Key Indicator - 3.2 Innovation Ecosystem (10)

3.2.1 (QlM) Institution has created an ecosystem for innovations including incubation centre and other initiatives for creation and transfer of knowledge. (5)

Response:

Incubation centers are mainly for technical education (engineering etc.) at University and Deemed University levels not applicable to dentistry/dental education at institute level. Hence, there is no specific incubation centre present in the institute. However, the institute nurture and provide conductive environment for research and innovations, this is made possible by creating favorable ecosystem that propels research and innovations through providing most of the departments with instruments and equipments, materials which are regularly used for innovation practices. The institute also have **Esthetic Clinic, Geriatric Clinic, Oral Implantology Section Simulation Lab etc**., which are helpful for the undergraduates, post graduates students and researcher to learn, develop skills regarding practice management, behavior management, exposure to the recent techniques and its use respectively. The post graduates students of the institute also participated in **Students Exchange Program** with K.M. Shah Dental College, Vadodara, Gujarat & Terna Dental College, Mumbai, so that they learn and imbibe different clinical and practical approaches practiced worldwide and modify them accordingly. In terms of the innovations and patents made, the institute has **total 10 innovations** out of which 3 innovations made through the Department of Pedodontics & Preventive Dentistry and 2 by the Department of Orthodontics & Dentofacial Orthopedics which were published.

1. RURS Elbow Guard
Published as: Shetty RM, Dixit U, Hegde R, Shivprakash PK. RURS elbow guard: An innovative treatment of thumb-sucking habit in a child with Hurler's syndrome. J Indian Soc Pedod Prev Dent 2010; 28;212-8.

2. RMS Tactile Scale
(Patented Ref No: 201741038533/CHE/2017)
Published as: Shetty RM, Khandelwal M, Rath S. RMS Pictorial Scale (RMS-PS): an innovative scale for the assessment of child's dental anxiety. J Indian Soc Pedod Prev Dent. 2015 Jan-Mar;33(1):48-52. doi: 10.4103/0970-4388.149006. PMID: 25572374.

3. RMS Pictorial Scale
Published as: Shetty RM, Khandelwal M, Rath S. RMS Pictorial Scale (RMS-PS). An innovative scale for the assessment of child dental anxiety. J Indian Soc Pedod Prev Dent [serial online] 2015[cited 2020 Jun 30]; 33;48-52.

4. MKG Angle: New Cephalometric Estimation
Published as: Chachada A, Ostwal P, Jain M, Khandelwal P, James J, Nahta M. MKG Angle: A True Marker for Maxillomandibular Discrepancy. *Journal of Indian Orthodontic Society*. 2020;54(3):220-225.

5. **Proxycrimps: A Transformative Solution**
Published as: James J, Ostwal P, Notra J. Proxy Crimps: A Transformative Solution. *Journal of Indian Orthodontic Society*. January 2021. 1-2.

Innovations made but not published yet:

6. Audiovisual Animation Behaviour Guidance Technique (Department of Pedodontics & Preventive Dentistry)

7. Tailor Method Booklet Behaviour Guidance Technique ((Department of Pedodontics & Preventive Dentistry)

8. A Combination Spring For Ectopic Correction Of Teeth (Department of Orthodontics & Dentofacial Orthopedics)

9. Incisor Spring For Malposed Cannine (Department of Orthodontics & Dentofacial Orthopedics)

10. Innovative Technique For Occlusal Photography (Department of Orthodontics & Dentofacial Orthopedics)

CHHATTISGARH DENTAL COLLEGE AND RESEARCH INSTITUTE

INNOVATION AND ANALYTICAL SKILLS

RURS Elbow Guard – By Dr. RM Shetty (2010)

CASE REPORT

RURS' elbow guard: An innovative treatment of the thumb-sucking habit in a child with Hurler's syndrome

Shetty RM, Dixit U[1], Hegde R[2], Shivprakash PK[3]
Department of Pedodontics and Preventive Dentistry, Reader, Chhattisgarh Dental College and Research Institute, Rajnandgaon - 491 441, Chattisgarh, [1]Professor, Dr. D. Y. Patil Dental College and Hospital, [2]Professor, Bharati Vidyapeet Dental College and Hospital, Nerul, Navi Mumbai, Maharastra, [3]Professor, P. M. N. M. Dental College and Hospital, Bagalkot, Karnataka, India.

Correspondence:
Dr. Raghavendra M. Shetty, Reader, Department of Pedodontics and Preventive Dentistry, Chhattisgarh Dental College and Research Institute, Rajnandgaon - 491 441, Chhattisgarh, India. E-mail: raghavendra77@yahoo.com

Access this article online

Quick Response Code:

Website: www.jisppd.com

DOI: 10.4103/0970-4388.73796

Abstract

Thumb sucking is the process of sucking on the thumb for oral pleasure. Thumb and finger sucking habits, or nonnutritive sucking, are considered to be the most prevalent of oral habits. Some parents are concerned by thumb sucking and may even try to restrain the infant or child. In most cases, this is not necessary. Most children stop thumb sucking on their own. When older children continue to suck their thumbs, it could mean they are bored, anxious, or have emotional problems such as depression. This article presents a case report of a child with Hurler's syndrome along with thumb sucking/biting habit. Hurler's syndrome, also known as mucopolysaccharidosis I, is a rare condition inherited as an autosomal-recessive trait. It represents the classical prototype of mucopolysaccharide disorder.

A unique appliance to prevent thumb sucking/biting was developed and termed as "RURS' elbow guard," which was successfully used to break thumb sucking of the child with Hurler syndrome. The present report also describes the steps in fabrication of this new habit-breaking appliance, which is also designed to protect the finger from the effects of the sucking habit.

Key words

Finger sucking, Hurler's syndrome, RURS' elbow guard, thumb sucking

Introduction

Thumb sucking is a form of nonnutritive sucking occurring as early as the 29th week of gestation. It is seen commonly in infants and peaks at 18–21 months of age.[1] Thumb and finger sucking habits, or nonnutritive sucking, are considered to be the most prevalent of oral habits, with a reported incidence ranging from 13% to almost 100% at some time during infancy.[2,3] The finger-sucking habit, normal in the first 2–3 years of life, may cause permanent damage if continued beyond this time.[4] The continuation of oral habits is usually due to physical and emotional stimuli such as boredom, stress, hunger, hyperactivity, sadness, pleasure and various kinds of disabilities. An acute increase in the child's level of stress or anxiety can also account for continuation of the sucking habit.[5]

The two theories about finger sucking involve emotional and learned behavior. The emotional theory is Freudian based and relates finger sucking to the oral phase of child development. If sucking continues beyond the oral phase of child development, it becomes a fixation.

