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# Iconodiagnosis as the key to establishing the identity of the so-called *Niccolò Albergati* portrait? Multiple signs of ear lobe disease in van Eyck's paintings (15th century)

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**Summary** In this essay, we will first look at an iconodiagnosis of a portrait by van Eyck (15th century), showing notably an ear lobe crease. Frank's sign is then compared with contextual and pathographic data relating to eminent cardinals during Hundred Years' War, Albergati and Beaufort, who both could have been the model of this enigmatic painting. After discussing how iconodiagnosis may also contribute to respond to an art enigma, we will present the Frank's sign within van Eyck's overall work, highlighting the historical presence of ear lobe disease. To the best of our knowledge, these artworks could be the earliest known paintings depicting Frank's sign, and may provide a rough idea of its prevalence in Western Europe, 15th century.
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*''The ear is the pathway of the heart''— Voltaire*

The diagonal ear lobe crease, as distinguished from the preauricular vertical crease and the paired ear crease of the helix, is an intriguing sign, originally described by Dr Sanders T. Frank as a diagonal fold of skin between the tragus

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**Figure 1.** A. Jan van Eyck. *Cardinal Niccolò Albergati* (?). c. 1435. Oak wood. 34 × 29.5 cm. Kunsthistorisches Museum, Vienna. ©KHM-Museumsverband. B. Jan van Eyck. Drawing. 214 × 180 mm. Kupferstich-Kabinett, Staatliche Kunstsammlungen Dresden. Photo: Herbert Boswank.

and the edge of the earlobe correlated with the presence of risk factors for coronary artery disease [1]. There are several classifications of diagonal ear lobe creases based upon whether creases are unilateral or bilateral and the depth of the crease. While the precise mechanisms of development remain uncertain, from an anatomical point of view, an increase in the buccal fat pad of the cheeks, linked to visceral obesity, could, by causing chronic traction chronic traction on the earlobe attachment, lead to a progressive and irreversible crease [2]. On a histological level, post-mortem analysis revealed that arterial myoelastofibrosis, eosinophilic inclusions in the nerves and diffuse fibrosis, were correlated with ventricular myocardial thickening [3]. A loss of elastic fibers in patients who have had an infarction, echoing damage to coronary microvascularisation [4] and endothelial dysfunction [5] has been evidenced.

The prognostic significance of Frank's sign is the subject of debate. The association with coronary artery disease, atherosclerosis and cardiovascular morbidity and mortality, shown in numerous studies, can be biased by ageing — as demonstrated by the skin autofluorescence advanced glycation end products in a large Chinese population [6]. A systematic review of acute or chronic coronary stenosis, documented mainly by angiography, concluded that Frank's sign, which is easy to examine, slightly changes the pre-test probability and can be applied to the examination of pre-symptomatic populations [7]. In addition, Frank's sign is associated with ischemic stroke, and can help to diagnose early stages of systemic atherosclerosis [8].

Can history and paleopathology help to respond to these contradictory data regarding the prognostic value of Frank's sign? Data appear scarce, and a hiatus, as noted by Galassi *et al.*, exists between Antiquity and the Renaissance [9]. Statues of Hadrian [10—12], two paintings by Mantegna [9], including one depicting also a temporal arteritis, a contested [13] statue and portrait of Piero di Cosimo de Medici [14], followed by Flaubert's death mask [15] exhibit a diagonal ear lobe crease. In the light of an enigma concerning the identity of a sitter depicted by the Flemish painter Jan van Eyck, we propose to flesh out this medical-artistic corpus by examining Frank's sign presence and its potential association with pathological outcomes. In addition to the many benefits of iconodiagnosis [16] outlined in recent guidelines, it can also be added that iconodiagnosis can shed light on an artistic riddle, when the identity of a sitter is unknown or disputed.

van Eyck constitutes a milestone in the history of western art. His ''photographic'' quest for realism offers valuable iconodiagnostic perspectives, such as polymyalgia rheumatica with temporal arteritis [17]. We describe the novel

