

Thyroid Swelling: A Common Phenomenon in Art?

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Abstract

Representations of thyroid swelling, intended as an enlarged anterior neck region, in the artworks of various periods are sporadically reported in the scientific literature, and different intents may be hypothesized. A comprehensive review of the international literature was performed on PubMed, Embase, and ResearchGate with the aim to analyze the modalities of representation of thyroid swelling through the ages by different artistic movements. Thyroid swelling is frequently represented in the artworks of many stylistic periods and seems to be a known condition even by the earliest cultures. Thyroid swelling may be considered a common finding among forms of art distant in time and style. It is not always possible to define whether thyroid swelling is a realistic representation or a detail added by the author. Although the function of the gland was discovered only at the end of the 19th century, thanks to the artworks of authors in many cultures, it is nowadays possible to formulate hypotheses about the distribution of thyroid diseases over the centuries.

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Introduction

It is noteworthy that in some artworks of various stylistic periods and areas, the neck of figures is particularly large in relation to the rest of the face and/or body. We examine if this phenomenon can be linked to the presence of thyroid pathologies leading to increased dimensions of the gland. It would appear that this feature is present primarily in paintings and sculptures of the Renaissance and Baroque eras [1, 2]. Different authors have considered the incidence of thyroid swelling in the population to be almost constant over the centuries, especially in iodine-deficient areas [2–5]. The representation of thyroid swelling in art is a debated issue and has found considerable attention in the medical literature.

Materials and Methods

A review of the relevant international literature was carried out using different databases (PubMed, Embase, and ResearchGate) with the following search terms: “art” OR “iconography” [All Fields] AND (thyroid, swelling [MeSH Terms], OR thyroid, enlargement [MeSH Terms], OR neck, enlargement [MeSH Terms], OR goiter [MeSH Term]). Articles and book chapters published in English, French, German, and Italian were included. Abstracts of all articles and book chapters published up to May 2017 were

screened and selected according to relevance, followed by full reading of the papers. Moreover, we discuss additional artworks that have not been previously described from this point of view to the best of our knowledge.

Results

According to the above-mentioned inclusion criteria, we identified 131 papers published from 1964 to May 2017. Of these, 69 analyzed how thyroid enlargement was depicted in art, also trying to correlate, whenever possible, the different representation modalities with specific pathological conditions.

It is impossible to quote in a single study all artworks representing personages with thyroid swelling as well as scientific papers dealing with this topic. Considering this, our aim was to highlight the historical continuity of representation of thyroid enlargement regardless of differences in ages, populations, and artistic movements.

Discussion

Hypothesis on the Main Causes of Thyroid Swelling

Written history testifies that thyroid swelling (nodular or diffuse) has existed for thousands of years. If the high prevalence of thyroid swelling in contemporary times is assessed, it can be assumed that, over the centuries, it was also common in the European populations, especially in iodine-deficient areas located far from the seashore. Moreover, several authors and anthropological studies formulated various hypotheses about the main causes of goiter as identified in personages represented in artworks [1, 2, 4–7].

Endemic Goiter due to Iodine Deficiency

Usually, iodine deficiency results in a large goiter (multinodular) in middle-aged subjects. According to Ferriss [2], it may be a sign of poverty and low social class, or could also stigmatize personages as executioners or tormentors [8].

Chronic Hashimoto Thyroiditis

In most of cases, Hashimoto thyroiditis, usually affecting young women, is characterized by a gland with normal or even reduced dimensions, but in some cases the thyroid may be uniformly enlarged. In the literature, it is universally accepted that several artists considered this feature to be part of beautiful physical appearance in young women [5, 9].

Autoimmune Postpartum Thyroiditis

Several authors have speculated that postpartum thyroiditis is a possible cause of thyroid enlargement in personages representing the *Madonna with Holy Child*, a popular subject of many artists, especially in the Renaissance [2, 9].

Hyperthyroidism and Graves-Basedow Disease

Hyperthyroidism is generally due to toxic multinodular goiter, which is generally associated with the presence of a globally enlarged thyroid gland; more rarely, the hyperthyroidism is caused by Graves-Basedow disease, an autoimmune condition that does not necessarily imply the existence of a gland with increased dimensions. In addition, the subject can show some peculiar signs, such as exophthalmos and restlessness. Several artists have exploited this physical appearance, linking it to particular significance in the scene (i.e., madness).

Congenital Hypothyroidism and Dysmorphogenesis

The goiters in very young personages can be attributed to congenital hypothyroidism or dysmorphogenesis; indeed, it would be unusual to present a large goiter due to iodine deficiency in childhood, as represented in few artworks.

