ABSTRACT
Preservation of alveolar bone volume following tooth extraction is the need of hour as it helps facilitate succeeding placement of dental implants and improved aesthetics as well as purposeful prosthetic results. In the present study, the objectives were to evaluate periodontal conditions of teeth adjacent to extraction site clinically and to evaluate morphological contour of bone after extraction by radiographs. Twenty patients reported for extraction of a mandibular premolar or molar and subsequent single-tooth implant treatment were included in this study. The periodontal conditions of the teeth adjacent to the extraction site were assessed by measuring probing pocket depths and clinical attachment levels at the tooth surfaces mesial and distal to the extraction site using a periodontal probe. Intraoral radiographs were obtained before and after extraction. Linear measurements of IOPA were performed using tracing methods. In addition, the bone levels at mesial and distally aspects of the extraction were compared with that of adjacent teeth. Results were evaluated using standard statistical methods.

KEYWORDS

INTRODUCTION
Sufficient alveolar bone volume and favorable contour of alveolar ridge are essential to get ideal functional and esthetic prosthetic reconstruction following implant therapy. Knowledge about contour changes due to bone resorption and modeling as well as healing process at extraction sites is essential to determine prognosis of the treatment. Periodontal disease, peri-apical pathology, or trauma to teeth and bone can result into reduction in alveolar bone before tooth extraction 1. Traumatic extraction procedures may lead to bone loss. The present study was done to evaluate soft tissue changes at extraction site clinically and to evaluate changes in morphological architecture of alveolar bone after extraction by radiographs.

MATERIALS AND METHODS
Twenty patients referred for extraction of a mandibular premolar or molar and subsequent single-tooth implant treatment were included in this study. Patients between 16 to 60 years of age referred for extraction of a mandibular premolar or molar and those willing to participate in the study were included.

The periodontal conditions of the teeth adjacent to the extraction site were assessed by measuring probing pocket depths and clinical attachment levels at the tooth surfaces mesial and distal to the extraction site using a periodontal probe. The measurements were performed medially & distally. Standardized intraoral radiographs were obtained preoperatively & 1 month post-extraction. Linear measurements on IOPA were performed using manual tracing method. To assess the level of bone healing at the extraction site, the changes of bone levels at mesial and distally aspects of the socket from baseline to 1 month after tooth extraction were assessed & compared on IOPA. In addition, the bone level at mesial and distally aspects of the extraction was compared with that of adjacent teeth.

RESULT
The mean of pre-extraction probing depth medially was 3.3 mm. The mean of post-extraction probing depth medially was 2.15 mm. The difference between mean of pre-extraction and post-extraction mesial probing depth was 1.15 mm. The mean of pre-extraction probing depth distally was 3.45. The mean of post-extraction probing depth distally was 2.15 mm. The difference between mean of pre-extraction and post-extraction distally probing depth was 1.3 mm. The total mean difference between pre-extraction and post-extraction probing depth was 1.22 mm. (Table No. 1)

The mean of pre-extraction gingival recession medially was 0.95mm. The mean of post-extraction gingival recession medially was 0.5mm. The difference between mean of pre-extraction and post-extraction mesial gingival recession was 0.45mm. The mean of pre-extraction gingival recession distally was 0.95mm. The mean of post-extraction gingival recession distally was 0.55mm. The difference between mean of pre-extraction and post-extraction distally gingival recession was 0.4mm. The total mean difference between pre-extraction and post-extraction gingival recession was 0.42mm. (Table No. 1)

The difference between mean of pre-extraction and post-extraction mesial gingival recession was 0.45mm. The mean of pre-extraction gingival recession distally was 0.95mm. The mean of post-extraction gingival recession distally was 0.55mm. The difference between mean of pre-extraction and post-extraction distally gingival recession was 0.4mm. The total mean difference between pre-extraction and post-extraction gingival recession was 0.42mm. (Table No. 1)

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The mean of pre-extraction attachment loss medially was 1.25mm. The mean of post-extraction attachment loss medially was 1.45mm. The difference between mean of pre-extraction and post-extraction mesial attachment loss was 1.67mm. (Table No. 1)

The mean of pre-extraction attachment loss distally was 1.45mm. The difference between mean of pre-extraction and post-extraction distally attachment loss was 1.45mm. The difference between mean of pre-extraction and post-extraction distally attachment loss was 1.65mm. The total mean difference between pre-extraction and post-extraction attachment loss was 1.67mm. (Table No. 1)

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Radiograph measurements of mean changes in height of the alveolar process (mm)

Changes in tooth surface adjacent to extraction sites (mm)

**DISCUSSION**

Recent developments in implant surgeries made permanent replacement of lost tooth structure possible. Sound placement of implant is based on sound & firm bone available at the missing tooth site. Recent developments in bone preservation materials require baseline data about bone healing parameters. Atraumatic extraction techniques & socket preservation methods can be effectively measured on basis of this baseline data achieved.

The resorption and remodeling of the alveolar ridge after tooth removal is a physiological phenomenon. This possibly inevitable process can negatively impact implant placement.

The successful implant depends on its optimal placement, which is influenced by its alveolar ridge dimension. The two-dimensional reduction of the alveolar ridge is commonly observed after tooth extraction.

Healing of extraction sockets leads to dimensional changes of the underlying bone as well as surrounding soft tissue architecture. Bone regeneration is promoted by spontaneous soft tissue thickening which is advantageous for implant therapies with high esthetics. Significant bone modeling activities occur during the first 2 weeks of healing.

During the post-extraction healing period, the weighted mean changes as based on the data derived from the individual selected studies show the clinical loss in width to be greater than the loss in height, assessed both clinically as well as radiographically.

The post-extraction mesiodistally bone distance between teeth adjacent to the edentulous ridge depends on the size of the edentulous space. Nevertheless, the distance does not affect the distance in bone loss height. The distance of bone resorption height reaches a balance at the midpoint, which we consider indicative of stable healing. This resorption process must be considered when placing dental implants in fresh extraction sockets, especially in aesthetic sites, because the implant surfaces could be exposed after 3 months.

In this study, we have selected twenty patients as suggested by statisticians as the sample size is sufficient in order to carry out statistical analysis. We have selected the patients referred for extraction of mandibular premolar or molar teeth in order to obtain standardized sample to avoid bias due to variable levels of attachment in the anterior region and it also helped in split arch technique. In our clinical setup, maximum numbers of patients were indicated for mandibular first molar and premolars because of dental carries hence mandibular arch was chosen for better obtaining the results.

Universal probe was used for measuring probing depth as it a standardized technique and easy to carry out on patients with chair side procedure. Pre-extraction probing depth, gingival recession and attachment loss were measured and the same were measured after 1 month of extraction as the maximum reduction in soft tissue architecture occurs within one month of tooth extraction.

Measurements of pre-extraction and post-extraction bone levels were obtained using Intraoral Periapical Radiographs rather than using CBCT & OPG as it is cost effective for rural patients. Pre-extraction and post-extraction radiographies were traced using standardized 1mm×1mm graph sheet self-made grids instead of using lead grids in order to further reduce the cost of project as both methods give same results.

**REFERENCES**

