

Review Article

Versatile AP Orthodontic Diagnostic Tool

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INTRODUCTION

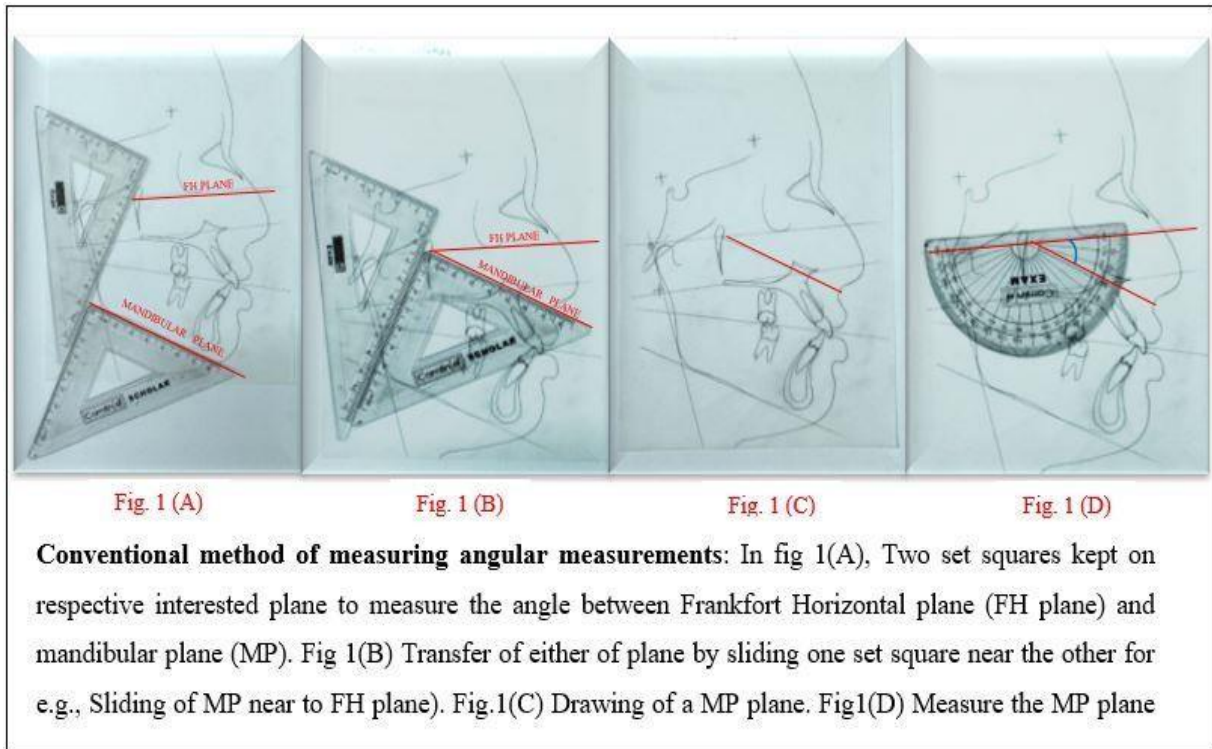
For orthodontic purposes, the database may be thought of as derived from three major sources: Questions of the patient (written and oral), clinical examination of the patient, and evaluation of diagnostic records, including dental casts, radiographs and photographs.¹

Applications of cephalometric analysis include case diagnosis, treatment planning, prediction of growth, and the evaluation of treatment results.² Although angles and linear measurements in cephalometry are very helpful guides to determine orthodontics and surgery treatments, the divine proportion is another method that can help the dentist to find areas which have the most harmony and balance, hence is the best way to achieve a harmony in esthetics and mostly lead

to adaptability and functional efficiency.¹ Ideal proportions are directly related to the so-called divine proportions and the most important value in relation to these proportions is 1: 1.618.³

Manual tracing of cephalometric parameters is performed by identifying radiographic landmarks on acetate overlays and using these reference points to construct lines, planes, and angles to enable the angular and linear measurement values, using a millimeter scale and a protractor.²

However, in many instances of conventional method we always face difficulties to measure the angular measurements of planes such as SN plane- mandibular plane, FH plane- MP, occlusal plane-FH plane etc and end up with errors as we need to slide two set squares and may require additional personnel (Fig 1).



This process can be discouraging as it is time-consuming and cumbersome.⁴

The aim of fabrication of Versatile AP orthodontic diagnostic tool is to measure and analyze the facial proportions and growth pattern of an individual clinically and cephalometrically. It is very easy to carry, quick and effective method in screening orthodontic patients clinically.