Pseudogoiter and False Goiter

Merke [6], in his pivotal work on the iconography of endemic goiter, observed that several artists probably did not have any intention to illustrate the pathological condition, and what has been identified by various observers as goiter, could have been a simple prominent neck, defined as “pseudogoiter” [6, 8]. Therefore, it is a common opinion of several authors that some artists considered a female enlarged neck as a sign of prosperity and probably added this feature even to normal subjects in artworks [5].

Thyroid Swelling Prior to Anatomical Knowledge

Representations of goiter in visual arts, numismatic material, and reports in medical and nonmedical written works date to ancient times [6–8, 10, 11]. Julius Caesar, for example, noted that among the Gauls living in the Alpine valleys, an “enlarged neck” was a common feature [12]. Laios et al. [13] reported representations of thyroid swelling in figures belonging to ancient Greek art.

Józsa [14] focused attention on Byzantine art on the assumption that endemic goiter was common in the land-

locked mountain regions of the Byzantine Empire. After review of 500 artworks, he identified 42 cases of thyroid enlargement. One example is the *Christ Pantocrator* as icon from the 6th century (Fig. 1a), depicting a case of nodular goiter. The aim of Byzantine art was not to represent pathological conditions but rather, especially in sacral art, to aspire to individual sanctity. For this reason, Józsa [14] concluded that only a small number and aspects of the population's prevailing diseases are visible in artworks from this period.

Thyroid Swelling in the Renaissance and Baroque

The Renaissance was a period of great cultural achievements: it started in the middle of the 14th century and lasted until the end of the 16th century. Noteworthy, the thyroid gland, from an anatomical point of view, was discovered and described during the Renaissance although its physiological role was only identified at the end of the 19th century [4]. Leonardo da Vinci (Anchiano 1452 – Amboise 1519) was the first to draw the gland in 1510 (see online suppl. Fig. 1; see www.karger.com/doi/10.1159/000488315 for all online suppl. material). Subsequently, in 1543, Andreas Vesalius (Brussels 1514 – Zante 1564) made a new representation of the gland in his magnum opus *De humani corporis fabrica* (see online suppl. Fig. 2). Following the publication of this atlas of human anatomy, the thyroid gland became known to physicians [1], but effective surgical treatment of the gland was described in the second half of the 19th century, especially thanks to the work of Theodor Kocher (Bern 1841–1917).

In the literature, numerous reports of paintings and sculptures of the Renaissance possibly showing subjects with thyroid swelling are mentioned [1, 5, 7, 15, 16], and the issue is discussed in significant depth in a seminal work by Clark and Clark [15]. Several authors have questioned the reasons why many artists of the Renaissance and Baroque seemed to represent the goiter [1, 2, 5]; indeed, many favored beautiful features and ignored or minimized physical defects. Vescia and Basso [1] claimed to have discovered 56 goiter representations in artworks from the Renaissance. Sterpetti et al. [5] claimed to have identified 70 paintings and 10 sculptures depicting subjects with thyroid swelling after review of 600 paintings and sculptures from the Italian Renaissance. The authors concluded that thyroid swelling must have been common in the historic population, and that the models included in the scenario were a part of daily life.

In the Renaissance, 3 main artistic trends can be identified:

- 1 *The art of Raffaello Sanzio* (Urbino 1483 – Rome 1520) epitomized the High Renaissance qualities of harmony and ideal beauty, so it can be supposed that he considered an enlarged neck at least a normal physical appearance in models, or that he exaggerated this feature, considering it as a part of ideal beauty. In the painting entitled *Borghese Deposition* (see online suppl. Fig. 3A), one of the pious women in the right part of the picture is depicted with a large goiter (see online suppl. Fig. 3B) [17].

In *The Transfiguration of Christ* (see online suppl. Fig. 4), a boy with an enlarged neck associated with signs of toxic goiter (exophthalmos, weight loss, and agitation) is depicted in the lower part at the right-hand side (Fig. 1b). In the common interpretation of the artwork, the boy is “possessed by Satan” and is waiting for a miracle, and thus a correlation between the signs of hyperthyroidism and the situation represented can be hypothesized.

