Editorial 2

Genial Tubercle Guideline for Implant Planning in Edentulous Mandible

The mental nerve can be subjected to iatrogenic injury during implant osteotomy.[1-3] All the implant osteotomy sites, especially in implant-retained mandibular overdenture, are located in this region. In edentulous mandible, there are no identifiable anatomical landmarks where the implant osteotomy sites can be predictably planned. Hence, the diagnostic stent is compulsory to prepare (with placement of the radiopaque markers like gutta-percha points, metal sleeves or balls) in the region of planned implant osteotomy sites followed by taking an orthopantomograph (OPG) or a cone-beam computed tomography (CBCT). The location of these radiopaque markers are initially be placed by taking the rough guidelines of midline of the mandible or a clinician's judgment. This is not always the predictable method and frequently we need to change the planned position of the markers and to take additional radiograph.

Anatomical location of the genial tubercle in relation to the metal foramina can be evaluated to predict the safe zone for implant osteotomy in CBCT images. The genial tubercle is an important palpable anatomical landmark in edentulous mandible. If we palpate the genial tubercle and mark the adjacent point on the crest of the ridge and taking this point as a 'reference', the implant locations can be easily planned. Additionally, if we have clear information about the location of the mental foramina on both sides from the genial tubercle in particular population, the number (1, 2, 3, 4 or 5 implants) and the exact location of the implant osteotomy sites can easily be predicted before fixing these points into the diagnostic stent for radiographic evaluation. Using CBCT, one should aims to determine a safe zone for implant osteotomy in interforaminal region of the mandible in relation to the genial tubercle that avoids injuring this nerve.

Lu et al[1] identified the anterior loop of mental nerve in 85.2% of cases with the mean anterior loop length of the 366 subjects (732 hemimandibles) being 1.46 ± 1.25 mm with no statistically significant difference between right and left sides or different gender groups. The 'safe zone' for bone harvesting from the interforaminal region of the mandible has been studied in Malaysian population by Al-Ani et al.[2] They have calculated the distances of mandibular incisive canal to the inferior border and the labial and lingual cortices of the mandible were measured at 3, 5, 7 and 9 mm mesial to the mental foramen and found to be 9.86 mm (2.51) from the lower border of the mandible, curving downwards toward the inferior mandibular border at the symphysis menti. Hasan[3] reviewed characteristics of the mental foramen in different population. There is no such information available in any population in the literature indicating the relationship of the genial tubercle with interforaminal zone in anterior mandible. The relationship of the genial tubercle with the mental foramina and anterior loop of mental nerve on CBCT images will be a vital guideline for implant planning. Additional research is needed to find out relationship of genial tubercle with interforaminal safe zone in anterior mandible for implant planning.

This issue is enriched with dental material research articles pertaining to the bond strength of the resilient liners with acrylic resin and amount of fluoride release in different cements. Other research articles highlighting the accuracy of different implant impression techniques and reliability of facial measurements in determining the vertical dimension of occlusion. The issue contains two interesting case reports of intraoral-extraoral combination prosthesis for midfacial defect and apexification technique using mineral trioxide aggregate with platelet rich fibrin.

Happy Reading.

REFERENCES

1. Lu CI, Won J, Al-Ardah A, Santana R, Rice D, Lozada J. Assessment of the anterior loop of the mental nerve using cone beam CT scan. J Oral Implantol 2014 Feb 19 [Epub ahead of print].
2. Al-Ani O, Nambiar P, Ha KO, Ngeow WC. Safe zone for bone harvesting from the interforaminal region of the mandible. Clin Oral Implants Res 2013;24(Suppl A100):115-121.
3. Hasan T. Characteristics of the mental foramen in different populations. Int J Bio Anthropol 2010;4(2).

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