



Suturing in single tooth Alveoloplasty wounds: A case-control study

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ABSTRACT

Alveoloplasty has been defined as the surgical removal of a portion of the alveolar process. It has stated that some form of alveoloplasty is indicated in nearly every instance of multiple extractions and frequently even in single extraction. The aim of this study was to evaluate the prevalence of suture techniques in single tooth alveoloplasty wounds. The purpose of this study was to analyse the sutures used for single tooth alveoloplasty. A study was carried out by collecting data by reviewing patients data and analysing the data of 86000 patients between June 2019 and March 2020 at the private dental institute. A total number of 26 case sheets were reviewed from intra oral photographs and additional supports. Photographs were assessed to determine the technique of suturing for patients undergoing single tooth alveoloplasty. The study was evaluated and approved by the ethical committee of the private dental institute Data was statistically analysed using SPSS 2.0, Chi Square Test was conducted. The results were recorded. The results showed majority of the dental students provided simple interrupted sutures post single tooth alveoloplasty wounds. Statistically, the difference was not significantly associated between tooth number and type of suture in single tooth alveoloplasty wounds as the p value was 0.404, (Chi Square test, $p > 0.05$). Within the limitation of present study, the majority of the dental students provided simple interrupted sutures post single tooth alveoloplasty wounds especially in relation to tooth number 37.



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INTRODUCTION

Alveoloplasty has been defined as the surgical removal of a portion of the alveolar process. It has stated that some form of alveoloplasty is indicated in nearly every instance of multiple extractions and frequently even in a single extraction (Jesudasan *et al.*, 2015). Alveoloplasty whether simple or extensive, is perhaps the most common surgical procedure used to prepare the jaws to receive a prosthesis while performing extractions, whether, of one or multiple teeth, the oral surgeon should at all times consider the bone and or soft tissues procedure needed to leave the mouth in the best possible con-

dition for future prosthetic replacement (Rahman and Santhoshkumar, 2017).

Moreover, alveoloplasty often facilitates the constructions of a better fitting and more esthetically pleasing denture (Christabel, 2016). Among the factors which the oral surgeon must consider in evaluating this procedure is the patients desire for improvement in his or her dental appearance and patients comfort in wearing the dental prosthesis, whether it is an immediate denture or one fabricated after a delay of 3 or 4 months. There are few things more painful than wearing a denture on a ridge with many sharp spicules or severe undercuts of the bone (Marimuthu, 2018).

A well-contoured smooth alveolar ridge is crucial for the appropriate fabrication of complete denture or partial denture (Packiri et al., 2017). While contouring the ridge, it is highly essential to remember that the greater the excision of bone, the higher will be resultant resorption. Therefore, the procedure of contouring should be limited to excision of the irregular shape ridges and unfavourable undercuts which are unsuitable for denture construction. Hence, the goal of alveoloplasty is to gain favourable tissue support for the designed prosthesis, while conserving as many soft tissues and hard tissues as possible (Kumar, 2017a).

This procedure is also termed for a pre-prosthetic surgical procedure that involves smoothening it rough alveolar ridge following extractions on the edentulous area or trimming of bulbous tuberosities, which creates deep undercuts (Patil, 2017). It is one of the most common surgical techniques used to prepare the alveolar ridges to produce a prosthesis. Historically, the procedure has been recognized for more than a century (Rao and Kumar, 2018).

The need for appropriate wound closure after alveoloplasty, especially in single tooth alveoloplasty had always been a topic of concern (Abhinav, 2019). Dating back thousands of years, there have been countless techniques used for closing alveoloplasty wounds regardless of the technique. The basic goals of surgical closure remain the same. These include reducing the dead space, minimizing the risk of infection and properly approximately the wound edges to achieve an acceptable aesthetic and functional outcome (Kumar and Sneha, 2016).

Various wound closure techniques have been described in previous literature using traditional suture methods such as simple interrupted, continuous suture, a figure of eight, horizontal, vertical, mattress suture and many more (Kumar, 2017b). Suture material and advanced modalities such as synthetic absorbable sutures, surgical staples and

tissues adhesives are getting popular commercially (Kumar and Rahman, 2017).

However, suturing has traditionally been the conventional method for approximating wound margins. A suture may also cause permanent suture tract, wound dehiscence, needle prick injuries, foreign body reactions, granulations, tissue ischemia, tissue tearing and infections. Various alternative materials have been used for approximating wounds since ancient times, ranging from human hair to silk sutures. Although the modern suture materials and techniques are very sophisticated, the intended wound closure is still not achievable (Abhinav et al., 2019).