FABRICATION

ARMAMENTARIUM REQUIRED

A simple geometric protractor, an iron metal rod (15cm length), 0.019” x 0.025” stainless steel straight wire, neodymium iron boron (NdFeB) magnet 2 cm length and 2mm diameter, Plunger flange of a disposable plastic syringe, cyanoacrylate adhesive (fevikwik), Short Metal scale (15cm length), DPI-RR Cold cure acrylic (Monomer and Polymer) [Fig 2].



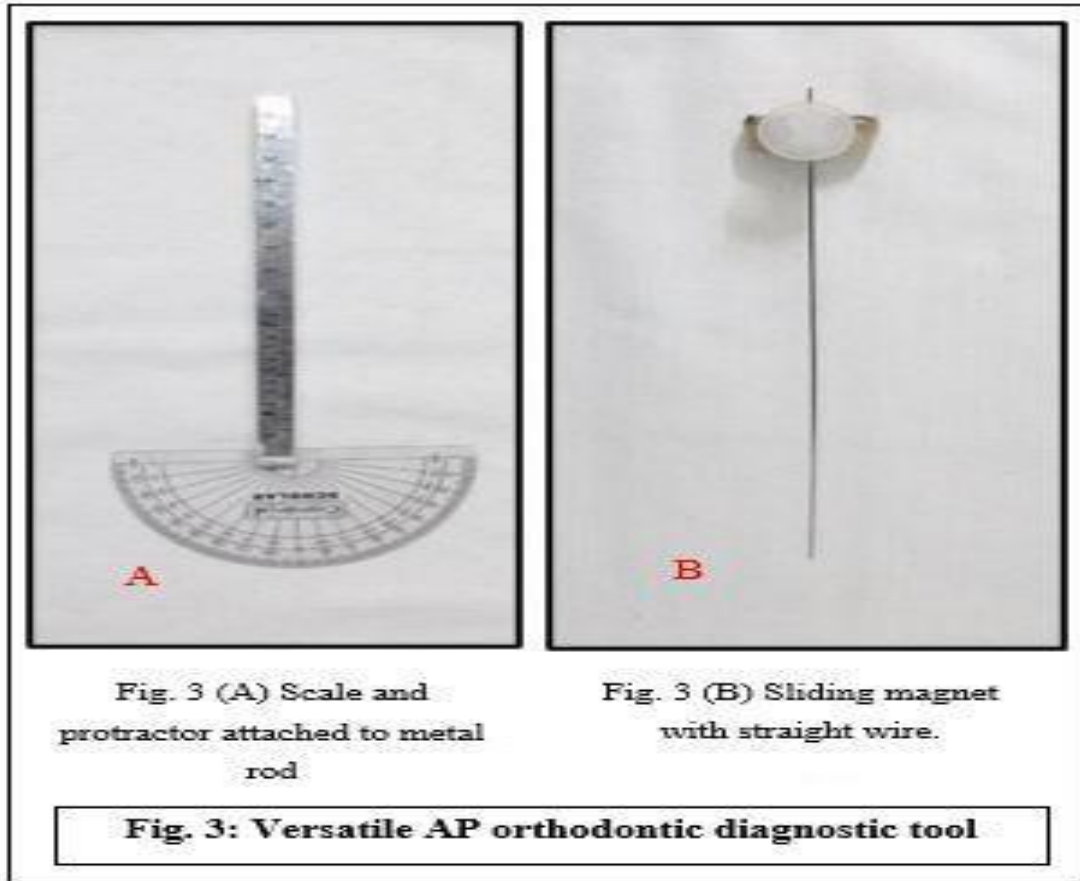
Fig. 2: A simple geometric protractor, an iron metal rod ((15cm l), 0.019 x 0.025 stainless steel straight wire, neodymium iron boron (NdFeB) magnet 2 cm l and 2mm thick, Plunger flange of a disposable plastic syringe, cyanoacrylate adhesive (fevikwik), Short Metal scale (15cm l), DPI-RR Cold cure acrylic (Monomer and Polymer)

STEPS OF FABRICATION

This tool is composed of 2 components i.e., Scale and protractor attached to metal rod, and sliding magnet with straight wire [Fig.3 (A, B)].

1. A rectangular metal iron rod with dimensions of 15 cm length x 1cm breadth x 1cm width was taken. Then a short metal scale with 15 cm length is trimmed vertically into the half with centimeter caliber visible on top and attached to the top side of the metal iron rod with cyanoacrylate adhesive (fevikwik). A simple geometric protractor then attached to the bottom of metal iron rod with cyanoacrylate adhesive (fevikwik)[Fig.3A].

