Introduction

The cartilaginous skeleton of the trachea shows vast variations in its structure. These structural alterations encompass both the form and number of cartilaginous rings as well as the junctions between them. This anatomical feature seems to be frequently underestimated, despite its clinical significance in some surgical procedures.

Methods

A total of 110 publications - 42 otorhinolaryngology - ENT textbooks, 27 anatomy atlases, 9 anatomy textbooks, 22 surgery textbooks and 10 articles were analyzed. Both illustrations and text were checked if they represent/describe the tracheal cartilages as strictly parallel or having any deviation, including non-parallel cartilages, bifurcated cartilages, junctions between two or more adjacent cartilages etc. Illustrations were also classified as being photorealistic, line-art or mixed.

Results

The publications evaluated were published in the time period from 1897 to 2016. The illustrations were mostly photorealistic – 70% (71% ENT, 67% anatomy textbooks, 78% anatomy atlases, 64% surgery textbooks, 70% ENT articles), the rest being line-art or mixed.

Only 29% of the ENT textbooks contain tracheal illustrations with intercartilaginous variations. Illustrators of the Anatomy manuals and atlases show alternating tracheal cartilage structure in 78% and 78% of the books, respectively [1], [2]. Merely 36% of surgical textbooks and 20% of the articles show deviation from the parallel presentation of the tracheal rings. Deviations from the general schematic representation are located in the intrathoracic part of the trachea, with the cervical part being drawn as composed of parallel orientated cartilages only (65% of the sample vs. 27% parallel tracheal cartilages in the neck and thorax, respectively). Only in 4 sources (3.6%) the text specifies, that the tracheal rings are not uniform in shape and have common intercartilaginous contacts [3].

Conclusion

The illustrations of the trachea in the medical textbooks are deceivingly stylized, not corresponding to the real anatomical structure. This also applies to the text presented in the medical literature. In certain surgical situations such a wrong and schematic concept may mislead the surgeon.

Bibliography

1. Agur, A. Grant’s atlas of anatomy. 9-th edition; Williams and Wilkins. 1991