In a case of single tooth alveoloplasty suturing is a must and an ideal suturing method is known to be the trans alveolar suturing method. Most of the surgeons have suggested this technique as it approximates the margin of the attached gingiva and keratinized alveolar tissues. In addition, it's excellent tensile strength, fast polymerization, biocompatibility, immediate haemostasis, ease of application and technique is easy to learn which makes this suture technique a good choice for wound closure post alveoloplasty. Given the superior properties that this suturing technique has in comparison to those of other suture techniques, it may also be better for wound healing, such as simple continuous suture and simple interrupted suture (Patturaja and Pradeep, 2016).

Most commonly, the simple interrupted suture will be the suture of choice due to its easiness. In some cases of single tooth alveoloplasty, no sutures given as the amount of incision are very minimal. This had to be evaluated properly as it can fail the wound healing process. An improper wound closure leads to swelling, bleeding and pain post operatives. The suture materials can be non-resolvable or resolvable and allowed to heal by primary intention. There are many advantages as well as disadvantages in all suturing materials and techniques (Jain et al., 2019). Therefore, this study was aimed to evaluate the suturing in single tooth alveoloplasty wounds among dental students in a private dental institute.

MATERIALS AND METHODS

The study was conducted as a hospital-based, case-control study in a private dental institute in Thiruverkadu, Chennai. A study was carried out by collecting data by reviewing patients data and analysing the data of 86000 patients between 21st June 2019 till 21st March 2020. A total number of 26 case sheets were reviewed from intra oral photographs and additional supports.

Photographs were assessed to determine the technique of suturing for patients undergoing single tooth alveoplasty. The study was evaluated and approved by the ethical committee of the private dental institute (ethical approval number: SDC/SIHEC/2020/DIASDATA/0619-0320). The inclusion and exclusion criteria were decided as follows:

1. Inclusion criteria

-patient underwent single tooth alveoplasty treatment

-individual aged above 17 years

2. Exclusion criteria

-patient below 17 years old

-incomplete available data

-improper photographs

The suturing type was evaluated from analysing postoperative intraoral photographs from DIAS. Those collected data were entered into Microsoft Excel with the parameters as following:

1. PID Number
2. Patient Name
3. Gender
4. Age
5. Type of Suture

The mentioned data were coded accordingly and transferred into statistical analysis. A comparison test, Chi-Square Test, was done between the type of suture technique placed by the dental students in the institute. The results were recorded. The differences considered positively significant as the p-value was less than 0.05.

RESULTS AND DISCUSSION

Figure 1 showed that predominantly male patients underwent single tooth alveoplasty, which was 15 patients (57.7%). Whereas, female patients were only 11 patients (42.3%). The graph explains that male patients were predominant compared to female patients.

The most number of tooth numbers which are prone to alveoplasty are 27, 37 and 43 with a frequency of 3 patients, respectively, as shown in Figure 2.

The available types of sutures for single tooth alveoplasty were simple continuous suture, simple interrupted and few cases no sutures were given.

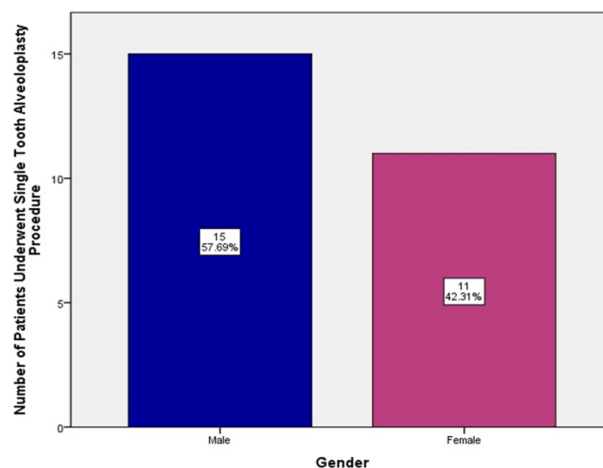


Figure 1: Graph showing the gender distribution of patients underwent single tooth alveoplasty procedure.

