



EVALUATION OF SAGITTAL ROOT POSITION (SRP) AND LABIAL BONE THICKNESS (LBT) IN ANTERIOR MAXILLA FOR IMMEDIATE IMPLANT PLACEMENT: A CBCT BASED STUDY

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BACKGROUND:

Immediate implant placement in the anterior maxilla is a challenging task for the clinicians. To achieve optimum results, factors such as root position, labial bone thickness, amount of keratinized tissue, gingival biotype are of paramount importance

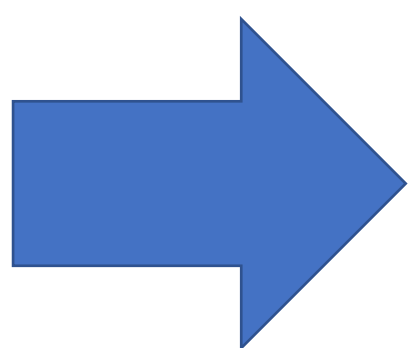
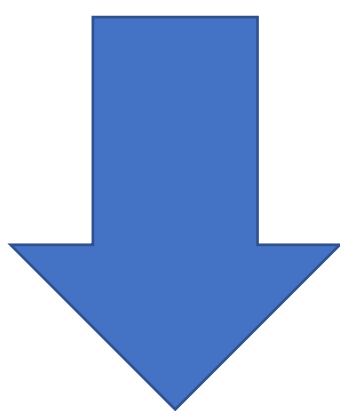
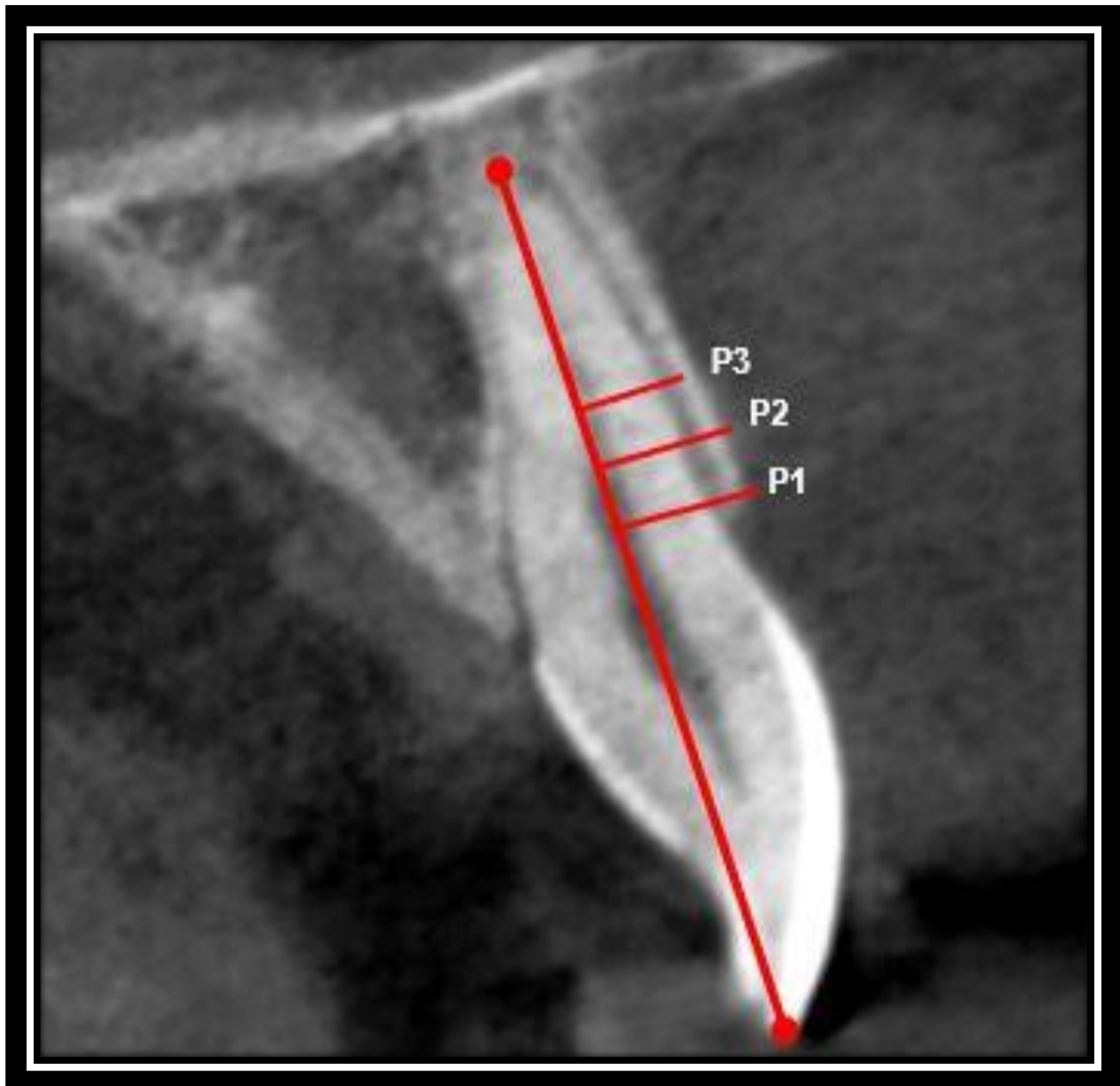
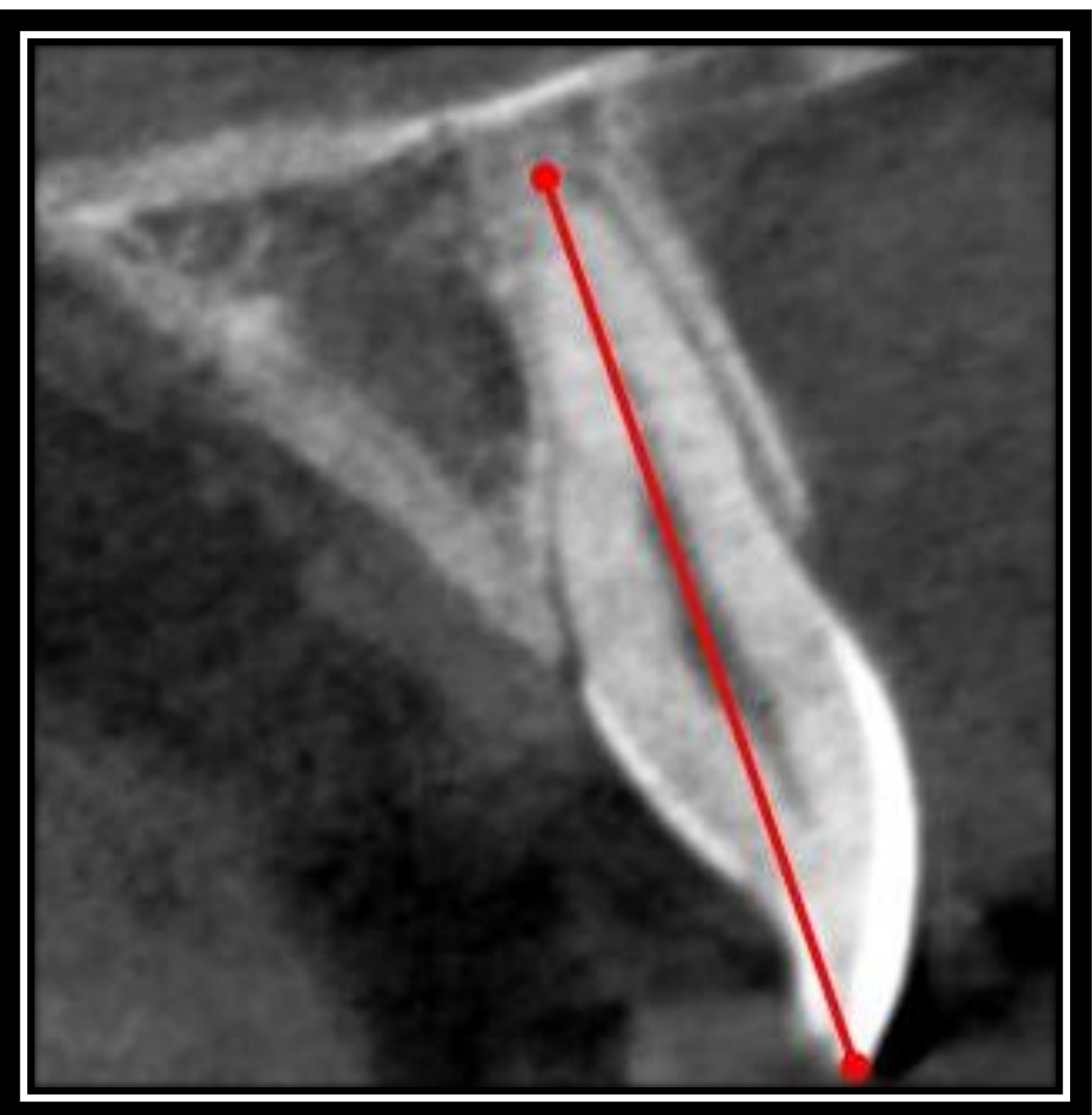
AIM