Figure 5: Impression making of the elbow using vinyl polysiloxane putty impression material

Figure 6: Cast obtained from the impression

Figure 7: Two layers of modelling wax adapted over the cast as a spacer

Figure 8: Acrylic elbow guard after removal of spacer

Shetty, *et al.*: RURS' elbow guard

Figure 9: Acrylic elbow guard after placement of a layer of sponge

Figure 10: RURS' elbow guard with velcro strap

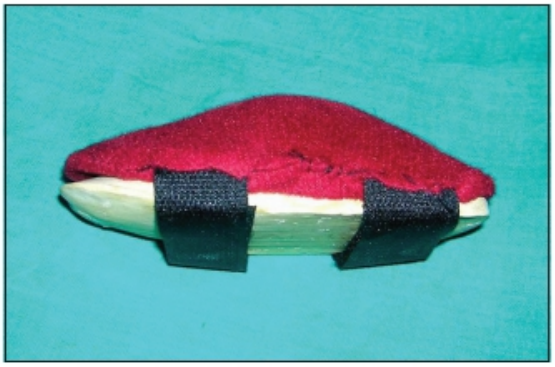


Figure 11: RURS' elbow guard tried on the cast

Figure 12: Patient wearing RURS' elbow guard

RMS Pictorial Scale (RMS-PS) – By Dr. RM Shetty, Dr. Madhuri Khandelwal, Dr. Sujata Rath (2015)

Original Article

RMS Pictorial Scale (RMS-PS): An innovative scale for the assessment of child's dental anxiety

Shetty RM, Khandelwal M, Rath S

Department of Pedodontics and Preventive Dentistry, Chhattisgarh Dental College and Research Institute, Rajnandgaon, Chhattisgarh, India

ABSTRACT

Background: Dental anxiety assessment for young children is as important as performing their treatment. Appropriate knowledge of patient's anxiety boosts confidence and will help us to review potential management options specific to every child. **Aim:** This study aimed to validate (RMS) Pictorial Scale (RMS-PS) and to compare it with Venham Picture Test (VPT) and Facial image scale (FIS) in measuring dental anxiety for young children during their first dental visit. **Materials and Methods:** A total of 102 healthy children aged between 4 and 14 years during their first dental visit were randomly selected for the study. Childs anxiety level was measured using three different scales namely (i) RMS-PS (ii) VPT, and (iii) FIS. **Statistical Analysis:** Student *t* test was used to compare the scores obtained from all the three scales. Pearson correlation test was used to obtain correlation among the scales used in the study. **Results:** A strong correlation (0·76) was found between the VPT and RMS-PS, and a moderate correlation (0.5) was found between RMS-PS and FIS, indicating good validity for the RMS-PS. **Conclusions:** The findings of this study suggest that the RMS-PS can be a newer and easiest means for the assessment of dental anxiety for young children in a clinical context.

KEYWORDS: Anxiety assessment scales, child dental anxiety, first dental visit, RMS pictorial scale, Venham picture test

Address for correspondence:
Dr. Raghavendra M. Shetty,
Department of Pedodontics and Preventive Dentistry,
Chhattisgarh Dental College and Research Institute,
Rajnandgaon - 491 441, Chhattisgarh, India.
E-mail: raghavendra77@yahoo.com

Access this article online	
Quick response code	Website: www.jisppd.com
	DOI: 10.4103/0970-4388.149006

Introduction

Dental anxiety among children has continued to generate a lot of curiosity in pediatric dentistry. It has been a potential problem in patient management. Furthermore, the effects of the dental anxiety can persist in adulthood, which may lead to dental neglect. Dental anxiety is defined as "an abnormal fear or dread of visiting the dentist for preventive care or therapy and unwarranted anxiety over dental procedures" and may have psychological, cognitive, and behavioral consequences.[1]

Early recognition of dental anxiety among children is essential for appropriate patient management and successful treatment. Various methods have been used in literature for the assessment of dental anxiety. It can be evaluated by variety of techniques such as: Physiological measures by measuring pulse rate, blood pressure, muscle tension,[2] projective techniques such as children's dental fear picture test,[3] psychological test such as Corah's Dental Anxiety scale (CDAS)[4] and Modified Child Dental Anxiety Scale (MCDAS).[5] The children's fear survey schedule-dental subscale (CFSS-DS) is another method to measure dental fear among young children.[6] Venham Picture Test (VPT) has been used in a number of studies[7-9] to assess anxiety before dental treatment. Facial image scale (FIS) has been used Buchanan and Niven (2002)[7] to assess the anxiety among children.

Since all the scales described above had certain limitations, the aim of the present study was to validate a new anxiety assessment scale which was developed in the department and named as Raghavendra, Madhuri, Sujata (RMS) Pictorial Scale (RMS-PS) for the assessment of child's dental anxiety

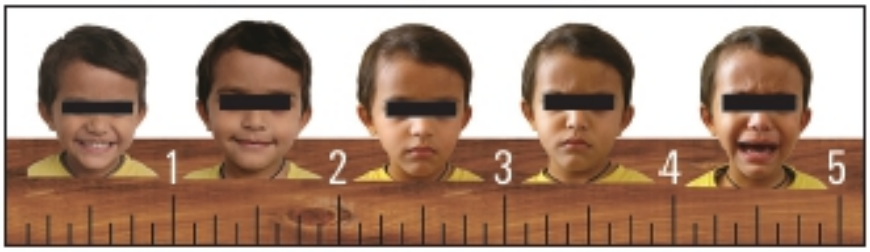


Figure 1: RMS Pictorial Scale (RMS-PS) for Boys

Figure 2: RMS Pictorial Scale (RMS-PS) for Girls

Figure 3: Venham Picture Test (VPT)

RMS Tactile Scale – By Dr. Trisha Gadekar (2018)

(RMS Tactile Scale Patented – Ref: No. 201741038533/CHE/2017)

Original Article

RMS tactile scale: An innovative tactile anxiety scale for visually impaired children

Raghavendra M Shetty, Trisha R Gadekar[1]