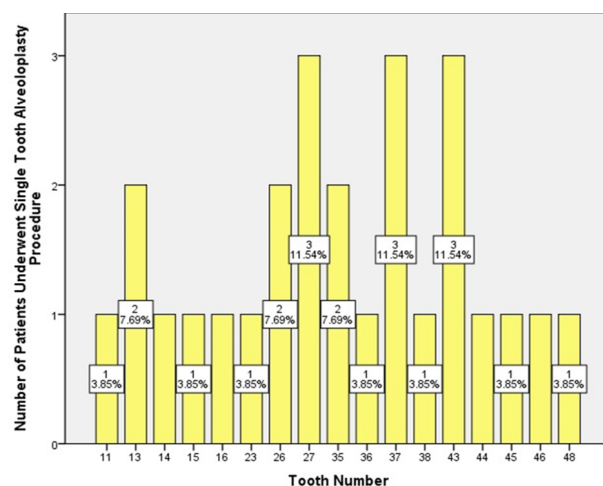


Figure 2: Graph shows the frequency of tooth underwent single tooth alveoplasty procedure.

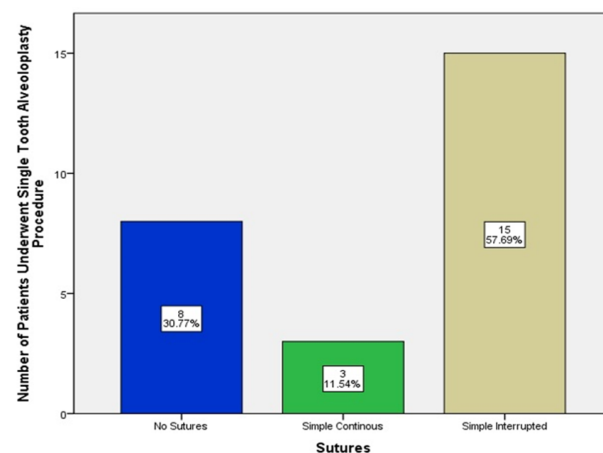


Figure 3: The graph portrays that simple interrupted suture was the most common type of suture used post operatively to single tooth alveoplasty procedure

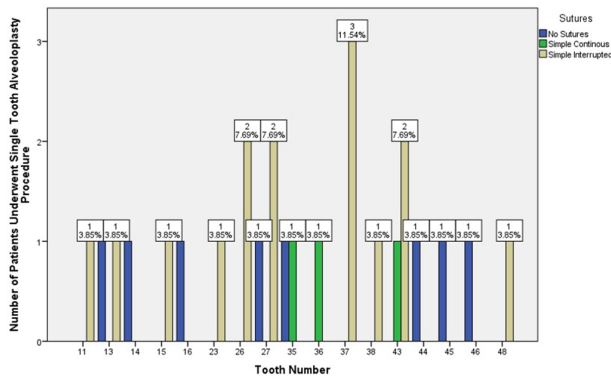


Figure 4: The composite graph shows the type of suturing and the tooth concerned involved in single tooth alveoplasty procedure.

According to Figure 3, the majority of the dental students have given simple interrupted suturing, which is 57.7% (15 patients)—remaining 30.8% (8 patient) and 30.8% (8 patients) with simple continuous suture and no suturing respectively.

It is shown that the correlation between suture type and gender. It is shown that the majority of male patients had undergone simple interrupted suture. In Figure 4, it is shown the association between tooth number and suture type. The highest number of simple interrupted suture was given in 37.

The most common type of suture used was simply interrupted compared to simple continuous suture. In this study, male patients were more compared to female patients. The mean age of the patients was 32 years old.

It is seen that the most common tooth number involved for single tooth alveoplasty was 27,37 and 43. Statistically, the difference was not significantly associated between tooth number and type of suture in single tooth alveoplasty wounds as the p-value was 0.404, (Chi-Square test, $p > 0.05$) which is not statistically significant.

As a contradicting study for the present study showed that Deeb et al. (Deeb, 2018), has reported that trans alveolar suturing technique was essential for alveoplasty wounds. Most of the previous literature has suggested transalveolar suture for this procedure. However, this study is consensus disagreed because of its smaller size, geographic limitation and no variation in the ethnic group and its unicentric study.

The possible reason for the results of the present study was mainly about operator skills and knowledge. Operators might select the suture type based on consumption. The sutures are given to enhance the healing process.

In future scope, clinical assessment on the baseline of sutures type for alveoplasty wounds has to be provided to dental students. Moreover, improvement for ways to treat patients has to be pumped up.

CONCLUSION

Single tooth alveoplasty is a common surgical procedure done in routine practice. Suturing is a common practice done in oral surgery. Simple interrupted sutures are the most common suturing method used in practice. Within the limitation of the present study, the majority of the dental students provided simple interrupted sutures post single tooth alveoplasty wounds, especially in relation to the lower left second molar.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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