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A supernumerary variation of the pharyngeal muscles - a case report

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ABSTRACT

The pharynx is a complex region and it partly possesses a muscular architecture. The classical textbooks divide them into the constrictors (superior, middle and inferior) and elevators (palatopharyngeus and stylopharyngeus) muscles, which are very significant to pharyngeal physiology and its main function: swallowing. Despite that, little is known regarding the anatomical variations of these muscles. We present a rare case in which a longitudinal and bilateral bundle arose from the basilar portion of the occipital bone near the pharyngeal tubercle and went towards the fibers of the inferior constrictor muscle and blended with them. We believe that this is an aberrant slip of the superior constrictor muscle, although there is no sufficient data to support this hypothesis. Similar variations have been described, but after thorough research, we believe that the one described herein was not previously reported. Variations of the pharyngeal muscles may lead to alterations in its function, thus, should be further studied and reported.

Keywords: pharynx, pharyngeal muscles, superior constrictor muscle, variations

INTRODUCTION

The pharynx is a muscle canal of the digestive system. It is situated vertically in front of the vertebral column and posterior to the nasal and oral cavities and the larynx. Due to its connection with the latter, it also belongs to the respiratory system [1].

The pharynx can be divided in three distinct portions: the nasopharynx, the oropharynx and the laryngopharynx. Its upper limit is the cranial base, while its inferior limit is near the sixth or seventh cervical vertebrae [1].

The muscles of the pharynx are considered to be in number of five by some authors: the superior, middle and inferior constrictor muscles, the palatopharyngeus muscle and the stylopharyngeus muscle [1, 2].

Variations regarding these muscles are not very common, especially when referring to the three constrictor muscles [3]. They are also poorly described in anatomical textbooks [1, 2, 4] and in recent articles, as most of them deals with the variations regarding their innervation [5, 6].

The paper presented herein aims to report a unique bilateral variation of the superior constrictor muscle in a male cadaver.

CASE REPORT

A male cadaver had its head removed from the body with the purpose of dissecting the pharyngeal and laryngeal regions. After dissection of the constrictor muscles, it was observed an unusual muscle variation.

The supernumerary muscle originated from the basilar portion of the occipital bone, near the pharyngeal tubercle and crossed the superior constrictor muscle in a perpendicular fashion. This longitudinal bundle descended to the inferior constrictor muscle and fused with its fibers inferiorly

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(Figure 1). It was present on the right and left sides of the pharynx.

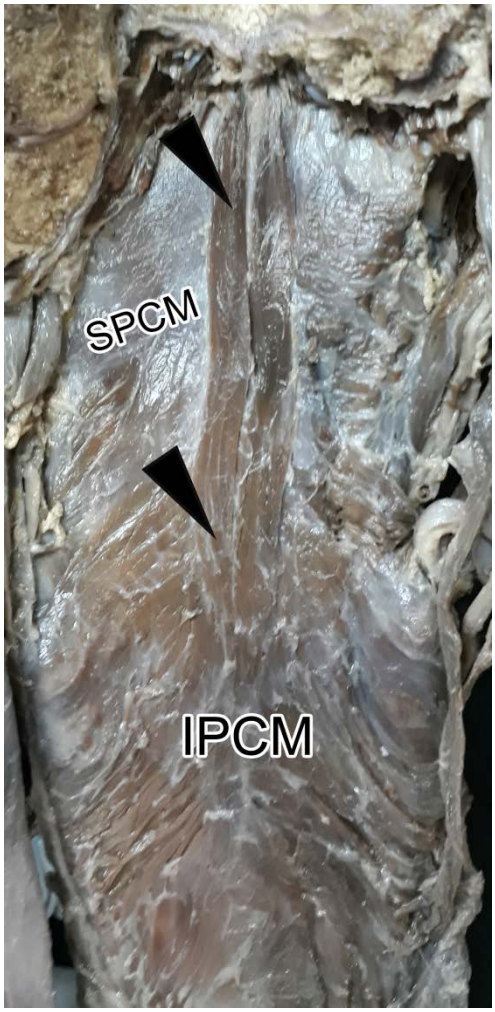

Figure 1: Posterior view of the pharynx. The aberrant longitudinal slip is shown (black arrowheads). SPCM: superior pharyngeal constrictor muscle; IPCM: inferior pharyngeal constrictor muscle.

DISCUSSION

.These muscles are derived from the branchial arches that form between the fourth to the seventh week of embryonic development. The superior constrictor muscle derives from the third branchial arch, while the others derive from the fourth arch. The muscles of the pharynx are extremely important, as they are partially responsible for breathing, swallowing and speaking [7, 8].

Furthermore, these muscles are surgically significant, since conditions such as dysphagia, breathing, and cancer resection are related to their action and morphology. This significance is increased during the postoperative period, as the resection of these muscles requires feeding tubes and swallowing therapy [9].

Swallowing is a complex process which requires coordination between many muscles and nerves. The most common disturbance in swallowing is dysphagia, which is present in around 50% of elderly and patients with neurological dysfunctions. Dysphagia is a very serious problem that can lead to malnourishment and pulmonary aspiration of food/saliva [10-12]. Moreover, the pharyngeal muscles are also involved in sleep apnea: they can become hypotonic and thus unable to prevent airway collapse in cases where there is increased airway resistance/narrowing, which can be caused by obesity, macroglossia, tonsillar hypertrophy and retrognathia, among others [13], as such, their variations requires more attention, as they can positively or negatively interfere in pharynx function.

Initially, during dissection, we thought that this was a variation of the pharyngeal raphe, although after reading the paper by Shimada and Gasser [14] we observed that the authors did not described a fully muscular pharyngeal raphe.

Sakamoto [6] described a similar variation to ours, in which a muscle band came from the superior constrictor muscle and spread its fibers to the middle constrictor muscle, although according to their photograph their variation was not the same as the one presented herein.

As such, to our knowledge, this muscle band which originated posterior to the pharyngeal tubercle and fused with the inferior constrictor muscle was not previously described in the literature. This supernumerary muscle may act as a reinforcement of the posterior pharyngeal wall, thus, it can be significant during diverticulum correction surgery and pharyngoplasty.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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We wish to pay our respects to the dissected cadaver and the donors.

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RESUMO

Uma variação supranumerária dos músculos da faringe - relato de caso

A faringe é uma região complexa e possui, em parte, uma arquitetura muscular. Os manuais clássicos os dividem em constritores e elevadores superiores, médios e baixos (palatofaríngeo e estilofaríngeo), que são significativos para a fisiologia faríngea e sua principal função: a deglutição. Apesar disso, pouco se sabe sobre as variações anatômicas desses músculos. Apresentamos um caso raro em que um feixe longitudinal e bilateral surgia da porção basilar do osso occipital, próximo ao tubérculo faríngeo, e se deslocava para baixo, em direção às fibras do músculo constritor inferior e se misturava com elas. Acreditamos que este é um deslize aberrante do músculo constritor superior, embora não haja dados suficientes para apoiar esta hipótese. Variações semelhantes foram descritas, mas após uma pesquisa minuciosa, acreditamos que a descrita aqui não foi relatada anteriormente. Variações dos músculos faríngeos podem levar a alterações em sua função, portanto, devem ser mais estudadas e relatadas.

Palavras-chave: faringe, músculos faríngeos, músculo constritor superior, variações