Department of Preventive and Pediatric Dentistry, College of Dentistry, Gulf Medical University, Ajman, United Arab Emirates,
[1]Department of Pedodontics and Preventive Dentistry, Chhattisgarh Dental College and Research Institute, Rajnandgaon, Chhattisgarh, India

ABSTRACT

Introduction: Behavior guidance is considered to be the backbone of pediatric dentistry which differentiates us from the other fields in dental sciences. Anxiety and fear being the primary concern in pediatric patients, has to be taken into consideration for the visually impaired children too. In the present study, an innovative anxiety scale RMS tactile scale (RMS-TS) was designed for the visually impaired children. Introducing newer concept other than Braille in the dental clinic for such patients can help in coping up and bringing out positive behavior in the special children. **Aims and Objective:** The study aimed to validate and assess the efficacy of RMS-TS for visually impaired child and compare it with modified dental anxiety scale (MDAS) and Braille scale. **Materials and Methods:** A total of hundred children of age 12–15 years from the special school were selected for the study. MDAS, RMS-TS, and Braille scale were used to determine the pretreatment anxiety scores in the visually impaired children. **Results:** The validity of the RMS-TS in the pretreatment anxiety in the assessment of child's dental anxiety is supported by its strong correlation with both the scales. **Conclusions:** The RMS-TS can be reliable anxiety assessment scale for measuring child's dental anxiety in visually impaired children. It can be used alone or in combination with other methods to improve assessment of dental anxiety.

KEYWORDS: Anxiety scale, braille, modified dental anxiety scale, RMS-tactile scale, tactile scale, visually impaired child

Address for correspondence:
Dr. Raghavendra M Shetty,
College of Dentistry, Gulf Medical University, P. O. Box: 4184, Ajman, United Arab Emirates.
E-mail: raghavendra77@yahoo.com

Access this article online

Quick response code

Website: www.jisppd.com

DOI: 10.4103/JISPPD.JISPPD_351_16

PMID: 28139477

Introduction

Dental anxiety can be defined as the patient's response specific to the dental situation.[1] The era of modern science has witnessed tremendous advancements in the field of pain control and patient management. Despite the advances in the child management, anxiety related to dental treatment and the fear of pain associated with the treatment remain widespread among the population.[1] The uncooperative behavior is attributed to the child's behavioral manifestation of anxiety which by in turn will delay the treatment or affect the quality of care.[2] Studies have found that uncooperative and anxious children tend to avoid dental care and they show worse oral health condition as compared to the less anxious and more cooperative peers.[3] Globally, total visual impairment affects more than 15 million people in the world.[4] With 7.8 million blind people in India, the country accounts for 20.5% of the 39 million blind population across the globe.[5] The prevalence of childhood blindness is stated to be 0.17%, and the major causes of the blindness seen apart from nutritive deficiencies included congenital eye anomalies (16.7%) and retinal degeneration (16.7%) in southern parts of Andhra Pradesh.[6] Menacker and Batshaw reported that the overall incidence of blindness in children

How to cite this article: Shetty RM, Gadekar TR. RMS tactile scale: An innovative tactile anxiety scale for visually impaired children. J Indian Soc Pedod Prev Dent 2018;36:76-81.

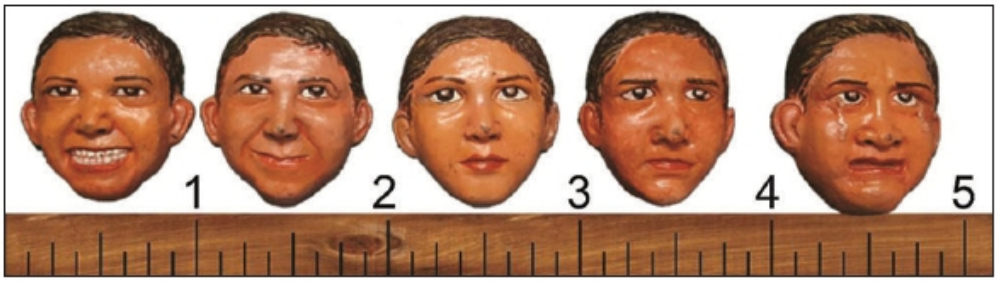


Figure 1: RMS tactile scale

Figure 2: Child with RMS-tactile scale

Controller General of Patents, Designs & Trade Marks

सत्यमेव जयते

G.A.R.6
[See Rule 22(1)]
RECEIPT

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS | GEOGRAPHICAL INDICATIONS

Docket No 67274

Date/Time 2017/10/30 18:55:43

To
DR. DEEPA .B

29/9 Ekambaram street, Old washermen pet,
Chennai 21.

UserId: intellpat

CBR Detail:

Sr. No.	Ref. No./Application No.	App. Number	Amount Paid	C.B.R. No.	Form Name	Remarks
1	201741038533	TEMP/E-1/39353/2017-CHE	1600	33571	FORM 1	RMS TACTILE SCALE

TransactionID	Payment Mode	Challan Identification Number	Amount Paid	Head of A/C No
N-0000314750	Online Bank Transfer	02806343010201750961	1600.00	1475001020000001

Total Amount : ₹ 1600

Amount in Words: Rupees One Thousand Six Hundred Only

Received from DR. DEEPA .B the sum of ₹ 1600 on account of Payment of fee for above mentioned Application/Forms.

* This is a computer generated receipt, hecnce no signature required.

Print

FORM 5

THE PATENT ACT, 1970

&

THE PATENT RULES, 2003

DECLARATION AS TO INVENTORSHIP

[See section 10(6) and rule 13 (6)]

1.**NAME OF APPLICANT(S):** Dr. RAGHAVENDRA MANJUNATH SHETTY

Hereby declare that the true and first inventor(s) of the invention disclosed in the complete specification filed in pursuance of my/our application numbered----------under title " **RMS TACTILE SCALE**" dated----------is/are

2. **INVENTOR(S)**

Name	Nationality	Address	Signature with date
Dr. RAGHAVENDRA MANJUNATH SHETTY	INDIAN	#1179, SIRI NELE , 80 FEET ROAD , OPP. VIJAYNAGAR SPORTS CLUB, VIJAYNAGAR 1ST STAGE , MYSORE KARNATAKA INDIA 570017	RMShetty 28/09/17
TRISHA RAJESH GADEKAR	INDIAN	D/O RAJESH GADEKAR, NEAR COTTON MARKET, GHAMODIYA PLOT, SALEBAD, AMRAVATI, PARATWADA, MAHARASHTRA INDIA 444805	TRGadekar 28.09.2017
SUNAINA SHETTY Y	INDIAN	#1179, SIRI NELE , 80 FEET ROAD , OPP. VIJAYNAGAR SPORTS CLUB, VIJAYNAGAR 1ST STAGE , MYSORE KARNATAKA INDIA, 570017	Sunaina 28/09/2017

