

# A possible case of Crouzon syndrome in a female figurine from Bracara Augusta from the 2<sup>nd</sup> century CE

## Um possível caso de síndrome de Crouzon numa estatueta feminina de Bracara Augusta do século II EC



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**Abstract** Artworks are not just objects of beauty but also historical documents that can reveal diseases unknown to ancient physicians, such as congenital disorders. A bronze female figurine from the 2nd century CE, unearthed during excavations in the Roman city of Bracara Augusta, currently the city of Braga, presents intriguing facial features, strongly indicating an underlying medical condition. The abnormal facial traits point to craniofacial dysostosis and, more precisely, Crouzon syndrome. The portrayed figure wears the walled crown of the city's patron goddesses, Tyche/Fortuna, the earlier Greek goddess of Fate (or Chance),

**Resumo** As obras de arte não são apenas objetos de beleza, mas também documentos históricos que podem revelar doenças desconhecidas pelos médicos antigos, tais como malformações congénitas. Uma estatueta feminina de bronze do século II EC, descoberta durante escavações na cidade romana de Bracara Augusta, atualmente a cidade de Braga, apresenta características faciais intrigantes, indicando fortemente a existência de uma patologia subjacente. Os traços faciais anormais apontam para disostose craniofacial, mais precisamente, síndrome de Crouzon. A figura retratada usa a coroa das deusas padroeiras da cidade, Tyche/For-

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the patron goddess of Greek and Roman cities. The attribute of the tutelary goddesses is the cornucopia of abundance, symbolizing fertility, wealth and well-being. However, instead of this attribute, the young lady carries a serpent entwined on a rod under her right arm, an attribute related to the cult of health deities like Asclepius (the Roman Aesculapius) and the Latin goddess Fortuna. This essay will discuss the features of this figurine, relating her possible medical condition with the symbology of the walled crown and entwined serpent and her social-cultural and religious status.

**Keywords:** Icono-diagnosis; palaeopathology; craniofacial dysostosis; Crouzon syndrome; Graeco-Roman medicine; Bracara Augusta.

## Introduction

Although disease and ugliness have always fascinated the human mind, the representation of diseased or disabled bodies in ancient art has surprisingly aroused little interest in scholarly studies. However, these unique artworks have survived (Grmek and Gourevitch, 1998). Their value is immeasurable from a medical perspective, as they allow for a retrospective diagnosis.

One of these artworks is an intriguing bronze figurine of a young lady from Bracara Augusta, the capital of Roman Callaecia, currently the city of Braga in the north of Portugal. Her facial asymmetry, exophthalmos, and exotropia are

tuna, a antiga deusa grega do Destino (ou Sorte) e padroeira das cidades gregas e romanas. O atributo das deusas tutelares é a cornucópia da abundância, simbolizando fertilidade, riqueza e bem-estar. No entanto, em vez desse atributo, a jovem segura, sob o seu braço direito, uma serpente enrolada numa haste, que é um símbolo relacionado ao culto de divindades da saúde como Asclépio (o Esculápio romano) e a deusa latina Fortuna. Neste artigo, abordaremos as características desta estatueta, relacionando o seu possível problema de saúde com a simbologia da coroa mural e da serpente enrolada e o seu estatuto sociocultural e religioso.

**Palavras-chave:** Iconodiagnóstico; paleopatologia; disostose craniofacial; síndrome de Crouzon; medicina greco-romana; Bracara Augusta.

striking and offer a unique insight into the knowledge of a condition unknown to ancient physicians, revealed through artwork. This essay will discuss the possible underlying medical condition. For the interpretation of the underlying pathology, we resorted to the retrospective icono-diagnosis method, defined as a “pattern detection based on the known facts of the pathophysiology of body function” by the neurologist Anneliese Pontius (Pontius, 1983: 107-120).

Furthermore, as she wears a mural crown, pointing to her as the city patron, a figure of great importance and influence, we will discuss the compatibility of her intriguing appearance with city patrons, tutelary goddesses of abundance

and well-being, depicted as healthy and beautiful.

A further detail is a snake entwined on a rod she carries under her left arm, which hints at the possibility that she has been a priest of health deities like the Asclepius (the Roman Aesculapius), Hygea, his daughter or the Roman goddess Fortuna.

