

A Reappraisal of Intentional Cranial Modification Among the Indigenous Inhabitants of Suriname in Prehistoric and Historic Times

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Abstract

Identity can be expressed directly through the human body in a multitude of ways: ranging from temporary changes to clothing and hair style to more permanent alterations such as piercings, tattoos or scarification. This paper will discuss the connection between identity and intentional cranial modification (ICM) – the practice of deliberately altering the human head shape – among the Amerindian societies of Suriname. This permanent bodily alteration is clearly visible and therefore a useful marker of identity.

The Geijskes collection of skeletal material from Suriname, currently stored at the Faculty of Archaeology of Leiden University, has been reanalysed. This material has been collected during various excavations in Suriname in the 1950's and 1960's. Skeletal material representing at least 42 individuals from the prehistoric Amerindian sites of Kwatta Tingiholo, Herttenrits, Okrodam, Saramacca, and Waterkant/de Mirandastraat is present. This paper will present the results of this reanalysis and discuss the potential element(s) of identity being expressed through the altered head shapes within these populations. This data on head shaping will be contextualized using archaeological and ethnohistorical data from research on prehistoric societies in Suriname and the adjoining coastal areas of South America as well as the Caribbean archipelago.

Introduction

Throughout history, humankind has been intrigued by the potential to transform the human body and express meaning through altered appearances. Intentional cranial modification – also known as head shaping – is a striking example of such bodily alterations. The custom has been practiced in numerous societies across the globe from prehistory

until the current day and is one of the few modifications of the human body which can be recognized directly in skeletal material. This longevity makes intentional cranial modification ideally suited to the study of identity in prehistoric societies (Blom 2005; Knudson and Stowjanowski 2009; Torres-Rouff 2003). Furthermore, head shaping is durable in a social sense as well. The practice is passed on through generations and represents permanent and lasting identities within a society (Tiesler 2010).

This article will discuss the practice of head shaping among the Amerindian communities of Suriname. A (re)analysis of the Geijskes Collection of skeletal material from several prehistoric Surinamese Amerindian sites is presented. This collection, currently stored at Leiden University in the Netherlands, provides an excellent opportunity to study intentional cranial modification in a coastal area of the South American continent with connections to both the societies of the Caribbean archipelago and the South American hinterlands. Furthermore, a review of colonial sources describing altered head shapes in the region will provide information on the practice from initial European contact in the 16th century¹ until the beginning of the modern era.

Shaping Identity

The infant skull is inherently flexible for the first years of life as a result of the open cranial sutures and fontalles. These characteristics allow for the necessary growth of the human skull, which increases in size significantly between birth and adulthood (Bronfin 2001; Morriss-Kay and Wilkie 2005; Ridgway and Weiner 2004). Prolonged external pressure on the head can redirect the standard pattern of growth to create a different skull shape. In the case of intentional cranial modification, this external force is created deliberately by human agents during the first months of life (Littlefield *et al.* 2005; Moss 1958). The location of pressure is key in determining the resulting shape of the skull, whereas the duration of applied force determines the degree of modification which

¹ One of the earliest depictions of Suriname on a European map dates to 1529. Several expeditions reached the coast of South America during the sixteenth century, some of which established (temporary) trade posts in the region. The first true attempts at European colonization of the region were made during the first half of the 17th century (Buddingh 2012).

can range from very mild alterations to more marked changes in cranial morphology (Littlefield *et al.* 2005; Oetteking 1930:16). Once skull growth has been redirected during the first six to twelve months of life, the resulting skull shape has become a permanent and unalterable feature of an individual (Littlefield *et al.* 2005; Tiesler 2010; Tubbs *et al.* 2006).

The high degree of visibility of the altered head shape during the life of an individual facilitates the transmission of meaning. Anthropological and archaeological studies of head shaping from a cross-cultural context suggest that head shape is most often used to express an element of personal or group identity (Blom 2005; Dingwall 1931; Gerszten and Gerszten 1995; Tiesler 2010; Torres-Rouff 2003; van Duijvenbode 2010). The flexible and dynamic nature of identity in recent anthropological and sociological paradigms is at odds with the unchangeable nature of intentional cranial modification (Diaz-Andreu and Lucy 2005; Verkuyten 2005). This permanence therefore diminishes the potential identities expressed through altered head shapes: these identities must equally be permanent and (at least partially) present at birth. This particular type of identity is referred to as 'ascribed' in most anthropological theory and is often connected to kinship ties (Babić 2005; Emberling 1997). Examples of kinship based identities expressed through head shaping include a range of group identities - such as family relations, lineage or ethnicity - or hereditary personal positions. Furthermore, intentional cranial modification can also be related to a differentiation between the sexes or genders, religious or mythological motivations, and aesthetic notions within society (Dingwall 1931; Gerszten and Gerszten 1995; Hoshower *et al.* 1995; Littlefield *et al.* 2005; Torres-Rouff 2003).