3. **DECLERATION TO BE GIVEN WHEN THE APPLICATION IN INDIA IS FILED BY** THE APPLICANT(S) IN THE CONVENTION COUNTRY:- N/A

We the applicant(s) in the convention country hereby declare that our right to apply for a patent in India is by way of assignment from the true and first inventor(s)

Dated this 28 day of Sep 2017
Signature
Name of the signatory

4. **STATEMENT** (to be signed by the additional inventors not mention in the application form)

I/We assent to the invention referred to in the above declaration, being included in the complete specification filed in pursuance of the stated application.

Dated this 25th day of Sept 2017

Signature

Name **Dr. RAGHAVENDRA MANJUNATH SHETTY**

Signature

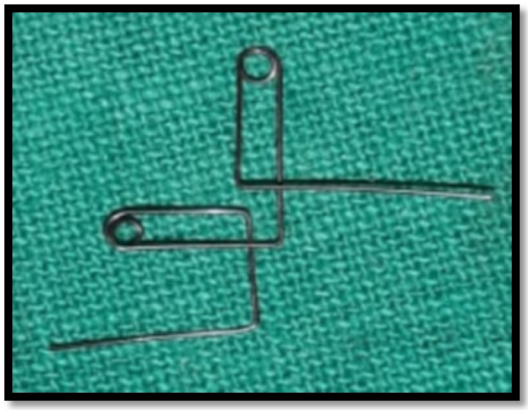
Name **TRISHA RAJESH GADEKAR**

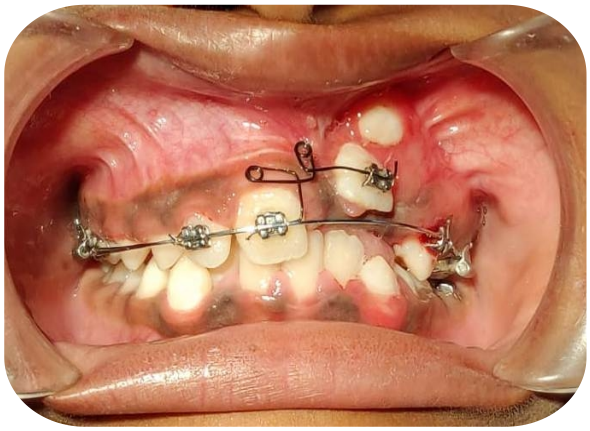
Signature

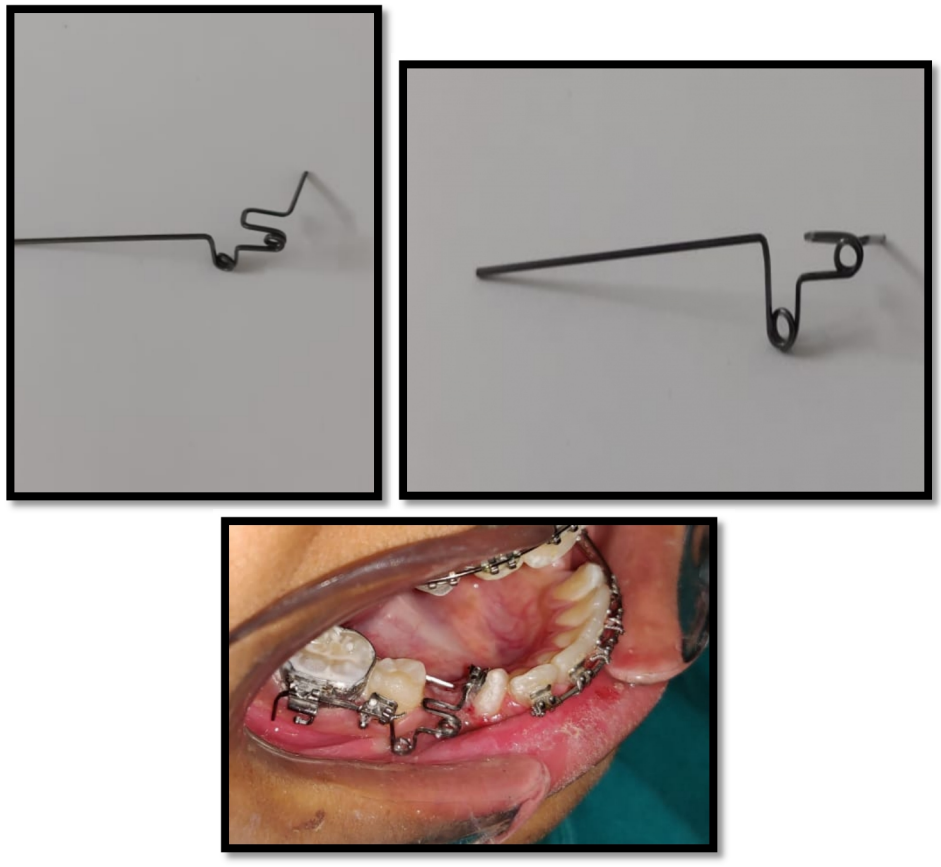
Name **SUNAINA SHETTY Y**

To
The controller of patents
The patent Office at Chennai

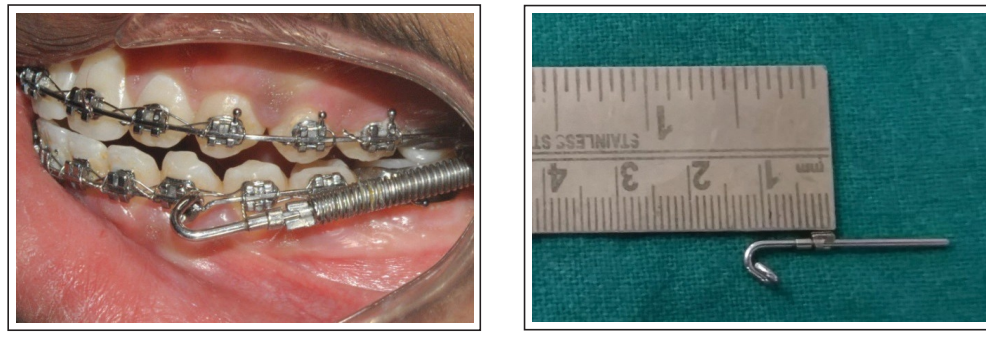
A combination spring for correction of ectopically positioned teeth







