

NEED FOR ALVEOLOPLASTY IN MULTIPLE EXTRACTION CASES AN INSTITUTIONAL STUDY

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ABSTRACT

INTRODUCTION:

Alveoloplasty is a surgical procedure that reshapes and smooths out the jaw where a tooth or teeth have been extracted or lost. The procedure is done in a patient either at the time of extraction or after the site is completely healed. The site after extraction would have residual crest irregularities, undercuts, bony spicules which may result in the ill fitting of the prosthetic appliance. Alveoloplasty is said to maintain proper width and height of the alveolar ridge so as to provide good retention and stability.

AIM: To find the need for alveoloplasty in multiple extraction cases.

MATERIALS AND METHOD:

Case sheets of the patients who had undergone multiple extractions in which the number of alveoloplasty procedures done were looked into. The required data was collected and a frequency pie chart was generated using SPSS software.

RESULTS AND DISCUSSION:

The study depicts a higher percentage of multiple extractions treated with alveoplasty than multiple extractions without alveoplasty. It shows that alveoplasty to be done in order to establish proper bony structure without sharp edges, undercuts or bulkness.

CONCLUSION:

It can be concluded that alveoplasty is needed in the case of multiple extractions in order to reduce the need for secondary surgical procedure and for proper fitting of prosthetic appliances.

KEYWORDS: Alveoplasty, residual crest, bony spicules, prosthetic appliance, novel study

INTRODUCTION:

Alveoplasty is a pre prosthetic surgical procedure which helps in smoothening or reshaping of the jaw bone for prosthetic and cosmetic purposes (1). This procedure was described by Williard in the year 1853 which was mainly done to seek healing faster in bone and tissues. The objective is to recontour or reshape the bone to establish a functional skeletal relationship. In the case of sharp edges noticed in the alveolar bone after the extraction, it is thus necessary to create a smoothened surface to allow the healing process in the bone socket for it to later take up a prosthetic appliance (2). It avoids the discomfort and pain for the patients while getting their appliance, while the mastication process and thus also ensures maintaining the proper height and width of the alveolar ridge which makes the prosthetics to have proper stability and retention especially in the cases of denture and implants (3). It reduces the bulk of the alveolar bone in most of the cases which indirectly leads to the pathological condition if unleft. The armamentarium used in this procedure includes bone rongeurs, bone file, rotary burs and handpiece (4). Bone rongeurs contain sharp blades which are used to cut and remove the large bulk of the bone. Bone file is a double ended instrument used for final polishing. It is designed in a manner which allows pulling stroke and thus pushing stroke should not be employed as it can cause the crushing of the bone. There are many types of alveoplasty. Simple alveoplasty is done at the time of extraction or after healing, when the bone remodelling starts to take place mainly helps to achieve the proper fit of the prosthesis (5). It involves the removal and reshaping of the bony projections, undercuts which are developed in that area after the extraction. As there are different methods of alveoplasty, the degree of the bone abnormality will decide the type of procedure to be done. When there are greater bony defects, it should be corrected by elevating the flap to gain access for those bony areas. Mucoperiosteal incision is also done to visualise the bony structure (6). Second technique is radical alveoplasty. This allows extensive excision of alveolar bone and may be performed on either the alveolar ridge with teeth or the edentulous ridge. Fabrication of the dentures should be delayed at least for 6 months or even more for those receiving radiotherapy. Intra-septal alveoplasty, which is also known as Dean's technique. This method mainly focuses on the removal of intra-septal bone and repositioning of labial cortical bone and is used in the area that has a regular contour and necessary height but with the undercut to the depth of the labial vestibule (7). There will not be any disturbance to the height since it involves the labial aspect of the ridge and muscle attachments are also involved in this procedure. Another procedure is maxillary tuberosity reduction which is considered to be the important anatomic landmark used in the procedure. Maxillary tuberosity is seen to show its prominence after the eruption of the third molar (8). It is the most important landmark for the proper stability of the denture in the maxilla. Sometimes, this becomes thick and irregular by vertical or lateral excess. This excess would cause a disturbance as the buccal flange of the denture thickness would be limited and thus does not allow the stability of the denture (9). Thus, contouring of this area is required and that includes other techniques like genial tubercle reduction. It could be observed that when the resorption of the mandible takes place, genial tubercle becomes more prominent. Hence, correction needs to be done. Edentulism is a major problem and thus affects the proper functioning of the oral cavity. People lose their confidence upon edentulism and as well as their speech is affected (10). To replace the edentulous space with a prosthetic appliance, dentists must look upon the condition of the ridge and the surrounding structures for the prosthesis to fit properly and ensure retention. Hence, alveoplasty is one such procedure which helps in betterment of using the appliance. A well contoured smooth alveolar ridge will be important for the fabrication of the denture, where in greater the excision, greater is the bone resorption. The right amount of removal of bone should be done. However, there are some contraindications like it should not be used in the cases of places where vital structures like nerves, blood vessels or vital tooth to be harmed during the bone removal process. In the case where there is already a lesser density of bone, this procedure should be done. In patients who had done head and neck radiation therapy or in patients with medically complex conditions like uncontrolled or excessive bleeding, poor healing property or immunocompromised. Patients who are under anticoagulants have a high risk of bleeding or with diabetes who have poor healing property, this procedure is not indicated. Therefore, the aim of the study is to

