**INTRODUCTION**

After the extraction of a tooth, the socket begins to heal by secondary intention. Prior to bone remodelling specific microvascular changes, as well as a bone formation patterns develop.

A recent study by Ferrus J et al has suggested that the width of the buccal wall may affect the pattern of bony resorption. Spray et al stated that 2 mm of buccal wall reduces buccal bone loss around implants placed in healed sites. A minimum of 2 mm of buccal bony wall is necessary for a soft and hard tissue aesthetic outcome for implant placement and restoration.

Here is a technique where in a collagen plug is placed in the extraction socket prior to closure of the socket with horizontal mattress suturing. The collagen sponge particularly has been found to not only protect the bone substitute, but to present hemostatic properties as well, contributing to minimal discomfort of the patient during the postsurgical period. In addition to stabilizing the blood clot, collagen plugs act as a chemotactic agents for fibroblasts.

**MATERIALS AND METHODS**

The study sample was derived from the population of subjects who presented to the department of Oral and Maxillofacial surgery, YMT Dental College and Hospital, sector 4, Kharghar. The measurements were recorded at the time of extraction and 1, 2, and 3 months post-surgery. The extraction on both sites was carried out at the same time whenever feasible, otherwise within a week of each other.

**Surgical procedure:**

**Tooth extraction:**

Atraumatic extractions of the tooth/teeth were performed taking care not to fracture the buccal cortical plate.

Collagen Plug placement: Collagen plug was placed down lightly in the extraction socket and overfill was avoided.

**Radiographic measures**

Crestal bone level: The distance from the occlusal stent to the crest of the alveolar ridge using William’s graduated probe.
The samples were then subjected to statistical analysis using Mann-Whitney U test, Kolmogorov-Smirnov test, Shapiro-Wilk test, Independent t-test. Level of significance was kept as 0.05. The ages of the patients ranged from 15-50 years. The mean age of the patients in the study was 30.7 ± 8.04 years. Out of the 20 patients 12 were females and 8 were male patients.

**DISCUSSION**

The preservation of extraction socket plays a central role in alveolar ridge maintenance after dental extractions. Resorption rate of the alveolar ridges is faster during the first 6 months following the extraction and proceeds at an average of 0.5–1.0% per year for the entire life. The height of a healed socket never reaches the coronal level of bone attached to the extracted tooth, and horizontal resorption seems to be greater in the molar region compared to the premolar area.

In our study, we used collagen plug in the extraction socket as a method of preserving the alveolar ridge. Collagen is an insoluble fibrous protein that is an essential component of the connective tissue stroma.

The extraction on both sites was carried out at the same time whenever feasible, otherwise within a week of each other. We did not include patients with teeth having active periapical infection or patients needing surgical extraction or extraction for which flap raising a flap, but an animal study reported that the detachment of the periosteum from the buccal site of the ridge leads to an increase of the resorption rate, resulting in an increase of the ridge resorption of approximately 0.7 mm.

In this study, the clinical buccolingual dimension of the socket showed a mean dimension loss of 2.68 mm in the control site and 2.25 mm in the test site. The loss in the vertical measurement clinically as measured from the occlusal stent showed a mean loss of 2.65 mm in the control site and 1.95 mm in the test site. The mean loss of crestal bone level was 2.1 mm in test site and 2.75 mm in control site as seen radiographically. In the present study, digital orthopantomograms were taken and the radiographic equipment was fully standardized for all the radiographs taken. On the other hand, it should be emphasized that some degree of magnification is inevitable. This magnification could be attributed to possible tooth migration or occlusal changes that occurred during the three months study period.

The difference between measurements made immediate postoperatively and after three months was statistically analysed for both test and control sites. P-value was less than 0.05 indicating the significance of difference between test and control. We also confirmed these results using Mann-Whitney U test.

The results of this study suggest that a ridge preservation procedure carried out at the time of extraction is a reliable and predictable method to minimize the resorption of the alveolar bone that takes place post extraction and offers the patients a relatively easy, cost effective method that spares them the discomfort of further ridge augmentation procedures that might be necessary for an esthetic rehabilitation or implant placement.
To conclude the results of this study indicate that ridge preservation approach with a collagen plug significantly limited the resorption of hard tissue ridge after tooth extraction compared to extraction alone.

REFERENCES