Incisor Spring for correction of severely malposed Canine



proxy crimp

Proxy Crimps: A Transformative Solution

Journal of Indian Orthodontic Society
1–2

DOI: 10.1177/0301574220963419
journals.sagepub.com/home/jio

Jamoy James[1], Payal Ostwal[2], and Juhi Notra[3]

Abstract

The Forsus appliance is one of the most commonly used rigid fixed functional appliances in the correction of class II malocclusion. It is often seen that parts go missing with regular usage of the appliance. Replacement of the same is expensive and also requires a large inventory. An innovative low-cost and easy option for lost or broken split crimps is described in this article.

Keywords

Fixed functional appliance, Forsus appliance

Introduction

The correction of class II malocclusion is a challenge in the day-to-day practice of an orthodontist. One of the recommended therapeutic approaches to class II malocclusion in a non-cooperative and growing patient is fixed functional jaw orthopedics through the primary mechanism of mandibular advancement.[1] The Forsus appliance is invariably used as a non-compliance class II corrector. The Forsus™ Fatigue Resistant Device (FRD) (3M Unitek, Monrovia, CA) is a fixed and a hybrid functional appliance, introduced by William Vogt. It is a three-piece, semi-rigid telescoping system incorporating a superelastic nickel–titanium coil spring that can be assembled chairside in a relatively short period of time. It is compatible with conventional fixed appliances and can be incorporated into them. The FRD attaches to the maxillary first molar and onto the mandibular archwire, distal to either the canine or the first premolar bracket. As the coil is compressed, opposing forces are transmitted to the sites of attachment.[2,3] Forsus FRD is very effective in the correction of class II malocclusion through bringing about a combination of skeletal and dentoalveolar modifications.[4]

The Forsus appliance kit consists of a push rod (right and left available in six different sizes), a spring module (EZ2 Module or L-pin Spring Module), measurement gauge, headgear tube on band, and split crimps. Split crimps are used to reactivate the spring module as treatment progresses. The recommendation is to add one split crimp to the push rod, and if another crimp is needed, move to a push rod of the next size (according to the manufacturer's guidelines). Though easy to place and activate, there is a possibility of losing the components, requiring immediate intervention from the orthodontist. Split crimps, being very small in size, are often misplaced. Replacement of these crimps requires a new kit, in turn increasing the cost. Moreover, additional activation might be required, albeit occasionally. This necessitates the need for supplementary crimps. Unfortunately, the appliance kit comes with only a pair.

This article makes an attempt to construct an alternative split crimp with simple, available orthodontic materials. A step-by-step procedure is mentioned below to fabricate a surrogate crimp (Figure 1).

Procedure

1. Take a weldable Begg's bracket and slightly open it with the help of a Weingart plier.
2. Pull the wings of the bracket so that the lockpin slot is opened; adapt this bracket over push rod (Figure 2).

[1] Dr Shakira's Superspeciality Dental Clinic, Kasargod, Kerala, India
[2] Department of Orthodontics and Dentofacial Orthopedics, Chhattisgarh Dental College and Research Institute, Rajnandgoan, Chhattisgarh, India
[3] Department of Pedodontics and Preventive Dentistry, New Horizon Dental College & Research Institute, Sakri, Bilaspur, Chhattisgarh, India

Corresponding author:
Jamoy James, Dr Shakira's Superspeciality Dental Clinic, Kasargod, Kerala 671315, India.
E-mail: jamoyjames@yahoo.com

3. Tighten the bracket over the push rod by compressing it with the plier.
4. It can be additionally spot-welded so that the new crimps formed by the bracket do not open up with force.
5. Depending on the activation required, the length of the Begg's bracket can be adjusted by trimming it.

Figure 1. Forsus In Situ With Proxy Crimp.

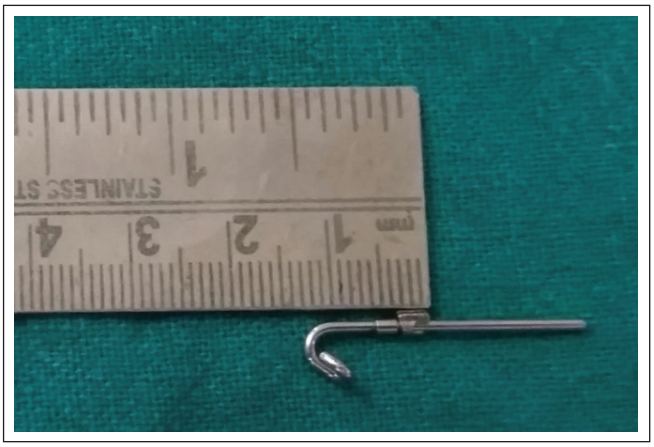


Figure 2. Begg's Bracket Adapted on Push Rod.

Advantages

1. Easy to fabricate;
2. No laboratory work required;
3. Economic and easily available in an orthodontic office;
4. Easy to insert and remove; and
5. Can be reused after sterilization.

Conclusion

This technique is found to be a cost-effective and facile alternative to split crimps, in case the latter are lost or additionally required. This helps in avoiding delay and saving chairside time.

Declaration of Conflicting Interests

The authors declare that there is no conflict of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Jamoy James https://orcid.org/0000-0003-3759-3973

Payal Ostwal https://orcid.org/0000-0002-3022-4887

References

1. McNamara JA Jr, Brudon WL. *Orthodontics and Dentofacial Orthopedics*. Needham Press, Inc; 2001:73.
2. Vogt W. The forsus fatigue resistant device. *J Clin Orthod.* 2006;40(6):368-377.
3. Jain A, Chopra SS, Mitra R. Fabrication of Alternative Push Rod for Forsus FRD Appliance. *J Ind Orthod Soc.* 2011;45(3):152-153.
4. Linjawi AI, Abbassy MA. Dentoskeletal effects of the forsus™ fatigue resistance device in the treatment of class II malocclusion: A systematic review and meta-analysis. *J Orthod Sci*. 2018;7:5.