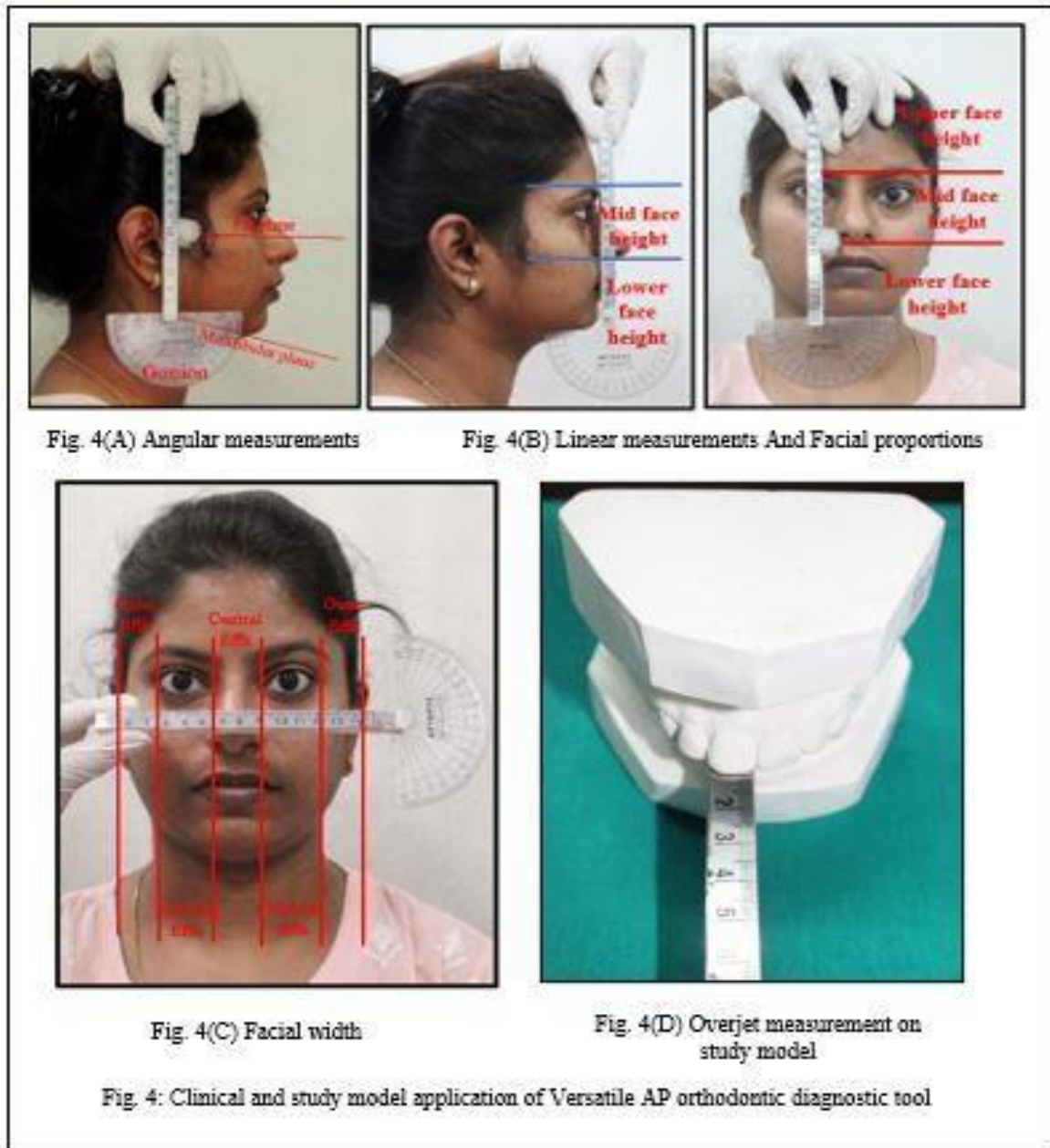
2. The Acrylic block of 2 x 1 cm was made onto which Neodymium iron boron (NdFeB) magnet 2 x 2cm placed. A handle was made with a plunger flange portion of the plastic syringe by cutting it into 1 cm and immediately attached into the acrylic block. Then 0.019 x 0.025 stainless steel straight wire was cut into 12 cm length, kept 1 cm extra out of the block and then inserted into the acrylic block above the 2 mm from the bottom of the metal rod for accurate linear measurement indicator [Fig.3 B].



CLINICAL APPLICATION

1. This tool has used at the time of clinical examination on new orthodontic patients to measure facial proportions and growth pattern[Fig 4 (A,B, C)].
2. This tool will also be used to examine the facial symmetry by facial width measurements

- (Horizontal fifths and Vertical third) [Fig 4(B, C)].
3. On the patient's study model cast, Overjet and Overbite can be measured with a scale attached on a metal rod) [Fig 4D].