Head Shaping among the Amerindian populations of Suriname

The earliest archaeological observation of intentional cranial modification in Suriname comes from the work of Ten Kate (1887 in Tacoma 1963). Ten Kate excavated a number of graves in the Coronie region of Suriname and recovered two crania which, according to him, displayed marked cranial modification. Unfortunately, no images or detailed descriptions of these skulls appear to have been

published and the current location of the material is unknown. Furthermore, Ten Kate notes that a sloping or receding forehead is a natural variation in regional Amerindian cranial morphology. Tacoma has suggested that this feature might in fact be produced by mild forms of intentional cranial modification which are difficult to recognize in the archaeological record (Tacoma 1963:21).

Intentional cranial modification is also reported in the skeletal remains recovered from several Arauquinoid sites in the coastal region of Suriname. The Arauquinoid pottery tradition originates in Venezuela and can be found in Suriname from AD 700 onwards. This ceramic tradition is made up of several related styles: (Early and Late) Hertenrits, Kwatta, Barbakoeba and Thémire (Versteeg 2008:316). Intentional cranial modification was observed in skeletal material from the Hertenrits and Wageningen-I sites, both of which are associated with the Hertenrits material culture (Maat 1985; Tacoma 1963; Versteeg 1985). Tacoma (1963, 1991a) also describes altered head shapes in the crania from Kwatta Tingiholo, the type site for the Kwatta ceramic style. Furthermore, two later campaigns at the site have yielded more skeletal material also demonstrating the practice of intentional cranial modification (Khudabux 1991a,b). A part of the Kwatta Tingiholo skeletal material has been reanalysed for the current study and an extended description of head shaping at this site can be found below.

One of the earliest historic descriptions of the practice of head shaping among the indigenous inhabitants of Suriname is provided by John Gabriel Stedman. In his *Narrative of a Five Years Expedition against the Revolted Negroes of Surinam*, Stedman encounters a group of Amerindians during a trip to Paramaribo in January of 1775 (Stedman 2010[1790]). He provides the following brief description:

“Most of these People esteeming a *flat-forehead* a Mark of beauty, they Compress the Heads of their Children / it is sayd/ immediately after birth like the Choctaws of N. America” (Stedman 2010[1790]:314).

Unfortunately, however, Stedman's account does not provide a detailed description of the skull shape nor of the way in which it is created. Despite this, the

recognition of altered head shapes is of great interest since it demonstrates the custom lasted for a significant period of time after initial European contact.

A wealth of anthropological descriptions regarding the indigenous populations of South America has been produced in the late 19th and early 20th century. Although none of these studies specifically focused on the practice of intentional cranial modification, its presence or absence is commented upon in most works. Unfortunately, however, some discrepancies exist between the different anthropological descriptions.

Gillin discusses head shaping in his description of the communities of the Guyanas in his article for the *Handbook of South American Indians*:

“Permanent ornamentation by deformation of the head is mentioned occasionally among the Cayenne and Suriname coastal Carib, Tarumá, and Maopityan, although the evidence is not clear that the deformation was intentional. Frontal deformation occurs on the coast, and fronto-occipital and side-to-side in the interior” (Gillin 1948:834).

Although Gillin questions whether the modification was intentional, the head shapes he mentions are almost exclusively related to intentional modification practices. His observations are somewhat problematic however, since Farabee states clearly that he did not observe any indications of cranial modification – intentional or otherwise – among the Tarumas during his Amazon expedition between 1913 and 1916 (Farabee 1918:435). Furthermore, the same campaign also visited the Carib and Arawak communities in Northern Brazil and Southern British Guyana and reported no cases of cranial modification. Gillin’s statement is supported however, by Roth’s 1924 study of Guyana Indians in which he describes fronto-occipital modification created by boards being practiced by the Fapouyranas of Cayenne, whereas the Maopityan create a narrow and high shape of the skull by compressing the head between two laterally placed boards (Roth 1924).

These contradictory ethnographical descriptions can be accounted for in several ways. The most likely explanation is that the practice was continued among certain communities yet discontinued in others, thus

leading to discrepancies in the observations recorded in the historic sources and ethnographic descriptions. This diversity could be related to a differential change in the values of indigenous identities during the colonial period, with some communities clinging to or actually emphasizing pre-Columbian elements of identity while others might have rejected the practice due to European pressure. The European view of intentional cranial modification was generally very negative, even resulting in the outlawing of the practice among Amerindian communities of the South American mainland as early as the second half of the 16th century (Dingwall 1931:215). Clearly, the level and nature of contact with Europeans plays an important role in the abandonment of cranial modification and can be used to explain the contradictory evidence from ethnography. A similar situation of differential decline in altered cranial shapes due to variation in Spanish pressure was demonstrated by Tiesler and Zabala Aguirre (2011) among the colonial period Maya populations.