Original Research Article

MKG Angle: A True Marker for Maxillomandibular Discrepancy

Journal of Indian Orthodontic Society
54(3) 220–225, 2020

DOI: 10.1177/0301574220905169
journals.sagepub.com/home/jio

Achint Chachada[1], Payal Ostwal[1], Megha Jain[1], Piyush Khandelwal[1], Jamoy James[3], and Mayank Nahta[2]

Abstract

Aim: To evolve a new cephalometric estimation called the point M, point key ridge, point G (MKG) angle using three skeletal landmarks—point key ridge (KR), point M, and point G to evaluate the sagittal relationship between the maxilla and mandible.
Materials and methods: A total of 60 pretreatment lateral cephalograms were selected and segregated into classes I, II, and III groups on the basis of point A, point nasion, point B (ANB) angle, Wits appraisal, and W angle. The MKG angle was constructed between the lines drawn from point M to point KR and point KR to point G. The MKG angle was measured to calculate the mean and the standard deviation.
Results: After using the one-way analysis of variance and the Newman–Keuls test and running ROC curves, the results showed that an MKG angle in the range 51°–59° can be considered to have a class I skeletal pattern. The MKG angle more than 59° indicates a class II skeletal pattern and less than 51° indicates class III skeletal pattern.
Conclusion: The MKG angle can be used as a dependable marker to assess sagittal jaw discrepancy.

Keywords

MKG angle, point M, point G, point KR, maxillomandibular discrepancy

Introduction

Cephalometric analysis plays a pivotal role in orthodontic diagnosis and treatment planning. An accurate assessment of the antero-posterior (AP) jaw relationship is a requisite step in orthodontic practice as rectifying it alone can do wonders in improving appearance. So far, various angular and linear cephalometric measurements have been proposed to assess the sagittal jaw relation or discrepancy between maxilla and mandible to assist orthodontic clinicians and researchers.

Most popularly used parameter is angle ANB which was introduced by Reidel in 1952.[1] The nasion being unstable with age questions the reliability of the ANB angle as an indicator of apical base discrepancies.[2] Also, the rotation of head while obtaining a lateral cephalogram or jaw rotation occurring as a result of growth or orthodontic treatment has a direct influence on the ANB angle.[3–5] To subdue problems related to the ANB angle, Jacobson introduced "The Wits appraisal" relating points A and B to the functional occlusal plane.[6] However, Wits appraisal also has a limited value when consecutive comparisons were performed throughout orthodontic treatment as it describes changes in the occlusal plane instead of pure AP changes of the jaws.[7] Hence, a measurement that is unconstrained of cranial reference planes or the dental occlusion, reflecting the true skeletal AP relationship without being influenced by changes in relation to other parameters, would be expedient in determining the apical base relationship.

Despite the fact that the Beta angle[8] does not use the cranial reference planes, it uses points A and B, which are subjected to change due to regional remodeling,[9,10] and also point C is confusing to be located on the lateral cephalogram.[11,12]

Off lately two more angles, Yen angle[13] and W angle,[14] were introduced to address the drawback of the Beta angle. However, the rotation of jaw either due to growth or orthodontic treatment can be vulnerable to accuracy of the Yen angle. Although the W angle is not affected by the rotation of jaws, it depends on Point S, the midpoint of Sella

[1] Department of Orthodontics and Dentofacial Orthopedics, Chhattisgarh Dental College and Research Institute, Rajnandgaon, Chhattisgarh, India
2 Department of Conservative Dentistry and Endodontics, Rungta College of Dental Sciences and Research, Bhilai, India
3 Department of Orthodontics, Dr Shakiras Dental clinic, Kasargod, Kerala, India

Corresponding author:
Payal Ostwal, Department of Orthodontics and Dentofacial Orthopedics, Chhattisgarh Dental College and Research Institute, G.E. Road, Sundra, Rajnandgaon, Chhattisgarh 491441, India.
E-mail: payal.g.ostwal@gmail.com

Turcica which again is an unstable landmark as reported by many studies.[15,16]

So, the need for the study was to locate a point which would be free from cranium but constant in relation to its growth. As coined by Atkinson, "key ridge" (KR) that is the lowest point of infrazygomatic crest is a strong buttress of bone which descends and goes forward from the zygoma to the maxillary bone and acts as a support for the maxillary first molar.[17] Bien stated that the KR remains constant in relation to the bones of the cranium throughout life.[18]

Despite being proven as an excellent diagnostic marker,[19] the literature shows very few studies that have been done using the KR as a landmark for sagittal discrepancy. Hence, this study aims to introduce a new parameter using the KR to assess true sagittal maxilla-mandibular discrepancy.

The aim of the paper is to develop and test the reliability of a new cephalometric parameter called the point M, point key ridge, point G (MKG) angle which consists of three skeletal landmarks—point KR, point M, and point G to assess the sagittal relationship between the maxilla and mandible.

This study was designed to define the mean value and the standard deviation (SD) for the MKG angle in a population with class I skeletal base pattern. It was also conducted to substantiate if any statistically significant difference exists between the mean values of the MKG angle among classes I, II, and III skeletal base population groups.

Methodology

Source of Data

The sample comprised of 60 standardized pretreatment lateral cephalograms of subjects (age 15–25 years) who had reported the Department of Orthodontics and Dentofacial Orthopedics in our institute for orthodontic treatment.

Method

A total of 150 pretreatment lateral cephalograms were traced on an acetate paper using a 0.5 mm lead pencil. Once the lateral cephalograms were traced, the routinely used parameters such as the ANB angle, Wits appraisal, and W angle to determine the sagittal discrepancy were constructed and measured by the same investigator to avoid inter-observer errors. Out of 150 screened lateral cephalograms, 60 lateral cephalograms were selected and subdivided into 3 groups of 20 each, that is, classes I, II, and III skeletal groups, based on the following inclusion and exclusion criteria.

Inclusion Criteria

1. Class I: ANB angle 1º–4º, WITS appraisal 0–4 mm, and W angle 51º–56º.
2. Class II: ANB angle >4º, WITS appraisal >4 mm, and W angle <51º.
3. Class III: ANB angle ≤0º, WITS appraisal <0 mm, and W angle >56º.
4. Permanent dentition with no missing teeth.
5. Patients with age group between 15 and 25 years.

Exclusion Criteria

1. Patients subjected to prior orthodontic treatment.
2. Patients with cranial or facial malformation and history of craniofacial trauma.
3. Poor quality of cephalograms.