### The bronze figurine from Bracara Augusta

A small bronze bust of a young lady was recovered from no specific context at the top of the Cividade Hill, a significant site in the archaeological context of Bracara Augusta (Figures 1A and 1B). The dating was estimated by comparing it with other pieces from the 2<sup>nd</sup> century CE by the archaeologist Rui Morais, who gave the following description for the bust in our English version from the Portuguese:

“The head is crowned by a diadem of seven stylized towers delimited by a zigzag groove that could correspond to the number of gates in the Roman city. The oval face is slightly tilted to the right and downwards. The facial expression is accentuated by the size of her large and prominent eyes. Dots mark the iris, eyelids and eyebrows. The lips (barely noticeable) are half-open, displaying two tiny incised points above and below. The hair is divided into symmetrical waves, hiding the ears and collected at the top of the head. Two wavy locks emerge from the back of her head, descending over the shoulders. Despite the state of fragmen-

tation of the bronze, part of a tunic with short sleeves can be seen, leaving the shoulders bare. The left sleeve presents a series of grooves arranged in a spine. She holds an attribute corresponding to a ritual symbol, possibly a religious or cultural emblem, between her left arm and her body [thorax]” (Morais, 2010: 8).

The young lady presents brachycephaly and mid-facial hypoplasia, as seen in the profile photo, with frontal bossing and hypertelorism, best seen in the profile photos (Figures 1C and 1D). Her eyes are bulging, clearly showing exophthalmos and external strabismus of the left eye. Her face abnormalities include left deviation of the nasal sept, mandibular asymmetry, lip deviation to the right and relatively protruding chin. These traits point to a complex case of craniosynostosis.

### Crouzon syndrome and the figurine from Bracara Augusta

Crouzon syndrome is a rare disease (on this subject, see <https://rarediseases.org/rare-diseases/crouzon-syndrome/>), first described as a triad of skull deformities, facial anomalies, and proptosis by French neurologist Octave Crouzon (1874–1938), who illustrated the condition with photos of four patients (Crouzon, 1912: 546, 547, 552, 553) (Figure 2).

It is inherited in an autosomal dominant pattern, caused by a mutation in the fibroblast growth factor receptor



**Figure 1A.** Female figurine. Front photo. Max height 70mm Max Width 49 mm. 2<sup>nd</sup> century CE. Inv. Nr. 1991.2666. **Figure 1B.** Back photo. **Figure 1C.** Female figurine. Left profile. **Figure 1D.** Right profile. Credit: Archaeological Museum D. Diogo de Sousa. ©MADDs/Manuel Santos.

(FGFR)-2 and -3 on chromosome 10. It is a rare disease, estimated to occur in only 1 in 60,000 newborns, characterized by premature closure of the coronal sutures, mid-facial hypoplasia, proptosis secondary to shallow orbits, mild hypertelorism, a beak-shaped nose, and a small jaw. In severe cases, a clover-leaf skull might show. Brachycephaly (widened and shortened) is the most common presentation due to bi-coronal suture fusion (Conrady and Patel, 2024).

The skeletal alterations of Crouzon syndrome are almost exclusively limited to the skull bones (Aufderheide and Rodríguez-Martín, 2011). The skull shape can present other abnormalities, depending on the order of the premature closure of cranial sutures. When craniosynostosis of the sagittal sutures occurs, the skull becomes narrow and long, scaphocephalic (boat-shaped), presenting dolichocephaly. The other sutures, namely the lambdoid, might also be prematurely fused. Optic atrophy and deafness are common complications (Baraitser and Winter, 1996).

Diagnosing Crouzon syndrome in our time is a complex process that begins at birth, with identifying characteristic facial features and a positive family history. The patients may also suffer from cleft lip and palate, hearing loss, and dental problems. The incidence of strabismus is exceptionally high. Managing these patients is a complex and intricate process requiring the expertise of paediatricians, oral maxillary surgeons, plastic surgeons, neurosurgeons, otolaryngologists, ophthalmologists, and other specialists. This multidisciplinary approach is crucial in preventing blindness and intellectual disability due to brain restriction and orbit development (Ciurea and Toader, 2009).

