



## Rapid Imaging of Isolated Anterior Nasal Spine by Radiovisiography

**Pandurangan Harikrishnan\***

*Craniofacial Orthodontics and Oral Surgery, Teeth "N" Jaws Center, Chennai, India*

**\*Corresponding Author:** Pandurangan Harikrishnan, Craniofacial Orthodontics and Oral Surgery, Teeth "N" Jaws Center, Chennai, India.

**E-mail:** teethnjaws@rediffmail.com

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### Abstract

Anterior nasal spine (ANS) is the most forward point of the maxilla and is naturally protected by the surrounding midfacial bones. Fractures of ANS are rare, but still occur in isolation or in association with midface fractures. Such fractures may either be ignored by patients or may go undetected. Lateral skull view and computed tomography is used for diagnosis of ANS fracture. In this article, an innovative, rapid, simple, cost-effective imaging of ANS with less radiation by Radiovisiography, a dental digital imaging system is discussed.

**Keywords:** Anterior Nasal Spine; Radiovisiography; Maxilla; Digital Imaging

### Abbreviations

ANS: Anterior Nasal Spine; RVG: Radiovisiography; kV: Kilo Volts; mA: Milli Ampere; mSv: Millisieverts

### Introduction

Anterior nasal spine (ANS) is the most forward point of the maxilla at the nasal base. ANS is naturally protected by the surrounding midfacial bones and thus fractures are rare. Still, fractures can occur in isolation or in association with other midface fractures. Such fractures may either be ignored by patients or may go undetected and thus reported less in the literature [1]. Fracture should be suspected if tenderness, ecchymosis, abrasions, or lacerations exist in areas adjacent to the ANS. Isolated undisplaced fractures do not require treatment [2]. Displaced fractures are often associated with nasal septum dislocations, fractures and present in degloving injuries of the upper labial vestibule as in a steering wheel injury. Hence, ANS fractures should be considered in the differential diagnosis of the midface injuries [3]. Displaced fractures mostly need open reduction and internal fixation [4]. Also, reshaping of ANS is shown to improve the aesthetic results in rhinoplasty as the antero-inferior part of the nasal septum is attached to it [5,6]. In suspected isolated ANS injuries, there is no simple, fast

and reliable way of imaging the ANS. In this article, we describe a novel application of Radiovisiography, a dental digital radiographic imaging tool for ANS imaging.

### ANS digital imaging by RVG

Routine radiographic examination include lateral view of the skull in which the ANS morphology is not always very clear. Computed tomography with three-dimensional reconstruction of the facial bones can reveal the fracture, but is expensive and time consuming. RVG, a commonly used digital dental imaging system for intra-oral radiographs delivers a high image resolution (> 20 line pairs/mm) [7]. A portable Intra-oral X-ray machine is used with a 200 mm cone with a 55 mm aperture which operates at 60 - 70 kV and 8 mA and exposure time of 2 to 3.2 sec. RVG unit consists of a sensor, computer and a monitor, with the sensor having a sensitive area of 275 x 182 mm. The radiation dosage is extremely lesser in RVG (0.001-0.005 mSv) compared to that of a skull radiograph (0.1 - 0.8 mSv), and also the results are faster with enhanced image quality.

For ANS imaging, the sensor is kept in the nasolabial area either on the left or right side perpendicular to and in contact with the skin surface and the dental X-ray cone is focussed from the op-

posite side to capture the lateral view of the ANS. The digital RVG radiograph shows immediately a very high resolution picture in the monitor which can be magnified and viewed by contrast adjustment as well (Figure 1).



**Figure 1:** (a) Portable dental intra-oral X-ray machine, (b) RVG sensor connected to the monitor and (c) Lateral view of a normal anterior nasal spine by RVG.

## Conclusion

A novel application of RVG is applied for isolated ANS evaluation, which proves to be simple, minimum in radiation, faster and a cost-effective imaging tool in facial trauma and rhinoplasty surgeries.

## Conflict of Interest

None.

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