Short Communication

Juxtaoral organ of Chievitz: An innocuous organ to be known

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Abstract

The Juxtaoral Organ of Chievitz is a normal anatomical structure located within the soft tissue in the buccotemporal fascia on the medial surface of the ascending ramus. This enigmatic vestigial structure is considered to be of neuroepithelial origin with no known function. As a matter of fact, JOOC is one of the most treacherous pitfalls in surgical pathology with respect to lesions in the head and neck area. Hence the basic aim of this short communication is to reveal the importance about this organ and enlighten the oral pathologist about this histopathological structure, thus preventing extensive and unnecessary investigations.

Keywords: Buccotemporal fascia, epithelial islands, Juxtaoral organ of Chievitz, normal anatomical structure, oral squamous cell carcinoma

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INTRODUCTION

The Juxtaoral organ of Chievitz (JOOC) is a normal anatomical structure considered of neuroepithelial origin with no known function is located within the soft tissue in the buccotemporal fascia on the medial surface of the ascending ramus.[1,2] JH Chievitz, a Danish anatomist, first described JOOC in 1885 while studying human embryos.[3] However, this structure is not only unique for adults but also has been reported in some other species and in reptiles.[4,5] This enigmatic vestigial structure has been designated with various other names depending on its embryologic origin as orbital inclusions, buccopharyngeal tract, buccotemporal organ and juxtaoral organ.[6] As a matter of fact, the only practical importance of awareness of this structure lies in the potential of being misdiagnosed as perineural invasion in a patient with oral squamous cell carcinoma, which can be one of the most treacherous pitfalls in oral pathology.[7] Hence, the basic aim of this short communication is to reveal the importance about this organ and enlighten the oral pathologist about this histopathological structure, thus preventing extensive and unnecessary investigations. It also includes a concise biography on the scientist who discovered it.

CONCISE BIOGRAPHY OF THE SCIENTIST WHO DISCOVERED THIS ORGAN

Johan Henrik Chievitz (1851–1901) was a Danish anatomist. He was born on October 16, 1850, in Svendborg

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which is a town on the island of Funen in South Central Denmark. Chievitz graduated in 1869 from Soro, which is a town in Region Sjælland on the island of Zealand in East Denmark. He got his medical degree in 1875. He practiced a short time before he was employed in 1877, in the anatomy under Professor Theodor Schmidt (1825–1880). In 1881, he won the university's gold medal for a thesis on ossification. JOOC is named for him after his description in 1885. He noted it in 10-week-old embryos during his study on the development of salivary glands.[3]

ORIGIN OF THIS ORGAN

Originally thought to be of embryonic origin, JOOC starts as an epithelial thickening of the stomodeum and invaginates into the subjacent mesenchyme. This epithelial bud then detaches from the oral epithelium and becomes innervated by a buccal nerve branch receiving vascular supply from the buccal artery. The JOOC measures between 7 mm and 15 mm in length and between 1 mm and 2 mm in diameter. If it is more than 10 mm in diameter, then clinicians are likely to suspect submucosal tumor or hyperplasia of JOOC.[8,9]

HISTOPATHOLOGICAL ASPECT OF THIS ORGAN

Microscopically, the epithelial component consists of circumscribed nests of nonkeratinizing squamous, columnar and occasionally, basaloid epithelial cells with a definite glandular or organoid pattern with no keratin formation.[3]

Three concentric domains of connective tissue encase the epithelial islands as shown in Figures 1 and 2.

- The inner layer called stratum fibrosum internum consists of dense collagen fibers that are separated from the epithelial islands by a distinct basal lamina[10,11]
- The middle layer, stratum nervosum, is characterized by loose connective tissue stroma, populated with myelinated and nonmyelinated fibers[10,12]
- The outer layer, the stratum fibrosum externum, connects to the muscle fascia of the buccotemporalis. The basement membrane around these epithelial islands demonstrates PAS positivity.[11]

Histochemically, the available CK profiles to date suggest that the epithelial nests of JOOC share the immunohistochemical phenotype of nonkeratinized stratified squamous cells.[13,14] Mandl *et al.* reported CK19 immunoreactivity in the central squamous cells.[15,16] Alkaline phosphatase activity of the epithelial component of the JOOC and a possible mechanoreceptor function due to a close approximation of JOOC to structures resembling Pacinian corpuscles have also been documented. JOOC is an innocuous variation of normal anatomy and carries no risk for malignant transformation and no recurrence after its removal.[4]

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Conflicts of interest
There are no conflicts of interest.

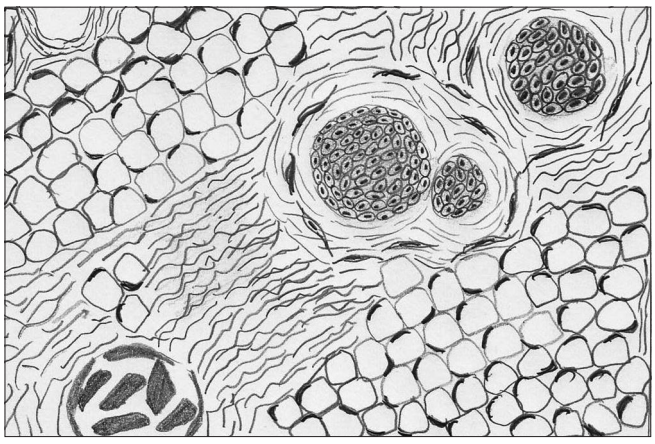

Figure 1: Hand drawn illustration showing epithelial component with circumscribed nests of nonkeratinized squamous, columnar and basaloid epithelial cells with a definite glandular or organoid pattern with no keratin formation within loose connective tissue stroma representative of Juxtaoral organ of Chievitz. The Juxtaoral organ of Chievitz is composed of nests of epithelial parenchyma embedded in highly organized connective tissue stroma rich in nerve bundles (Courtesy: Jerad M Gardner, MD, University of Arkansas for Medical Sciences, USA; Daifullah Al Aboud *et al.* 2014)

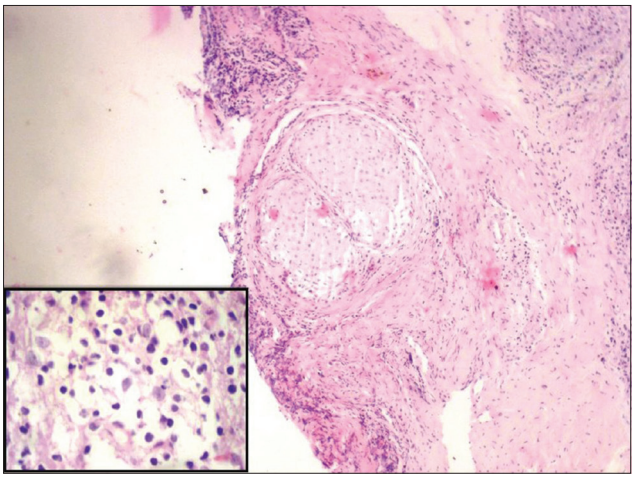

Figure 2: Courtesy: Arvind Venkatesh, Department of Oral Pathology and Microbiology, Subharti Dental College and Hospital, Meerut, Uttar Pradesh, India. Well-circumscribed epithelial sprouts present within the loose connective tissue stroma representative of juxtaoral organs of Chievetz (H and E, ×100). Inset: Cells showing paler cytoplasm and clear cell-like features (H and E, ×1000) Juxtaoral organ of Chievitz: A histopathological masquerade. Indian J Med Paediat Oncol 2015;36:193

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