To evaluate the maxillary anterior teeth root position in sagittal plane and labial bone thickness using cone beam computed tomography (CBCT) in a subset of Pakistani population.

METHODOLOGY

Study Design	Cross sectional study
Setting	Dental Clinics, AKUH
Study Duration	July-Sept 2019
Sampling Technique	Non-probability consecutive
Sample Size	240 CBCT images of teeth
Ethical Approval	2019-1999-5234

DATA COLLECTION



RESULTS

SRP	Central Incisors n (%)	Lateral Incisors n (%)	Canines n (%)	Overall n (%)	<i>p</i> - value
Class I	67 (83.7%)	60 (75%)	69 (86.2 %)	196 (81.7%)	0.51
Class II	8 (10%)	10 (12.5%)	9 (11.3%)	27 (11.3%)	
Class III	0 (0%)	1 (1.3 %)	0 (0%)	1 (0.4%)	
Class IV	5 (6.3%)	9 (11.2%)	2 (2.5%)	16 (6.6%)	
Total	80 (100%)	80 (100%)	80 (100%)	240 (100%)	

Table 1: Frequency distribution of SRP among study participants, SRP: Sagittal root position, *p*- value of ≤ 0.05 taken as significant

Position	Central Incisors Mean± SD (mm)		Lateral Incisors Mean± SD (mm)		Canines Mean ± SD (mm)	
	Right	Left	Right	Left	Right	Left
P1	0.56±0.19	0.67±0.21	0.53±0.21	0.55±0.34	0.58±0.28	0.54±0.35
P2	0.81±0.34	0.89±0.32	0.90±0.72	0.88±0.80	0.89±0.54	0.76±0.57
P3	0.75±0.42	0.85±0.37	0.77±0.99	0.77±1.02	0.80±0.5	0.74±0.64

Table 2: Descriptive statistics of LBT values among study participants. P1 = Alveolar crest level, P2= 2mm from alveolar crest level, P3= 4mm alveolar crest level

DISCUSSION

Study	Population	Sample size	Image modality	Conclusions
Kan et al. 2011	Not reported	600 maxillary teeth	CBCT	81% of anterior teeth were in Class I SRP
Lau et al 2011	Not reported	170 teeth	CBCT	78.8% of teeth were positioned buccally.
Chung et al 2015	Taiwanese	250 teeth	CBCT	87.5% of teeth were in Class I SRP
Xu et al 2016	Chinese	934 maxillary central incisors	CBCT	Most predominant SRP position is buccal (95.4%)
Shrestha et al 2019	Chinese	146 patients	CBCT	Most of roots of anterior teeth(94.9%)were in Class I
Habib S 2019	Pakistani	240 Maxillary anterior teeth	CBCT	81.6% of teeth were in Class I SRP

Strengths

- LBT assessment at three levels
- All the measurements were obtained in a standardized manner

Limitations

- Single center study
- Sample selection bias

CONCLUSIONS

- 81.6% of maxillary anterior teeth were in SRP class I.
- Maxillary canines (69%) are the most prevalent teeth to have an ideal root position for immediate implant placement followed by central incisors(67%) and lateral incisors (60%)
- The mean thickness of labial bone thickness in anterior maxilla is compromised i.e. in the range of 0.5-0.9mm.
- In our population, the most favorable position was found for immediate implant placement.