find the need for alveoplasty in multiple extractions. Our team has extensive knowledge and research experience that has translate into high quality publications(11),(12),(13),(14),(15–24) (25),(26–28).(29,30)

MATERIALS AND METHOD:

The study was conducted in a private university setting. A total of 580 case sheets were considered for the study. The main advantage of conducting study in a university setting is that it aids as a single centre for multiple people from localities at the same time. On the other hand, the disadvantage of the study is that it does not represent the general population. The inclusion criteria of the study is the case sheets with multiple extractions only and the exclusion criteria is single tooth extraction. The subjects were chosen at random, inclusive of all genders to reduce and minimise sampling bias. A third examiner reviewed the case records of the collected data to confirm the validity of the data with post operative photographs. The collected data was then tabulated for statistical analysis using SPSS. Frequency graph was generated using SPSS software.

RESULTS AND DISCUSSION:

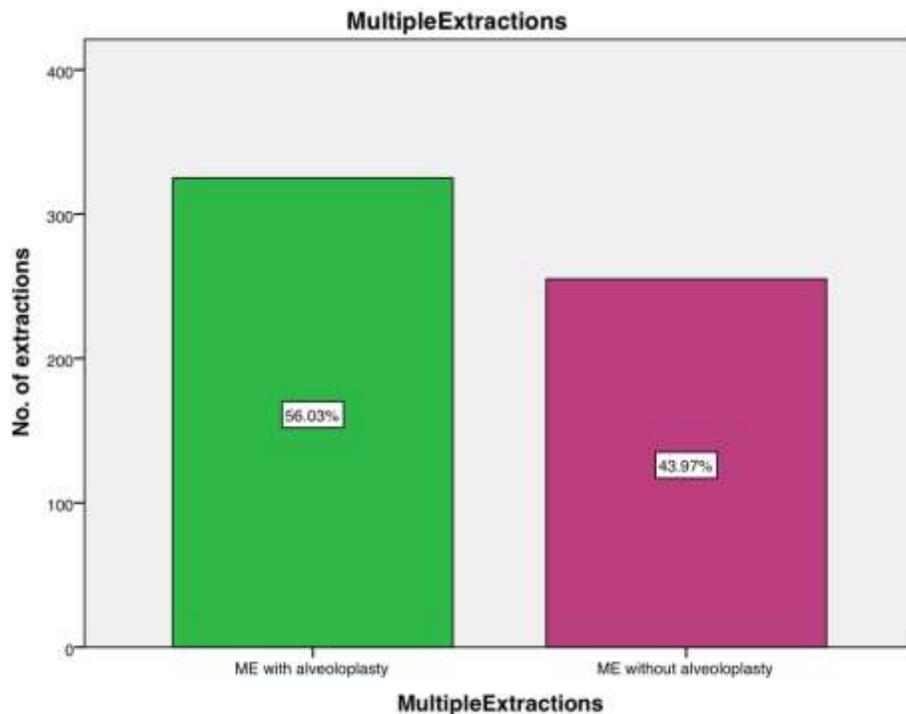


Figure 1: This figure represents the number of multiple extractions with and without alveoplasty done. Around 56.03% (green) of the multiple extractions have an alveoplasty done whereas 43.97% (purple) of the multiple extractions does not have an alveoplasty done.