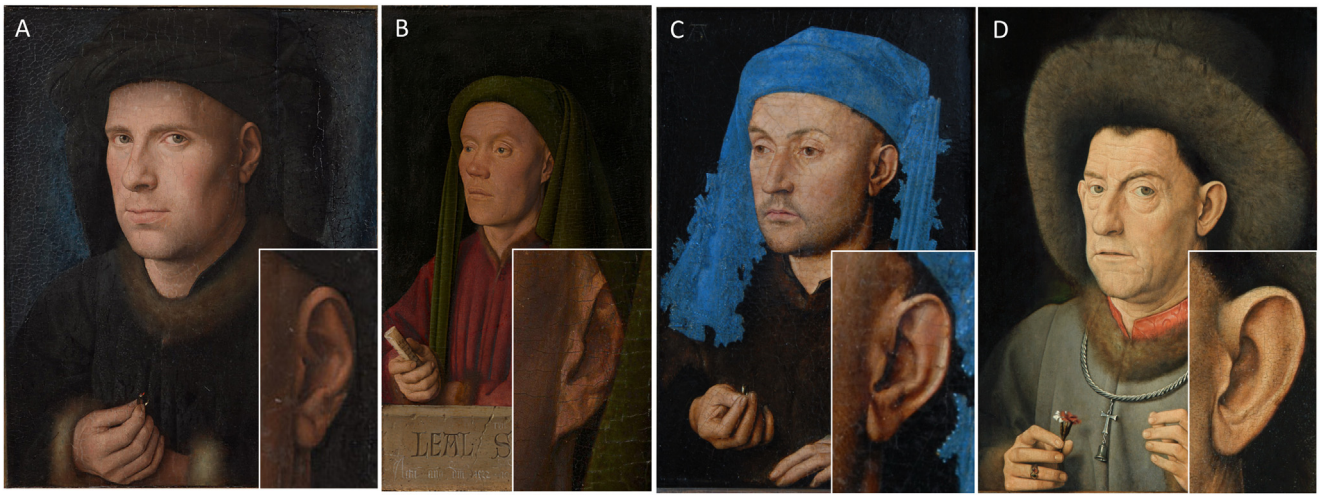



**Figure 2.** A. Jan van Eyck. *Jan of Leeuw*. c. 1436. Oak wood. 33 × 27.5 cm. Kunsthistorisches Museum, Vienna. ©KHM-Museumsverband. B. Jan van Eyck. c. 1432. Oil on oak. 33.3 × 18.9 cm. The National Gallery, London. ©The National Gallery. C. Jan van Eyck. *Man in a Blue Cap*. 19.1 × 13.2 cm. ©Muzeul National Brukenthal, Sibiu. D. Jan van Eyck (probably a reworked copy after a lost work). C 1510—1520. ©Gemäldegalerie SMB-SPK. Photo: Christoph Schmidt.

application of a medical-artistic hypothesis to a bust-length portrait of a man (Fig. 1A). At least two figures may have served as models: Niccolò Albergati and Henry Beaufort, both cardinals who played a diplomatic and political role during the Hundred Years' War [18,19].

The first written record of the portrait appeared in 17th century. Peter Stevens (an Antwerp art collector) affirmed that he possessed ''a fine portrait by Jan van Eyck dated 1438 and representing the Cardinal of the Holy Cross, who at the time was sent to Bruges to make peace between Duke Philip and the Dauphin of France'' [18]. In 1438, this post was held by Albergati, Bishop of Bologna, promoted to the cardinalate by Pope Eugene IV. The Pope further exploited Albergati's diplomatic talents by making him an ambassador to Philip the Good (Duke of Burgundy) and King Charles VII of France. Albergati sojourned in Flanders (Bruges, Ghent) on at least two occasions, where he could have met van Eyck (himself in the service of Philip the Good) [18]. However, Stevens' affirmation has been called into doubt by differences between the portrait by van Eyck and other likely portraits of Albergati. Furthermore, van Eyck's painting does not depict the tonsure and cape (*mozzetta*) that would have suited the dignified status of a cardinal described by chroniclers as conforming strictly to clerical rules [18]. An alternative hypothesis has been put forward: a man of the church, of the same age, namely Beaufort, rich Cardinal-Bishop of Winchester, powerful chancellor, who may also have met van Eyck [18]. The clothing of the person in the portrait is, moreover, similar to clothing worn by Beaufort during a procession [19].

