

ORIGINAL RESEARCH

Assessment of implant placement site in anterior maxilla- A clinical study

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ABSTRACT:

Background: Careful consideration is necessary when an implant is positioned in the maxillary central incisors. The present study was conducted to assess dental implant placement site at anterior maxilla. **Materials & Methods:** The present study was conducted on 62 patients of both genders who received dental implants in anterior maxilla. In all patients, intraoral periapical radiographs were obtained. Number of canals and length and width of bone in anterior maxilla was evaluated. **Results:** Out of 62 patients, males were 35 and females were 27. Single canal was present in 48 patients, double in 10, triple in 1 and Y shaped in 3 patients. The difference was significant ($P < 0.05$). The mean length of alveolar bone was 10.6 mm in males and 10.21 mm in females. The mean width was 4.2 mm in males and 3.8 mm in females. The difference was non-significant ($P > 0.05$). **Conclusion:** In most cases, single shaped canal was present and mean length and width was sufficient to acquire dental implant.

Key words: Implants, Nasopalatine canal, periapical radiographs

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INTRODUCTION

Implant rehabilitation of the edentulous anterior maxilla remains one of the most complex restorative challenges because of several variables that affect the esthetic and functional aspects of prostheses. The intricate preexisting anatomy dictates meticulous and accurate osteotomy planning into a premaxilla reconstruction.¹ In the post-extraction phase, the high resorption rate of the maxilla could be jeopardized with the surgical osteotomy preparation and prosthesis retention. With progressive bone loss, the alveolar crest may approach to the anatomic structures. The nasopalatine nerve and vessels emerge from the crest of the ridge with palatal migration of the anterior maxillary alveolus. Careful consideration is necessary when an implant is positioned in the maxillary central incisors because of the proximity of the nasopalatine canal (incisive canal) and its contents.²

The nasopalatine canal is described as being located in the midline of the palate, posterior to the central maxillary

incisors. The funnel shaped oral opening of the canal in the midline of the anterior palate is known as the incisive foramen and is usually located immediately below the incisal papilla.³

Difficulties and anatomic limitations regarding the location of the nasopalatine canal in relation to maxillary central incisor implants have been reported. In 4% of the computed tomographic scans, the canal size was an impediment for placing root-form implants in this area. Augmentation of the area before or at the same time as implant placement is indicated in cases, in which the nasopalatine foramen is in proximity to the location of the future osteotomy.⁴ The present study was conducted to assess dental implant placement site at anterior maxilla.

MATERIALS & METHODS

The present study was conducted in the department of Prosthodontics. It included 62 patients of both genders who received dental implants in anterior maxilla. The study

protocol was approved from institutional ethical committee. All patients were well versed with the study and written consent was obtained prior to the study. Information such as name, age, gender etc. was obtained. In all patients, intraoral periapical radiographs were obtained.

Number of canals and length and width of bone in anterior maxilla was evaluated. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant using chi- square test.