After surveying the characteristics of the Crouzon syndrome, we can conclude that the figurine's abnormal cranial and facial traits from Bracara Augusta match the condition's diagnostic criteria.

## Records of Crouzon syndrome

As a rare disease, undiagnosed in their time, just a few cases of craniosynostosis



**Figure 2.** Photos of patients with Crouzon Syndrom (*in Crouzon, 1912: 546,547,552, 553*).

and Crouzon syndrome have been identified in the past. Grmek and Gourevitch, in their meticulous and comprehensive study of diseases in ancient art (Grmek and Gourevitch, 1998), just cited Pontius on figurines from Cook Island's prehistoric art (Pontius, 1983). Within the scope of this study, we searched mainly sources from the Graeco-Roman Antiquity.

The condition was notably observed in the dolichocephaly of the Egyptian Pharaoh Tutankhamun (reigned c. 1332-1323 BCE) and his father Amenhotep IV (reigned 1353-1336 BCE) (Ciurea and Toader, 2009).

The Greek philosopher, writer, and biographer Plutarch (c. 45-120 CE) described the unusual form of the head of Pericles (495-429 BCE), the Greek politician of the Athens Golden Age, who was usually portrayed wearing a helmet to hide his head malformed due to possible craniosynostosis:

"His personal appearance was unimpeachable, except that his head was rather long and out of due proportion. For this reason, the images of him, almost, almost all of them, wear helmets because the artist, as it would seem, were not willing to reproach him with the deformity. The comic poets of Attica used to call him "*Synocephalus*" or *Squill head* (The squill is sometimes called "*schinus*")." (Plutarch, 1916: 9).

Plutarch's statement is a testament that highlights how the Greek artists faithfully depicted the model, in this case, by

resorting to a helmet to hide a deformity.

This case is the only source hinting at the condition that we encountered in Graeco-Roman times.

A few cases have been reported in Mesoamerica's pre-Columbian art in the cultures of Tumaco-La-Tolita (Tribin, 2007).

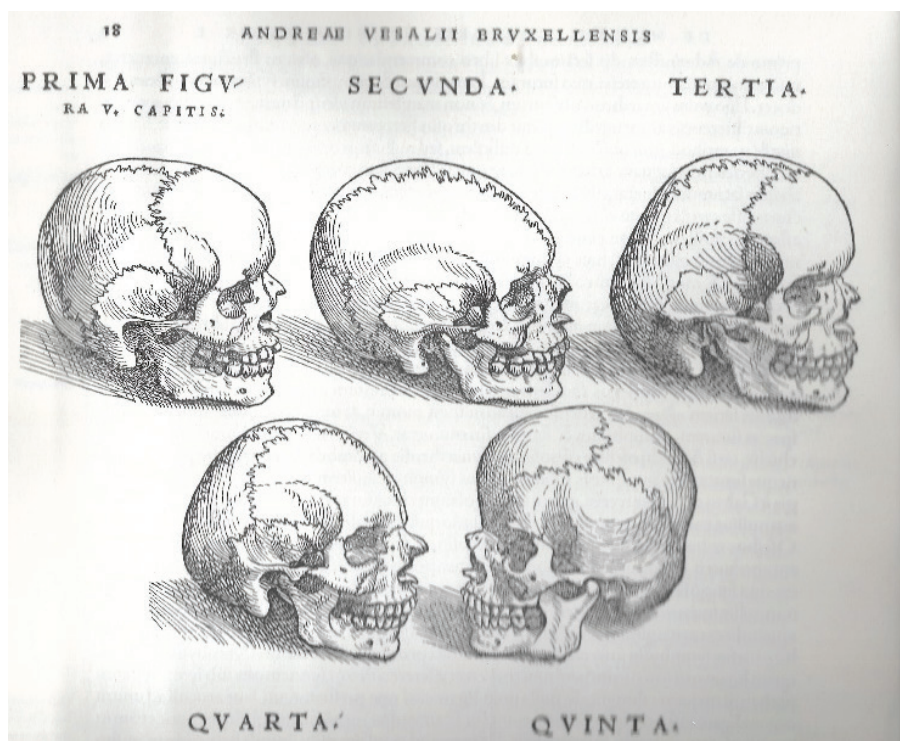
The Catalan paleopathologist Domènec Campillo has described a rare and unique case of a medieval child from San Miquel de Cardona in Catalonia, Spain (Campillo, 1993).

