The Use of Computed Tomographic Scans to Guide Implant Placement Lateral to the Inferior Alveolar Canal

INTRODUCTION

Bone atrophy of the posterior mandible following loss of dentition can cause significant resorption of alveolar bone, and this is likely to present a challenge for the clinician in the planning of the use of removable prostheses, viewing them as a handicapped not only to our London but affecting the quality of life. As a consequence of the function through placement and restoration of implants is often welcome. In fact the two implants overdenture is now accepted as the standard of care for fully edentulous mandibles.

Over the years, various techniques have been proposed to overcome the osteotomy and transposition of bone. Surgical interventions including guided bone regeneration, distraction osteogenesis and nerve transposition have been utilized (11-16). While these methods have demonstrated improvements in implant survival and marginal bone loss, they are usually used in patients with available bone or in situations where bone augmentation is not possible.

An alternative approach is to place the implant lateral to the IAN. This approach could help minimize nerve injury when placing implants in the severely atrophic posterior mandible. This method allows for restoration of bone density and improves the stability of the implant. The purpose of the present study was to determine the amount of bone available for implant placement in the posterior mandible lateral to the inferior alveolar canal.

MATERIALS & METHODS

Clinical data in this study was obtained from Implant Database (8), this data set was included in the mentioned information criteria for surgically acceptable implant placement. The mean angular deviation of the clinical prediction of the IAN was 1.44 ± 0.55 degrees. In case where the angle of insertion of the implant is not acceptable for short implants, Panvis et al. (9) described a method of treatment using filled endosseous implants. The implants were placed passing posterior to the superior buccal cortex and the lingual cortex to achieve buccal anchorage and avoid nerve injury. Because of the location of the alveolar ridge, 31 (42.29%) of 74 implants were in a position where the IAN was located lateral to it. When planning to place implants into the bone lateral to IAN, it is recommended to consider the distance of the final crown for the better relationship of occlusion between upper and lower teeth.

RESULTS

The main purpose of the present study was to evaluate in what percentage of cases, implants could be placed lateral to the IAN. According to the results there is a 15% of 1st molar sites and 20% of 2nd molar sites have enough lateral bone available to accommodate a 4x10mm implant. The results of this current study demonstrated that 15% of 1st molar sites and 20% of 2nd molar sites have enough bone available to accommodate at least a 4x10mm implant lateral to Inferior Alveolar Nerve (IAN).”

DISCUSSION

The width of cancellous bone within the criteria for surgically acceptable implant placement. The mean angular devision of the clinical prediction from ideal value was 1.44 ± 0.55 degrees. In case where the angle of insertion of the implant is not acceptable for short implants, Panvis et al. (9) described a method of treatment using filled endosseous implants. The implants were placed passing posterior to the superior buccal cortex and the lingual cortex to achieve buccal anchorage and avoid nerve injury. Because of the location of the alveolar ridge, 31 (42.29%) of 74 implants were in a position where the IAN was located lateral to it. When planning to place implants into the bone lateral to IAN, it is recommended to consider the distance of the final crown for the better relationship of occlusion between upper and lower teeth.

CONCLUSIONS

P lacing implants lateral to IAN offers a functional treatment alternative to bone augmentation, guided bone regeneration, nerve transposition, or short implants for the narrow, height deficient atrophic posterior mandible. The results of this current study demonstrated that 15% of 1st molar sites and 20% of 2nd molar sites have enough bone available to accommodate at least a 4x10mm implant lateral to Inferior Alveolar Nerve (IAN).”

REFERENCES


4. Jemt T, Lekholm U. Oral implant treatment in posterior partially edentulous jaws: The nerve injury is a major concern during placement. A safety margin of 2mm of osseous area in panoramic radiographic... The risk of violation of the neurovascular bundle can be minimized using a surgical guide during placement. The nerve injury is a major concern during placement. A safety margin of 2mm of osseous area in panoramic radiographic... The risk of violation of the neurovascular bundle can be minimized using a surgical guide during placement.

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Table 1. Measurement (Mean & Range)

Table 2. The number of sites (percentage)