The left ear (the only one visible) presents a marked skin crease that starts at the tragus and extends diagonally (at an angle of around 45°) across two thirds of the lateral aspect of the earlobe: this resembles Frank's sign (Fig. 1A). It can be seen in the sketch, albeit less prominently (Fig. 1B). One can also note the presence of arcus senilis, dermatochalasis, and myosis. The lateral third of the left eyebrow appears to be somewhat depilated, which is suggestive of the sign of Hertoghe, associated to hypothyroidism, which in turn may lead to atherosclerosis. The troublingly high similarity in proportions between the smaller sketch and the portrait suggests that an optical or mechanical device was used [12]. Is the earlobe crease's accentuation in the painting a stylistic trait or a true sign remembered by van Eyck — a painter whose extremely faithful reproduction of anatomic features profoundly changed the art of portrait painting? X-rays reveal that it was not subsequently retouched; only the corners have had additional layers of paint dated to the 18th century, suggesting that the original frame, which could have provided an indication of the identity of the model, has disappeared [20]. Besides, the portrait's *mise en abyme* by David Teniers the Younger and Frans Francken the Younger (not shown) is too small to corroborate the presence or absence of Frank's sign.

As for pathographic data, two biographies, in 17th [21] and 18th centuries [22], devoted a chapter to the circumstances leading to Albergati's death. In March 1443, the cardinal had started out from Florence but was obliged to stop in Siena by a ''fever [that was] more intense than usual'' (''*fiera piu del folito*'' or ''*febbre gagliarda*'', according to the chroniclers) and intense ''calculus pain'' (''*doglia di calcolo*'' or ''*dolor di pietra*'') ''that tormented him terribly and made him cry out unceasingly'' (''*che terribilmente lo cruciaua, coltringendo [...] a mandar continue grida*''). Extremely fatigued (''*abbatimento eftremo*''), the cardinal refused various remedies and food, including meat (so as not to breach his religious rules) and even sheep's blood (''*fangue di montone*'') delivered by the Medicis. The cardinal died a few months later (May 1443), at the age of 68. Did his episodes of fever correspond to the onset of malaria raging across Italy since Antiquity? The terms ''*dolor di pietra/calcolo*'' suggest the presence of possibly recurrent kidney stones having led to renal colic. Maybe weakened by his travels, malnourished and refusing medication, might the cardinal have died from an infectious complication like pyelonephritis? The pathography does not rule out underlying atherosclerotic disease that could have been predicted by Frank's sign. As for Beaufort, we did not find relevant patho-

graphic data [23]. He died in 1447, at about 72 years of age. Two statues have been reported as probably having been made during his lifetime: one eroded and greatly damaged; the other, a bust, in better condition, from the ruins of Waltham Palace [19]. Finding this bust and detecting a potential Frank's sign could be interesting.

Although these cases do not fully address the enigma of who van Eyck's subject really was, they add to the body of work on art featuring Frank's sign. Finally, we incidentally noted its presence in other bust-length portraits by van Eyck. An earlobe crease, at variable length and depth was observed in young — such as the goldsmith Jean de Leeuw here depicted at the age of 35 (Fig. 2A) —, middle-aged, and older men (Fig. 2). We postulate that the sign's prominence in the painting entitled *Leal Souvenir* (i.e. ''faithful memory''; Fig. 2B) and its non-systemic presence in van Eyck's legacy tend to rule out a technical ruse. To the best of our knowledge, these artworks could be the earliest known paintings depicting Frank's Sign, and may contribute to provide a rough idea of its prevalence in Western Europe, 15th century.

## Human and animal rights

The authors declare that the work described has not involved experimentation on humans or animals.

## Informed consent and patient details

The authors declare that the work described does not involve patients or volunteers.

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## Author contributions

All authors attest that they meet the current International Committee of Medical Journal Editors (ICMJE) criteria for Authorship.

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## Disclosure of interest

The authors declare that they have no competing interest.

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