1± 41.1
5days	Male	22.1± 70.0	82.0± 68.0	82.0± 68.0
	Female	65.2± 62.1	28.1± 59.0	28.1± 59.0
6 days	Male	75.0± 40.0	48.0± 32.0	48.0± 32.0
	Female	73.1± 06.1	99.0± 35.0	99.0± 35.0

Table 3: Frequency distribution of people's swelling according to closure type (second and sixth days of operation

Second Day						Sixth Day					
Swelling Situation	Single Suture		Conventional Suture		Chi-Square	Type Of Swelling	Single Suture		Conventional Suture		Chi-Square
	f	p	f	p			f	p	f	p	
No	5	9.13	1	8.2		No	0.50	18	8.77	28	
Mild	21	3.58	6	7.16		Mild	4.44	16	2.22	8	
Moderate	8	2.22	17	2.47		Moderate	6.5	2	0	0	
Severe	2	6.5	12	3.33		Severe	0	0	0	0	
Total	36	100	36	100	P=0.0008	Total	100	36	100	36	P=0.033

Note: f means frequency and p means percentage

Table 4: Frequency distribution of swelling situation of participants at the second day of operation with respect to closure type and gender

Closure Type Swelling Situation		Single Suture		Conventional Suture		Chi-square P-value
	Gender	frequency	percentage	frequency	percentage	
No	Male	5	0.25	1	3.5	P=0.003 P=0.003
	Female	0	0	0	0	
Mild	Male	9	0.45	3	8.15	
	Female	12	0.75	3	6.17	
Moderate	Male	6	0.30	7	8.36	
	Female	2	5.12	10	8.58	
Severe	Male	0	0	8	1.42	
	Female	2	5.12	4	5.23	
Total	Male	20	100	19	100	
	Female	16	100	17	100	

There was also significant relationship between using conventional suture method and moderate and severe swelling (p= 0.033). In fact, swelling rate at the end of the sixth day due to apply conventional method

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was higher than single suture (after controlling gender variable the relationship was not significant p=>0.05).as shown in Table 5.

Table 5: Frequency distribution of swelling situation of participants at the sixth day of operation with respect to closure type and gender

Closure type Swelling situation		Single suture		Conventional suture		Chi-Square P-value
	Gender	frequency	percentage	frequency	percentage	
No	Male	16	0.80	10	6.52	P=.124
	Female	12	0.75	8	1.47	P=.101
Mild	Male	4	0.20	7	8.36	
	Female	4	0.25	9	9.52	
Moderate	Male	0	0	2	5.10	
	Female	0	0	0	0	
Severe	Male	0	0	0	0	
	Female	0	0	0	0	
Total	Male	20	100	19	100	
	Female	16	100	17	100	

Chi-square did not show significant relationship between suture type and bleeding at the second day (p=0.05) after controlling gender variable, the significant relationship was disappeared (p>0.05) (there was also no bleeding among the participants at the sixth day) as shown in Table 6 ,7.

Table 6: Frequency distribution of bleeding situation of participants at the second day of operation

Closure Type Bleeding	Single Suture		Conventional Suture		Chi-Square
	frequency	percentage	frequency	percentage	
bleeding	3	3.8	2	5.5	P=.05
No bleeding	33	7.91	34	5.94	
Total	36	100	36	100	

Table 7: Frequency distribution of bleeding situation of participants at the second day of operation with respect to gender

Closure Type Bleeding	Single suture			Conventional suture		Chi-Square
	Gender	frequency	percentage	frequency	percentage	
bleeding	Male	1	0.5	1	3.5	P=.05
	Female	2	5.12	1	9.5	
No bleeding	Male	19	0.95	18	7.94	
	Female	14	5.87	16	1.94	
Total	Male	20	100	19	100	
	Female	16	100	17	100	

Chi-square showed no significant relationship between dry cavity and suture type (p= .099) (also between males and females, the relationship was not significant, p=>.05) as shown in Table 8.

Table 8: Frequency distribution of dry cavity of participants at the fourth day with respect to closure type

Closure Type Dry Cavity	Single Suture		Conventional Suture		Chi-Square
	frequency	percentage	frequency	percentage	
bleeding	5	8.13	1	7.2	P=.099
No bleeding	31	2.86	35	3.97	
Total	36	100	36	100	

Results of the study showed no significant relationship between age and swelling at the end of the second day (p=0.053). (The relationship, also, was not significant for swelling at the end of the sixth day, p= 0.218).

DISCUSSION

This study aimed to compare results of wound dressing of latent wisdom tooth operation with applying two single and conventional suture methods. The advantage of this study than previous ones is prevention of periodontal dystrophy in of second molar's distal. In fact, with applying suture at distal of the second molar the gum tissue is fixed in its place and the dystrophy of bone in diseases of periodontal distal of the second molar is prevented. Other advantage is lack of need to drain channel and reduction to repeated visits of patients to controlling and removing the channel.

