



Supernumerary incisive canals in a cadaver: a rare anatomical variation

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Abstract

We present a rare anatomical variation in which an additional incisive canal was observed during the routine dissection of the palatal region in a cadaver. The diameter of the incisive and additional incisive canals measured 4.59 mm and 0.91 mm, respectively. Even though this variation is rare, oral surgeons should be aware of such anatomical variations for a better understanding.

Keywords Anatomical variation · Anatomy · Incisive canal · Palate · Oral surgery

Introduction

The incisive canal, also clinically called the nasopalatine canal or the anterior palatine canal, is the most prominent long, narrow anatomical structure in the middle of the anterior maxilla. Stenson first described the canal in 1683 [10]. The canal contains the nasopalatine nerve, branches of the maxillary division of the trigeminal nerve and the sphenopalatine branch of the maxillary artery [6]. The nasopalatine nerve is a branch from the pterygopalatine ganglion in the pterygopalatine fossa, which passes through the sphenopalatine foramen to enter the nasal cavity. Next, the nerve travels through the nasal septum to enter the incisive canal and innervates the palatal gingiva around the incisors up to the canine teeth and mucosa of the anterior part of the hard palate. The sphenopalatine artery passes through the sphenopalatine foramen to enter the nasal cavity, which is

subdivided into the posterior lateral nasal arteries and the posterior septal branches. The latter leaves the incisive canal to supply the anterior part of the hard palate. It is very important to observe such a vessel and nerve before carrying out surgical procedures of the anterior maxilla [5]. To our knowledge, there are only a few reports which investigated accessory incisive canals that may contain neurovascular structures [7, 8]. Here, we present a rare case of an additional incisive canal in a cadaver.

Case report

During the routine dissection of a formalin-fixed edentulous maxilla from a Caucasian male cadaver (60 years old at death), the incisive canal and surrounding vessels and nerves in the palatal region were dissected (Fig. 1). An additional incisive canal was found posterior to the incisive canal. Small branches of the greater palatine artery and nerve derived from the greater palatine foramen on the left side ran anteriorly and entered the additional incisive canal rather than the normal incisive canal. The diameters of the incisive canal and additional incisive canal were 4.59 mm and 0.91 mm, respectively. The greater palatine artery had no anastomosis with the nasopalatine artery. No other anatomical variations were found in the areas dissected and no evidence of previous surgical intervention was found in the palate.

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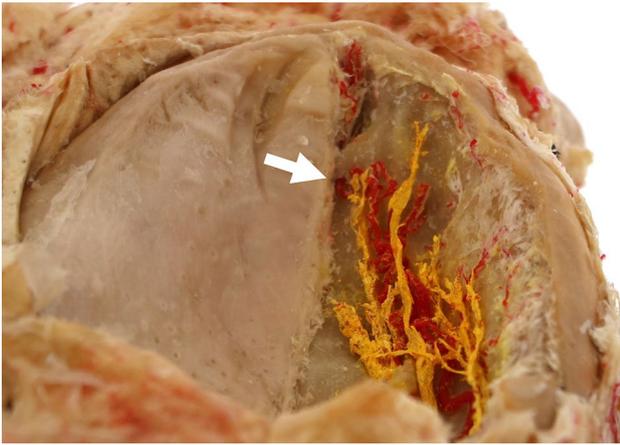


Fig. 1 After removing the mucosa of the left side of the palate, the additional incisive foramen (arrow) is seen posterior to the incisive foramen

Discussion

The incisive canal is a Y-shaped passage, the most prominent and long narrow anatomical structure in the middle of the anterior maxilla. The inferior opening of the incisive canal is the incisive foramen (nasopalatine foramen; foramen of Stensen) [1, 6]. Song et al. [9] defined the inferior opening only as the incisive foramen and the superior opening as either the nasopalatine foramen or the foramen of Stensen. Using cone-beam CT, Sekerci et al. [8] reported accessory canals in the anterior maxilla in 22.3% of 368 pediatric patients. One of 365 cases (0.27%) was located posterior to the incisive canal and connected with it. Other researchers have reported that the doubled incisive canal was found in 2 out of 100 skulls (2%) [3]. One case report of a doubled incisive canal reported a hematoma 1 week after surgical removal of the maxillary impacted tooth [2]. If the nasopalatine nerve is surgically transected, neurosensory disorders could occur [4]. In the present case, the additional incisive canal opened posterior to the incisive foramen. From a surgical perspective, damage to this additional canal could potentially lead to hemorrhage. Even though this variation is rare, knowledge of it might result in fewer complications during oral surgery.

The present case demonstrated an additional incisive canal located posterior to the normally positioned incisive canal. Oral surgeons and dentists should be aware of such an anatomical variation.

Author contributions SK and JI: data collection and manuscript writing. JK and RT: manuscript editing. All authors read and approved the final manuscript.

Compliance with ethical standards

Conflict of interest The authors declare no conflict of interest.

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