The MKG Angle

The MKG angle is a new parameter for assessing the sagittal apical base discrepancy. It uses the three skeletal reference points, that is:

Point KR: Lowest point on the outline of the KR.
Point M: Midpoint of the premaxilla.
Point G: Center of the largest circle that is tangent to the internal inferior, anterior, and posterior surfaces of the mandibular symphysis.

The centers of premaxilla and mandibular symphysis were identified by constructing a template with concentric circles whose diameters increased in 0.5-inch increments. The center of the template was marked, and points M and G were identified on the tracings.[20,21]

The two lines that would form joining these points are:

- Line 1: connecting points M and KR.
- Line 2: connecting points KR and G.

The MKG angle was constructed between lines 1 and 2 drawn from point M to point KR and point KR to point G as shown in Figure 1.

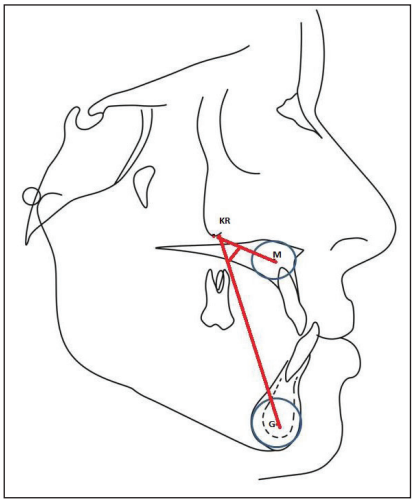
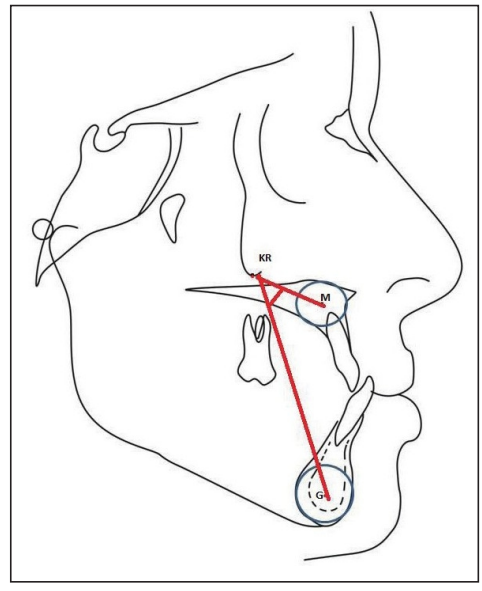
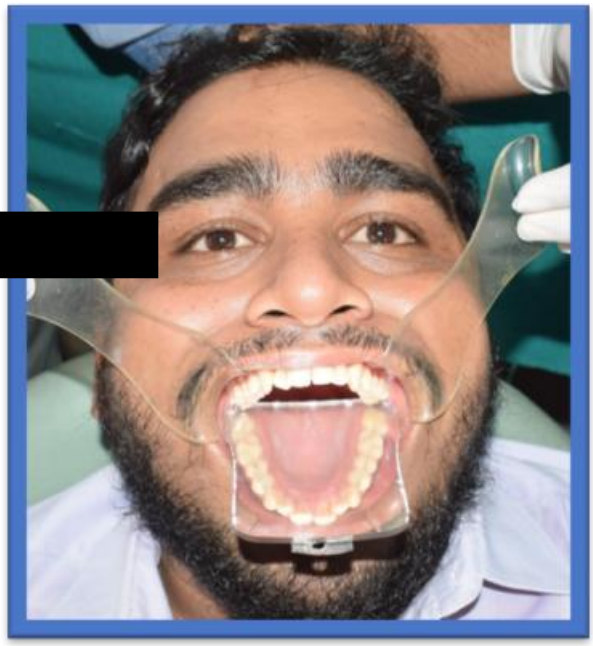