DISCUSSION:

The most common procedure that is done after extraction is alveoplasty. The goal for this procedure is to establish a contour of the alveolar ridge for support of the prosthesis and at the same time conserving as much as soft and hard tissue (31). Many methods like simple alveoplasty, intraseptal alveoplasty, radical alveoplasty have been introduced. Dean's intraseptal alveoplasty was suitable for intermediate denture surgery. Piezoelectric technique was introduced in the 1970s which produces oscillations of ultrasonic frequency. These amplification of vibrations will produce a minimum pressure on the hard tissue that leads to cavitation which is a mechanical cutting procedure that occurs (32). Alveoplasty is very important because it causes perfect fit of dentures for edentulous patients. Our study has reviewed 580 case sheets, in which 325 case sheets are found to have multiple extractions with alveoplasty that constitutes 56.3% and 225 case sheets having multiple extractions without alveoplasty that

constitutes 43.97%. In the study of Elam emami, it showed that being edentulous leads to serious conditions like systemic diseases such as cardiovascular diseases in addition to already existing aesthetic problems. Thus, it is important to recognise and evaluate the changes in the denture loading areas. It's a dentist's duty to explain the role of alveoloplasty to the patients before they undergo the surgical procedure. Complications like secondary alveoloplasty can be decreased by proper compression of the socket and reducing the bony projections during extraction (33). In a study of Bhuskute, it stated that alveoloplasty was done quadrant wise by removing the irregular ridges and bony prominences in a 81 year old patient which gave an effective result of well fitting and comfortable fabricated prosthesis. In the study of Gangwani revealed that piezoelectric technique was found to be effective with minimal discomfort, and does not involve other soft tissue and hard tissues. It shows a faster healing process when compared to the conventional technique. The procedure is mainly done after the subjective and objective symptoms are done with full thickness flap elevation. Digital palpation was done to check for the uniformity of the ridge smoothening which was carried out using rongeurs and bone files to achieve the contour (34). Once the hemostasis is received, flap margins are approximated and sutured using a non absorbable suture. Patients are given post operative instructions to take analgesics and antibiotics for the next 5 and to maintain proper oral hygiene. Patient to be called for a review after 8 days to remove the suture and check for the healing process that has taken place. Following this, post operative healing satisfactory was done for 3 weeks to one month and then prosthesis to be fabricated. The procedure to be followed in a correct manner at the proper time in order to avoid second surgical procedure as it needs crestal incision and reflection of full thickness mucoperiosteal flap (35). It shows postoperative discomfort, swelling and almost one month of healing which leads to the delay in the processing of the prosthesis and increased number of appointments with extra financial problems. Compression of the socket and removing sharp bony edges at the time of extraction with proper supervision should be done. In any surgical procedure, common complications seen are pain, swelling, infection and bleeding. It is important for a surgeon to be careful on working near vital structures such as nerve bundle, blood vessels. In the cases with thin bone, it may not get revascularized and in the case of prosthetic rehabilitation, proper healing in the site of the procedure to be checked upon. There are fewer disadvantages of piezoelectric because it takes longer osteotomy time and increases heat transmission due to the increasing working pressure which can lead to damage. It is important that before starting the procedure as history of diabetes, bleeding disorders or any systemic complications to be taken care of, as it might lead to complications after the procedure. The limitations of our study is uncentred with a limited demographic area of smaller sample size. By investigating the prevalence of caries and its association with preventive measures would also might help broaden existing knowledge about the various preventive measures for such caries development and hence would also improve our clinical management to minimize false interpretations.

CONCLUSION:

Within the limitations of the study, it can be concluded that alveoloplasty is a definite procedure for multiple extraction cases as it would facilitate a proper contour, retention and stability when prosthesis are provided. At the same time, care should be taken in avoiding secondary alveoloplasty for the patients who take up the procedure. Proper diagnosis of the condition of the edentulous ridges and proper treatment plan is absolutely necessary for achieving well fit fabrication of prosthesis.

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CONFLICT OF INTEREST:

Authors declare no potential conflict of interest.

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