In the sixteenth century, Andrea Vesalius (1541-1564), in his pioneer work on Anatomy, reproduced drawings of fascinating skulls without cranial sutures, one of the variants of Crouzon syndrome (Vesalius, 1543: 18) (Figure 3) (Roberts and Manchester, 2010).

## Tyche

Tyche, the Greek goddess of Fate Chance, was first mentioned by Hesiod (flourished c. 700 BCE) as a nymph of flowing water born from the Ocean and Tethys, symbolizing fertility (Hesiod, 1973). The primitive meaning of Tyche concerning happiness, prosperity and wealth derived from agriculture and maritime trade, was expressed in monuments, statues, terracotta figurines and reliefs in which the goddess figures holding the cornucopia of abundance and, frequently, a rudder. Tyche's cult expanded during Alexander the Great's reign (336-323 BCE) (Allègre, 1889). In this period, the Greeks started personifying the cities in female figures wearing





**Figure 3.** Five skulls (*in Vesalius, 1543: 18*).

the city's walled crowns and symbols of happiness, fertility and abundance.

Eutychides, of Sicyon in Corinthia (a Greek sculptor of the early 3<sup>rd</sup> century BCE and a pupil of Lysippus, one of the great Greek sculptors from the 4<sup>th</sup> century BCE, together with Scopas and Praxiteles), erected a bronze and gilt statue of Tyche as the patron goddess of the city of Antioch in Asia Minor (Allègre, 1889). The statue depicts a young goddess wearing a mural crown, sitting on a rock and holding a bunch of corn ears in her right hand. At her feet lies a young, beardless god personifying the Orontes

River (Allègre, 1889) (Figure 4). This statue had a significant expression in Asia Minor and influenced the concept of Tyche/Fortuna in imperial Roman times. The goddess cult flourished between the 1<sup>st</sup> and 2<sup>nd</sup> centuries CE (Arya, 2002).

A later statute, "The Personification of a City", testifies how Tyche's cult prevailed until the early Byzantine world:

"Tyche, the personification of chance or fortune, was also understood as the protector of cities. Linked to civic pride and well-being, she appeared in a range of media, including coins, stone reliefs, glass bot-

tles, and stone and copper-alloy sculptures. Here, Tyche sits on a low throne. Wearing a mural crown, chiton, and peplos, she holds a cornucopia in her left hand. She extends her right hand, which held a now-missing attribute, possibly a staff. It is difficult to identify which city is represented by the statuette, but regardless, the sculpture is representative of the small-scale Tyche images found throughout the late Roman and early Byzantine worlds."

(Statuette of the Personification of a City - Figure 5)  
<https://www.metmuseum.org/art/collection/search/468202>



**Figure 4.** The Tyche (Fortune) of Antioch. Roman copy after an original bronze by Eutychides. 3<sup>rd</sup> century BCE. Vatican Museums. Public domain (Wikipedia).

The young lady's head is surmounted by a turreted crown, like those worn by Tyche. Consequently, the figure could have been the tutelary goddess of Bracara Augusta. A second crown with five towers, possibly belonging to another figure, was also unearthed (Morais, 2010). However, her abnormal facial traits do not fit the stereotyped image of a healthy and beautiful city patron. Abnormal traits such as facial asymmetry, exophthalmos and exotropia are clear pathologic signs. A brain tumour or a congenital malformation stood out as possible explanations in a previous presentation of this



**Figure 5.** Statuette of the Personification of a City. Copper alloy. Culture: Late Roman or Byzantine (300-500 CE). Dimensions: 25.5 x14.4x10.3 cm. Accession Number: 47.100.40 Metropolitan Museum of Art, New York.



figurine (Barroso, 2022). Also, surprisingly, her facial expression does not convey happiness, a natural attribute of tutelary deities. Although she wears magnificent clothes and is depicted in a hieratic pose adequate to a relevant social or religious position, her face is unattractive. She is misshapen and looks sad.