- 2 *Leonardo da Vinci* was pushed by a great curiosity for discovering human anatomy and probably fascinated by strange physiognomies: a consistent example of this is the drawing of *Scaramuccia* (see online suppl. Fig. 5). In Leonardo's drawings, we often capture the intent to analyze an altered physical property rather than to cancel it.
- 3 *Other authors such as Michelangelo Merisi (Caravaggio)* (Milan 1571 – Porto d'Ercole 1610) wanted to create paintings with large emotional effects for the viewer and avoided the idealization of personages included, who were preferentially common low-class people. Every physical characteristic, goiter included, was pre-

Fig. 1. **a** *Christ Pantocrator* icon (6th century), St. Catherine's Monastery, Mount Sinai, Egypt. **b** *The Transfiguration of Christ* (detail) (Raffaello Sanzio, 1516–1520), tempera on panel, © Museo Nacional del Prado / © Photographic Archive Museo Nacional del Prado, Madrid, Spain. **c** *The Crucifixion of Saint Andrew* (detail) (Caravaggio, 1607), oil on canvas, © Cleveland Museum of Art / © Photographic Archive Cleveland Museum of Art, Cleveland, OH, USA. **d** *The Mad Lovers* (Bartolomeo Passerotti, 1570), oil on canvas, private collection, Paris, France. **e** *Judith and Her Maidservant* (Artemisia Gentileschi, 1613), oil on canvas, © Museo Pitti, © Photographic Archive Museo Pitti, Florence, Italy. **f** *The Madonna in Red* (Rogier van der Weyden, 1435–1438), oil on oak, © Museo Nacional del Prado / © Photographic Archive Museo Nacional del Prado, Madrid, Spain. **g** *Monstrous Craws, at a New Coalition Feast* (James Gillray, 1787), etching with aquatint, © The British Museum, London, UK. **h** *The Seducer II* (Edvard Munch, 1913), oil on canvas, 80 × 99 cm, Munch Museum, Oslo, Norway.

(For figure see next page.)



cisely depicted. An outstanding and well-known example is *The Crucifixion of Saint Andrew* (1607) (see online suppl. Fig. 6) [5, 18]. Although it should be kept in mind that Caravaggio used *clair-obscur* in his paintings – contrasts to create more emotional effects, in the left lower part of the picture an old lady with an obvious goiter is represented (Fig. 1c). As underlined by Sterpetti et al. [5], the woman probably came from a low-class group.

In the first of the 3 above-mentioned Renaissance trends, thyroid swelling was included in artwork as part of ideal human beauty; in the second, goiter physiognomy was depicted as an attempt to represent a not well-known human anatomy; in the third, the artistic innovations of the Renaissance (perspective and study of human anatomy) led to realism. In this group, 2 subgroups can be identified: first, a group of artists in which the trend was to exaggerate and cross the edge of realism, up to grotesque and artificial qualities classified as *mannerism style*, and second, a group of artists classified as *Caravaggists*, contextualized in the Baroque and no longer part of the Renaissance. An interesting example of the first group is painting *The Mad Lovers* (1570) by Bartolomeo Passerotti (Bologna 1529–1592) (Fig. 1d). The male and female figures, the gods Baccho and Cerere, respectively, are only distinguishable due to the presence of the breast in Cerere; the goiter of the female subject, probably an artificial composition, contributes to her masculine appearance.

A very good example of the second group is the painting *Judith and Her Maidservant* (1613) (Fig. 1e) by Artemisia Gentileschi (Rome 1593 – Naples 1653). *Judith and Oloferne* is a recurrent theme in Caravaggio and in *Caravaggist* artists, and at least 2 representations are attributed to Gentileschi. According to Lazzeri et al. [19] and Trimarchi [20], the legendary heroine Judith was very often represented with a goitrous thyroid gland by several artists of the Baroque as a symbol of powerful masculine body and courage. In *Judith and Her Maidservant*, the figure of Judith is probably a self-portrait of the artist who did not hide her large goiter [5].

Representation of thyroid swelling also seems to be present in the artworks of other major artists of the Renaissance and Baroque periods, i.e., Michelangelo Buonarroti, Pinturicchio, Piero della Francesca, Gaudenzio Ferrari, and Jusepe de Ribera. Unfortunately, it is impossible to include all these artworks in a single paper: a detailed report on this topic is presented in the article by Sterpetti et al. [5].

In Belgium and the Netherlands, the goiter was not endemic as in other European regions; however, thanks to

the work by Lazzeri et al. [9], representations of goiters in Flemish Renaissance became more noticeable. Although Peter Paul Rubens and Albrecht Dürer only occasionally depicted personages with thyroid enlargement [1, 7, 21], Lazzeri et al. [9] found several paintings by Rogier van der Weyden (Tournai 1399 – Brussels 1464) in which the subjects revealed mild grades of thyroid enlargement. A complete analysis is very well presented in the aforementioned article; in the present work, we report as an example an important female-figure portrait by van der Weyden in which the goiter is much more evident: *The Madonna in Red* (Fig. 1f). The artist had the possibility to travel across Italy, where he was exposed to the Italian Renaissance, and where he consequently observed artworks in which the enlarged neck was included. The most accepted hypothesis is that van der Weyden included the stylistic element of an enlarged neck in his work inspired by the aforementioned ideals of the Renaissance [22].