RESULTS

Table I Distribution of patient

Gender	Male	Female
Number	35	27

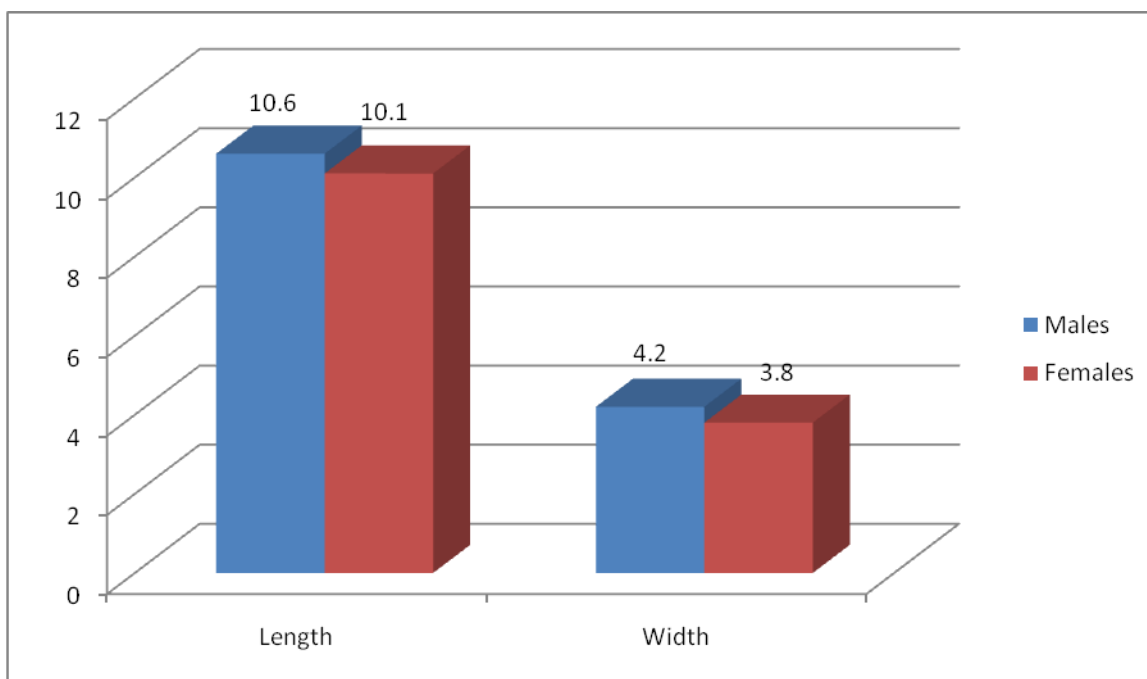
Table I shows that out of 62 patients, males were 35 and females were 27.

Table II Shape of nasopalatine canal

Shape	Number	P value
Single	48	0.01
Double	10	
Triple	1	
Y- shaped	3	

Table II shows that single canal was present in 48 patients, double in 10, triple in 1 and Y shaped in 3 patients. The difference was significant (P< 0.05).

Graph I Length and width of alveolar bone



Graph I shows that mean length of alveolar bone was 10.6 mm in males and 10.21 mm in females. The mean width was 4.2 mm in males and 3.8 mm in females. The difference was non- significant (P> 0.05).

DISCUSSION

The nasopalatine canal is usually described as being located in the midline of the palate, posterior to the central maxillary incisors. The funnel-shaped oral opening of the canal in the midline of the anterior palate is known as the incisive foramen, and is usually located immediately below the incisive papilla.⁵ The canal divides into two canaliculi on its way to the nasal cavity, and terminates at the nasal floor with an opening at either side of the septum. The canal contains the nasopalatine (incisive) nerve and the terminal branch of the descending nasopalatine artery, as well as fibrous connective tissue, fat, and even small salivary glands. Nevertheless, anatomical variations of the nasopalatine canal are not very well documented in the literature and are often presented as case reports.⁶ The present study was conducted to assess dental implant placement site at anterior maxilla.

In this study, out of 62 patients, males were 35 and females were 27. We found that single canal was present in 48 patients, double in 10, triple in 1 and Y shaped in 3 patients. Rosenquist et al⁷ found that the study population comprised 44 men and 56 women with a mean age of 43.09 years. Gender of the included patients had a statistically significant influence on the dimensions of the buccal bone plate, the mean values being generally higher for male subjects. In the multivariate linear regression model, the status of the central maxillary incisors (both present, one missing, and both missing) and the time elapsed since loss of the central incisors (01 year vs. 41 year) were independently associated with buccal bone wall measurements, adjusted for age and sex. The present study demonstrates decreasing values for the coronal width of the buccal bone wall in patients with missing central incisors and a time span since tooth loss of over 1 year. The age of the patients had a significant influence only on the length of the nasopalatine canal, with the mean values generally decreasing with an increasing age.

We observed that mean length of alveolar bone was 10.6 mm in males and 10.21 mm in females. The mean width was 4.2 mm in males and 3.8 mm in females. Scher et al⁸ found an increase in the canal diameter and foramina (nasopalatine foramina and incisive foramen) with the degree of ridge resorption accompanied by edentulism. The average age of the included patients was 43.09 years.

Artzi et al⁹ conducted a prospective study evaluating sensory disorders after separation of the nasopalatine nerve during removal of impacted and palatally displaced maxillary canines. It revealed no subjective or objective neurological impairments more than 4 weeks after the intervention. Dental implant was placed in anterior maxilla in 80 patients. The width and length of the bone found to be adequate.

CONCLUSION

Authors found that in most cases, single shaped canal was present and mean length and width was sufficient to acquire dental implant.

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