The Greeks highly valued beauty. As Garland noted, it was an unenviable fate to be handicapped in a society that placed such heavy emphasis on physical perfection. This societal norm is reflected in the representation of Greek and Roman gods, usually reproduced at the height of their imperishable beauty (Garland, 2010).

The accurately reproduction of cranial and facial abnormalities could not go unnoticed in Roman times. When pathological signs are suspected, it is crucial to consider the artist's technical capacity to reproduce the model faithfully. In this case, the work of art is not rudimentary, crude, or imprecise. The unknown author of the figurine from Bracara Augusta demonstrated remarkable skill in accurately depicting the underlying medical condition and the attributes of her social role, whatever it could be, showcasing a commendable level of technical mastery and precision.

The object under the left arm, a serpent entwined around a rod, a significant attribute of the Greek goddess Hygeia may provide another view. Since the serpent was not Tyche's classical attribute, its presence led to the conclusion that the figurine represented the Roman god-

dess *Salus*. This interpretation was further supported by a significant discovery – a pedestal with an inscription dedicated to the goddess. In the Graeco-Roman world, *Salus* symbolized care for physical health, well-being in the afterlife, and community safeguarding. The personification of Bracara Augusta conveys the imperial ideology of peace and happiness in the Empire (*Felicitas imperii*) (Redentor, 2011).

However, the association of the patron goddess with the cult of Asclepius also appeared on a coin from the Greek city of Messene in the Peloponnese. This coin, depicting the god Asclepius and his attributes on one side and a bust of a woman with a turreted crown on the other, likely represents the tutelary goddess of Messene (Allègre, 1889). Therefore, the association of Bracara Augusta's young lady and the cult of Asclepius was also plausible.

A votive shrine wall of granite, dedicated to Asclepius and Hygeia by Marcus, from the 2<sup>nd</sup>/3<sup>rd</sup> century, hints at the presence of the original Greek cult or the presence of followers of the Aesculapius cult in Rome settled by freedmen who moved to Bracara Augusta, by employing the Greek name of Asclepius (instead of the Roman Aesculapius), (on this subject, see Vasconcellos, 1913). The figurine could be related to this cult (Figure 6).

### Additional remarks

The quest to find a disabled lady to embody the tutelary goddess of Bracara



**Figure 6.** Votive shrine wall of granite dedicated to Asclepius and Hygea by Marcus. H. 780 mm Max width 380 mm. 2<sup>nd</sup>/3<sup>rd</sup> century CE. Inv. Nr. 1992.0686. Credit: Archaeological Museum D. Diogo de Sousa. ©MADDS/Manuel Santos.

Augusta is a complex challenge that may find resolution when viewed in the context of the cult of Asclepius. This connection is not just significant as it illuminates the religious beliefs and practices of the ancient Bracara Augusta population. She could have been a priestess if we remember the Ibero-Celtic origin of the Bracara Augusta population. The young lady could be linked to remnants of indigenous rites. In primitive shamanic medicine, deformities were seen as divine marks, often leading to the se-

lection of disabled individuals as priests (González, 1998). To date, no parallel has been discovered.

Frequently, ancient iconography tells us about the people's reactions to abnormal phenomena, as stated by Joseph Warkany:

"The ancient history of teratology does not teach us much about the origin, prevention, or treatment of congenital malformations; but it tells us a great deal about the human mind and its reactions to unexplained phenomena." (Warkany, 1977: 4-17).

This statement does not apply to the bronze figurine from Bracara Augusta. However, it is precious to the history of Teratology, a term coined by the French zoologist Isidore Geoffroy Saint Hilaire (1805-1861) that figures as a subtitle of his work *Traité de Tératologie* (from the Greek *terat*, *téras* (sign sent by the gods) and *logos* (speech, discourse) (Saint-Hilaire, 1832).

## Conclusion

Although craniosynostoses and Crouzon syndrome are rare, the fact that they appear reproduced in artworks or that their description is found in ancient literature expresses the high impact on those who observed the condition. Reports from Graeco-Roman times, as Plutarch's allusion, are a rarity. In the Graeco-Roman iconography, the figurine from Bracara Augusta is the first to be hypoth-

aised as possibly suffering from that condition to the best of our knowledge.

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