In the current study mean of pain rate and standard deviation in the groups with the primary and secondary intention after 6 hours of the operation were 4.7±1.43 (p=0.025) and 3.86±1.64 respectively, and one day of operation were 4.53±1.52 and 3.58±1.61 (p=0.03) in the same order, which can be counted significant. It means, pain rate at 6 and 24 hours after operation in the single suture with the second intention was significantly less than conventional suture with the primary intention. The finding is in line with Pasqualini et al. [10], Sanchis and colleagues [11], Danda et al. [12] and Dubois et al. [13]. In this study, no significant difference was observed between pain rates of the groups at the second to sixth days of operation. However, Pasqualini et al. [10] (2005) reported less pain with the secondary intention compare to the primary one in the period. SanchisBielsa et al. [11] (2010) also found out less pain during the second to seventh days of operation with the secondary intention than the primary one. In another study, Osunde et al. [8] (2010), pain rate in the secondary intention group during the second to fourth days were drastically less than the group with the primary one. Dubois and colleagues [13] (1982) also, pain rates at the second and third days of the operation with the secondary intention method was significantly less than the primary one.

This is necessary to be insisted that in the study, the pain data was collected with using subjective methods. As it is possible to include incorrect information in the data, the observed difference can be ascribed to the method. So, it is recommended to collect data by more objective methods in the future.

In the study, the severe swelling at the end of the second day with applying VAS method of assessment for single and conventional suture was 6.5 and 3.33 respectively, and the moderate swelling at the end of the second day with the above mentioned situation was 2.22 and 2.47 (p=<0.05) which was significant statistically. It means, the severe and moderate swelling rate at the end of the second day was higher among the conventional method group than the other group. Moderate swelling among the single-suture and other method was zero and 5.6 respectively. Moreover, mild swelling rate in single suture and other method was 2.22 and 4.44 respectively, which is statistically the moderate and mild swelling at the end of the sixth day was more in conventional method than the other group (p= 0.033).

Finally, it can be concluded that swelling rate in conventional method with the primary intention at the end of the second and sixth days was mainly more than single suture with the secondary intention. The finding is in line with Pasqualini and colleagues [10] and Danda et al. [12]. Moreover, SanchisBiels et al. [11] (2008) stated that intention rate after operation in the secondary intention was less than the other type which is congruent with the currents study.

Sound and colleagues [8] (2010) said that the swelling rate after the first to third days of operation in single suture method was much less than conventional one which is in line with this study. However, the index was significant between the groups at the fifth to seventh days of the operation.

Here, the point should cite that the important indexes of making pain and swelling after dental surgery especially wisdom are: age, position of the tooth in jaw, position of the tooth and its relationship with neural system and vessels which all make difference in conceptual pain and swelling. There is also a direct relationship between swelling rate and trauma during operation [14]. In other studies also, it was cited that after operation effects, especially during 3 days of operation, are more severe [6].

Dubois et al. [13] also stated that swelling at the first to third days of operation in the secondary intention group was significantly less than other group which is in line with ours.

In this study, the hemorrhage rate in the secondary of operation in single suture was 3.8 and other group 5.5 which was not significant (p=05). In the sixth day hemorrhage was observed.

Qoreyshian and colleagues [15] (2008) compared effect of cyanoacrylate and single suture on hemorrhage. They found out the hemorrhage rate during the first and second days of after surgery significantly is less than the other group. They reported both methods have similar effect in the pain controlling, but for hemorrhage controlling, cyanoacrylate gives better result.

The rate of dry cavity among single suture and other method was 8.13 and 7.2 respectively and no significant relationship was found between dry cavity and type of suture (p=0.099).

Waite and colleagues [16] (2006), found out that making dry cavity in non-suture method is drastically less than the other. As, it has been already said several variable intervene in making dry cavity which among them can refer to microbiology, operation time, age of patient, residuals of bone and root, venial perfusion and smoking [17,18]. It should be cited that using materials such as hydrogen peroxide also can remove the existing clot and makes dry cavity.

The results of pain rate after operation for single and conventional suture among male and females showed no significant difference which is in line with Pasqulin [10], SanchisBielsa [11], Osund [8], Danda [12] and Dubois et al. [13]. While Yuasa and colleagues [17] said the pain rate relates to gender, but no significant differences was reported by them in terms of the pain rate and age of the patients.

Results of this study showed no significant relationship between age and gender of the patients and swelling occurrence at the second (p=0.053) and sixth (p=0.218) days. In Yuasa et al. study [17] swelling among males was significantly higher than females; they also reported significant higher swelling among people more than 40 compared to less than 40 ages. In the current study people with 40 or more was not included in the sample.

CONCLUSIONS

According to described findings of this study it can be concluded that pain and swelling rate in single suture method is less than the conventional one. Researchers hope that the finding help patients have more qualified life and be more satisfied due to suggestions:

- Data collection with more objective methods
- Including variable such as age and gender in studies
- Making more studies to assess pain rate during the second to sixth days of treatment
- Including variables such as dental suction, operation durance and time of bone cutting which relate to the surgery difficulty
- Making more studies to determine relationship between type of intention, bleeding and dry cavity
- Including trismus rate after operation

Authors' contributions

SR is the first and correspond author who has involved in analysis and interpretation of data.
SS is the second, author who has been involved in acquisition of data and drafting the manuscript.

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