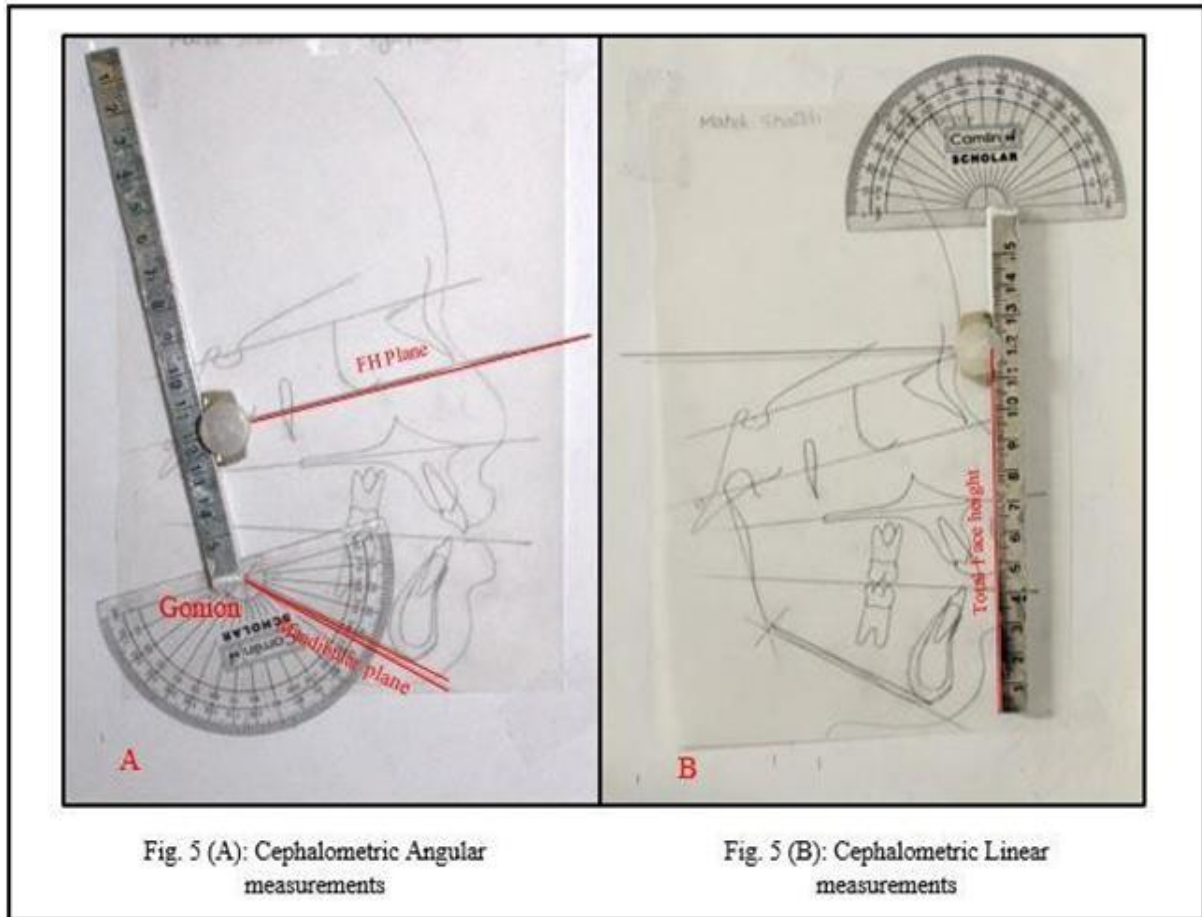


CEPHALOMETRIC APPLICATION

1. First cephalometric landmarks will be traced. Then this tool will be placed directly on the Lateral cephalogram [Fig 5(A)] with center of protractor at Gonion. Then horizontal stainless-steelwire will be placed on the respective interested plane, for e.g., SN plane, FH plane,

Occlusal plane. Center of the protractor kept perpendicular to the metal iron rod scale on the point of intersection on the mandibular plane [Fig 5 (A)] and an accurate angular measurement can be obtained.

2. The device will be used to measure linear measurements [Fig 5 (B)].



ADVANTAGES

1. The device has both clinical and cephalometric use.
2. Shows accurate measurements of all the angles on cephalometric tracings.
3. Easy to sterilize with spirit.
4. Portable, transportable and easy to fabricate.
5. Cost-effective.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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