Thyroid Swelling in Caricatures at the End of 18th Century

In the 18th century, the caricature, strongly influenced by the theme of grotesque belonging to Middle Age, Renaissance, and Baroque traditions, spread though the new social conditions of the *Illuminist* movement. An anomalous physical property was widely exploited or deliberately added by the authors to deplore the subject(s) of the caricature. James Gillray (Chelsea 1757 – London 1815) is considered one of the father of the modern caricature. The caricature *Monstrous Craws, at a New Coalition Feast* (1787) (Fig. 1g) is an example of goiter deliberately added for satiric purposes. It shows King George III, dressed like a woman, Queen Charlotte, and the Prince of Wales eating gold coins: goiters are represented as “pelican pouches” and hanging from their neck. Gillray used the imagery of gluttony to criticize the exorbitant demands on the public purse by the British royal family. The Prince of Wales is represented with a goiter not large enough to pay off debts; on the other hand, the King and the Queen are criticized for the greed with which they fill their distended pouches.

Thyroid Swelling in the Neoclassicism

The Neoclassicism marked by rationalism arose in the late 18th century as an opposition to the artistic “extravagance” of the late Baroque and Rococo and in contrast to the emerging Romantic art. This movement was inspired by the ideals of Grecian and Roman classic art: the neoclassic artists considered that it was important to extract the essence and the mental attitude of the artists of the classic age in artworks. Jean-Auguste Dominique Ingres

(Montauban 1780 – Paris 1867) was one of the most influential painters of this movement. Ingres was an artist who combined classical inspiration and realism and who was responsible for one of the most interesting representations of the goiter painted in that period. In *Roger Freeing Angelica* (1819) (see online suppl. Fig. 7), the young woman is depicted with a large goiter in order to increase, according to Ferriss [2], her erotic appearance. When the painting was exhibited, the features of Angelica were criticized, and she was nicknamed the “triple-breasted Angelica.” In a period in which the highest expression of art was reproduction of “ancient perfection,” an obvious physical defect such as a large goiter was not widely tolerated.

Thyroid Swelling in 20th Century Artworks

In the 20th century, examples of personages depicted with an enlarged neck can be found, although, as already mentioned, the most numerous examples in painting and sculptures are from other periods. This also happened because the art movements of the second part of the 19th century and the 20th century reduced the attention to details of the human figure, evolving towards abstraction, starting from Impressionism, going through Expressionism, Surrealism, and so on.

The Seducer (1913) (Fig. 1h) by Edvard Munch (Løten 1863 – Oslo 1944) is one such example. The picture, which was painted 20 years after *The Scream* (1891) during the mature phase of the author and in a happy period in Munch’s life, is characterized by a light touch and vibrant colors. The painting represents a couple in an intimate pose: the female figure is depicted with an enlarged neck; however, as noticed before, the aim of Munch was not to depict reality, but to express deeper emotions by using expressive colors and forms.

Another example, focused on by Pozzilli and Lazzeri [23], is *The Crucifixion* (1924), by the futuristic Italian author Primo Conti (Florence 1900 – Fiesole 1988) (see online suppl. Fig. 8). The figure of Christ is depicted with a thick neck, but in this case it is probably not a real goiter.

Firstly, it is an artwork in a futuristic style in which the human body, and therefore the neck, is slightly deformed in the direction of the mechanical; secondly, Pozzilli and Lazzeri [23] underlined that a crucified Christ with thyroid swelling is an extremely uncommon representation in art.

We also want to mention a clear example of a self-portrait with goiter by the Italian painter Antonio Ligabue (Zurich 1899 – Gualtieri 1965), who was not contextualized in any movement and whose work is generally framed as “naïf.” Suffering from rickets which compromised his normal physical development, the author lived a life dominated by depressive episodes. Ligabue is the only case in which we can be sure of depiction of goiter, because it is known from photographs that the artist suffered from it. The best known and appreciated parts of his work are the paintings of animals, but he also made numerous self-portraits. In these self-portraits, the artist paid attention to expressiveness in the eyes and to physiognomic details: indeed, the goiter is very often not hidden, but rather underlined, becoming a focal point in the work, as in the self-portrait (see online suppl. Fig. 9).

Conclusion

In the examples reviewed, thyroid swelling may be considered a common finding among forms of art distant in time and artistic style. In every period during human history, art and medicine deal with the same topic according to different perspectives; thanks to the work of artists who used thyroid swelling for formal or symbolic reasons, and, of course, observers and descriptors of nature in the past, it is possible to have hints about the spread and extent of thyroid diseases over the centuries.

Disclosure Statement

All authors have no conflict of interest to disclose.

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