Figure 1. MKG Angle



MKG angle could be a potential marker for assessing jaw discrepancy

INNOVATIVE TECHNIQUE FOR OCCLUSAL PHOTOGRAPHY



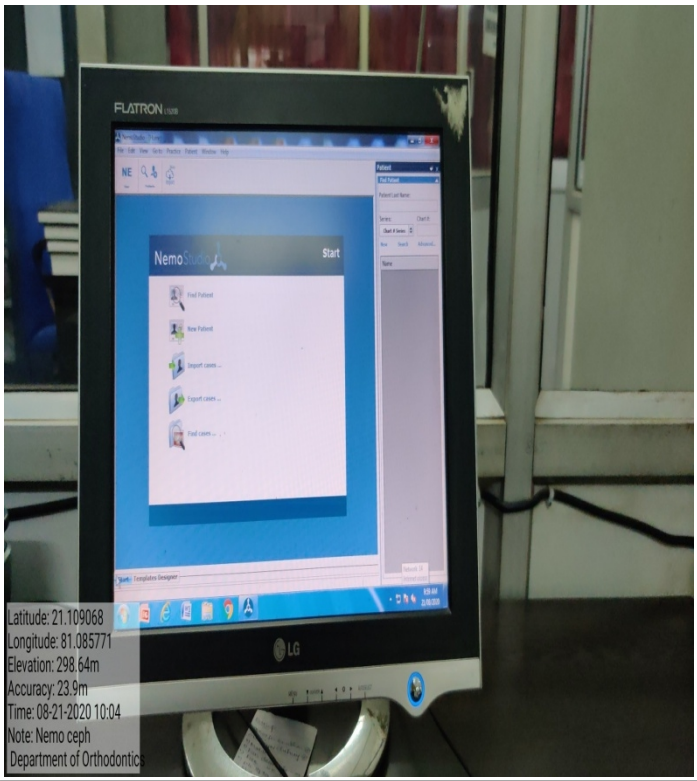
MICROSCOPES

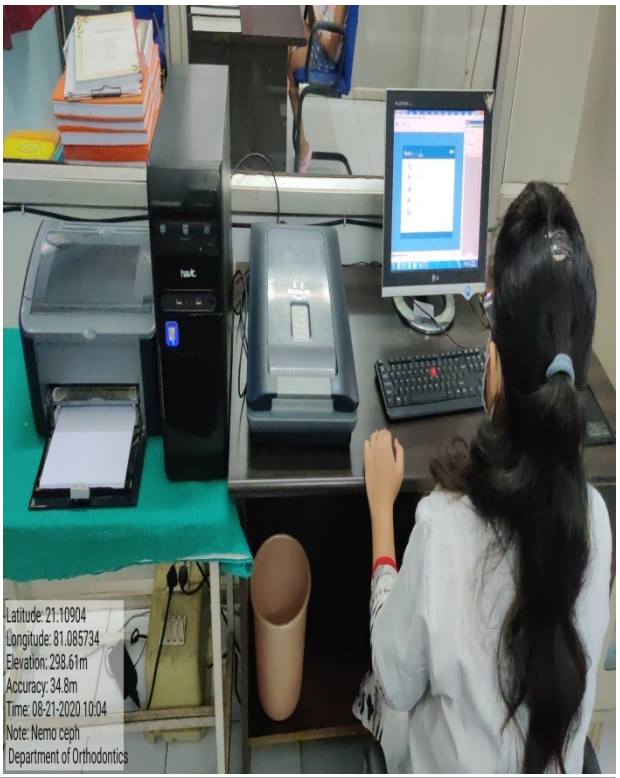
ANALYTICAL AND INNOVATIVE SKILL DEVELOPMENT

LASERS


BLEACHING
Thakur Tola, Chhattisgarh, India
NH53, Thakur Tola, Chhattisgarh 491441, India
Lat N 21° 7' 6.13524"
Long E 81° 7' 2.5194"
10/10/20 12:18 PM
Google
53

NEMO-CEPH SOFTWARE

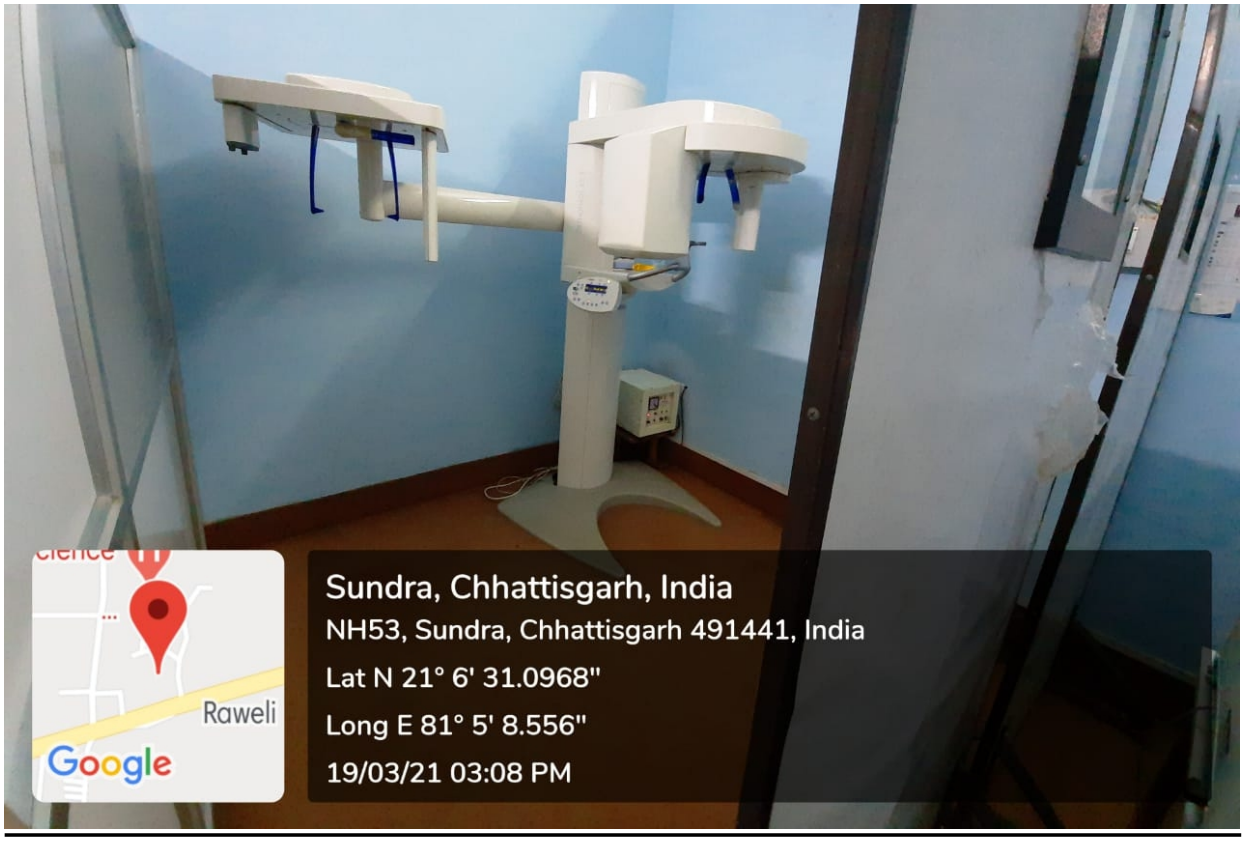




MAJOR OT

ENDODONTIC MICROSCOPE


PRIMA
LABOMED
Sundra
53
Google
Sundra, Chhattisgarh, India
NH53, Sundra, Chhattisgarh 491441, India
Lat N 21° 6' 31.25304"
Long E 81° 5' 7.42488"
10/10/20 12:25 PM


Raweli
Google
Sundra, Chhattisgarh, India
NH53, Sundra, Chhattisgarh 491441, India
Lat N 21° 6' 31.0968"
Long E 81° 5' 8.556"
19/03/21 03:08 PM

RVG


Latitude: 21.108678
Longitude: 81.08558
Elevation: 303.67m
Accuracy: 30.0m
Time: 23-03-2021 14:56
Note: pedo rvg


IMPLANTOLOGY ROOM
ATTENTION..!
AVOID USING MOBILE
DURING WORKING HOURS
BY ORDER
Latitude: 21.108841
Longitude: 81.085739
Elevation: 304.67m
Accuracy: 17.7m
Time: 20-08-2020 10:24
Note: Implant Clinic CDCRI


U.V. CHAMBER
Latitude: 21.108884
Longitude: 81.085762
Elevation: 240.2m
Accuracy: 19.3m
Time: 20-08-2020 10:22
Note: Implant Clinic CDCRI


26
GERIATRIC
CLINIC
Latitude: 21.108825
Longitude: 81.085734
Elevation: 304.67m
Accuracy: 20.9m
Time: 29-08-2020 11:09
Note: CDCRI