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A NOVEL METHOD TO EVALUATE THE THICKNESS OF GINGIVA –A CHAIR SIDE TECHNIQUE

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ABSTRACT The assessment of gingival thickness with accuracy is vital for many mucogingival procedures in periodontics and esthetic surgeries, till date there are various methods available to assess the thickness of the gingiva but some of these fail to assess the thickness accurately or some others are too expensive and cannot be used routinely as a chair side procedure for accurate analysis of gingival thickness, hence we have designed a protocol with the most simple and inexpensive easily available instruments which are familiar to the clinician to determine the thickness of the gingiva with reasonable accuracy and simple to use and periodically track the changes in gingival thickness, just by using the principle of trans gingival probing rubber stopper and acrylic block containing pre designed slots measuring from 0.5 mm to 6mm, the application of this protocol yielded a reasonable accuracy when compared to the other methods.

KEYWORDS : gingival thickness, transgingival probing, gingival biotype.

INTRODUCTION

Periodontics is a branch of dentistry which is fast expanding and has become a specialty where in the clinician is challenged with his precision of making right judgments at any point of his treatment to meet the highest possible success and achieve highest post treatment esthetics, any error in the judgment of treatment modality or in the assessment of tissues or choosing an inappropriate surgical technique may cause an irreversible damage to the esthetics or sometimes an irreversible damage to the periodontal health of the treated area, for this reason an accurate assessment and correct clinical judgment is very important for a successful treatment, this is even more true when the clinician is attempting any mucogingival procedures for either correction of mucogingival problems or otherwise for enhancing the esthetics . The implant treatment scenarios are also demanding a high quality surgical expertise from the treating clinician to have a good post operative stability of the implant and also a postoperative esthetics of the implanted area, where in mere achievement of the implant stability by osseous regeneration/integration is not enough but a coordinated and matching effort to achieve soft tissue esthetics around the implant is also very important.

The soft tissue esthetics is mainly dependent on preoperative assessment of the existing soft tissue biotype in the area which is going to be treated or operated, the soft tissues of this area mainly may comprise of a part of free gingiva, attached gingiva and mucosa. The gingiva should be assessed under different parameters to estimate its postoperative behavior and to prevent its recession in the post operative recovery or healing period.

The parameters which dictate its behavior in the post operative period are the preoperative health of the gingiva that is the presence or absence of any inflammation in the gingiva, the height of papilla in the interdental region, the degree of keratinization of the gingiva, preoperative height of the gingiva in relation to the cement enamel junctions of the teeth, the shape of the underlying alveolar bone, the shape of the teeth, the buccolingul and mesiodistal positioning of the teeth within the alveolar housing and the biotype of the gingiva which means whether the gingiva is of thick, medium or thin biotype as per the classification given by Claffey and Shanley according to which a gingival thickness of ⩾2 mm was considered as thick tissue biotype and a gingival thickness of <1.5 mm was referred as thin tissue biotype.[1]

Becker et.al proposed three different periodontal biotypes: flat, scalloped and pronounced scalloped gingiva. Measuring from the height of the bone interproximally to the height at the direct midfacial, their findings are as follows: flat = 2.1 mm, scalloped = 2.8 mm, pronounced scalloped = 4.1 mm.[2]

The gingival thickness can be assessed by the direct method or trans gingival probing or bone sounding,[3] Probe transparency (TRAN) method,[4] Ultrasonic devices[5] and Cone Beam Computed Tomography (CBCT) scans.[6]

TRAN method uses the principle of visibility of probe inserted into the sulcus, if the probe is visible through the gingiva after it is inserted then the gingival biotype is considered to be thin, the drawback of this method is that this method is useful only to see the thickness of the free gingiva or unattached gingiva only.

The recent inclusion of ultrasonic devices to measure the gingival thickness is a non invasive method, but the cost of the equipment and demand for high expertise to measure the gingival thickness with a fair degree of reproducibility limits its routine chair side utilization.

Recently CBCT methodis also used to visualize and measure thickness of both hard and soft tissues. Fu et al. reported that CBCT measurements of both bone and labial soft tissue thickness are accurate and concluded that CBCT measurements might be a more objective method to determine the thickness of both soft and hard tissues than direct measurements.[6] but the amount of radiation, and this not being a chair side diagnostic test make it less acceptable more over repeated measurements at the post operative follow up is not advisable with this method.

In the present study we have designed a procedure which uses simple instruments and a self designed acrylic block with premeasured slots of 0.5 mm depth and lengths measuring from 0.5mm to 6mm with incremental increase of 0.5 mm starting from 0.5mm and we have used single probe marked at each mm and which has a rubber stopper which is used for endodontic reamers and files, by this way we have used the same bone sounding methods or trans gingival probing with the help of this probe which is having rubber stopper placed over its working end, so when we push the probe through the gingiva, the rubber stopper is pushed back as the probe starts penetrating through the gingival thickness and at a point when the probe touches the bone the rubber stopper will be retained at the point and when the probe is taken back, the

position of the rubber stopper will show the thickness of the gingiva which can be further accurately measure by matching with the slots prepared over the acrylic block, this procedure not only helps us to accurately know the thickness of the gingiva but also it is easy inexpensive chair side procedure.

We have tested this procedure and tried to estimate the gingival thickness on 34 patients visiting the postgraduate department of Periodontics and compared its results with the assessment done with conventional bone sounding method through two experienced periodontists and the results showed that the conventional method showed a gross over estimation of around 30 to 40% in the assessment of gingival thickness when compared to the current protocol.

Conclusion

After this study we would like to state that the assessment of gingival thickness through arbitrary bonesounding alone is insufficient and needs an easy and economically cheaper and viable procedure and the system of using a probe with a rubber stopper has offered a promising accuracy which is clinically very important and further refinement of the system may offer a valuable information which will be helpful for presurgical and postsurgical assessment of gingival thickness.

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