The disparity between different sources might also be the result of an abandonment of the practice in the late nineteenth or early twentieth century. This scenario would result in a situation where altered head shapes are solely observed among adults born before the disappearance of the practice². The statement by Ten Kate in 1887 (in Tacoma 1963) that the practice had been abandoned long before his visit, compared to Stedman’s observation of head shaping less than a century before suggest a rapid decline could indeed have played a part among some of the communities in question.

Methodology

The current reanalysis of the skeletal material in the Geijskes collection is focused on the study of intentional cranial modification. To avoid confusion and maintain the compatibility with earlier research, the author has chosen to use the sex and age data produced by Tacoma’s earlier research (Tacoma 1963,

² A similar situation has been observed among the Shipibo of the Amazon region. Here, anthropologists found altered head shapes solely in adults aged 40 or over. The abrupt termination of the practice was caused by the Peruvian government which outlawed head shaping considering it a sign of mental retardation. This sentiment was adopted by the Shipibo, who therefore refused to discuss the practice with the anthropologists (Tommaso and Drusini 1984).

1991b). The determination of age at death was based on the assessment of ectocranial suture closure and dental attrition (Tacoma 1963:67, 1991b:50). The sex of an individual was determined by studying features and landmarks of the skull, overall pelvic shape and pelvic features, and the general robusticity of the skull and postcranial skeleton (Tacoma 1963:65-67, 1991b:50).

The analysis of cranial shape starts with a visual examination of each cranium. Only those crania where a significant portion of the cranial vault was preserved were included in the sample, since too fragmentary remains lead to unreliable results. The visual inspection includes an assessment of the overall cranial shape and lateral cranial vault contour. Special attention is paid to any flattened planes or depressions, which could be attributed to the use of boards or bandages. Other characteristics which can point to the presence of intentional cranial modification are cranial vault asymmetries, an increase or decrease in the width of the cranial vault, a shortening or elongation in the length of the cranial vault and bulging around the parietal region (Cheverud *et al.* 1992; Dembo and Imbelloni 1938; Kohn *et al.* 1993; Neumann 1942; Tiesler 2010). In certain cases, skulls deviate only mildly from the normal shapes or present only some of the features mentioned above. These skulls were classified as ambiguous. In addition to the visual classification, a standard set of cranial measurements is taken on each skull, condition permitting (Buikstra and Ubelaker 1994:74-77). Non-metric traits are also recorded, again based on the standards of Buikstra and Ubelaker (1994) with some additions from Hauser and De Stefano (1989).

The skull shape is described using a classification system based on Hrdlicka (1920). The three main categories of intentional cranial modification are fronto-occipital, circumferential and occipital modification. In addition to these three main categories from the original classification, the angle of occipital flattening can be indicated using the terms vertical and parallel³. Fronto-occipital modification is created by applying pressure to the front and back of

the skull, creating a broadening and shortening of the cranial vault. Circumferential modification, on the other hand, is created by wrapping the head in tight bandages or textiles, creating an elongated but narrow skull shape (Dembo and Imbelloni 1938; Hrdlicka 1920).

In addition to these intentional types of cranial modification, unintentional external forces on the skull in utero, during child birth, and throughout early infancy can also cause an altered skull shape. This can create so-called deformational or positional plagiocephaly of the skull, a condition with reported frequencies among modern neonates of up to 48% (Ridgway and Reiner 2004:367; Robinson and Proctor 2009:284). The resulting skull shape is dependent on the exact location and duration of pressure, but tends to be asymmetric (Ridgway and Reiner 2004; Rogers 2011). Although it is very difficult to distinguish between intentional and unintentional cranial modification in the archaeological record, the asymmetry and archaeological context (i.e. the presence or absence of intentional forms of modification or knowledge about child rearing practices) can be of assistance. Deformational plagiocephaly should be kept in mind whilst studying the head shape of ancient populations, due to its high frequency in modern populations.

Materials: Geijskes Collection

The origin and history of the Geijskes collection was discussed by Tacoma in his 1963³ dissertation. D.C. Geijskes originally sent the skeletal material collected during his excavation in Kwatta Tingiholo to the Department of Anthropology of the Royal Tropical Institute in Amsterdam. The director of the latter institute entrusted the material to Tacoma as reference materials for his ongoing PhD research at the University of Utrecht. The collection was extended at a later stage by the addition of material from Hertenrits and “two batches of skeletal remains originating from a burial-place, putatively Indian, in a shell-ridge named ‘Okrodam’ in Kwatta” (Tacoma 1963:14). The entire collection was later transferred to the Faculty of Archaeology of Leiden University in 2007 (Hoogland, personal communication 2011). During the current reanalyses of the material in the spring of 2011, the unexpected addition of a fragmented skull marked ‘Aruba’, two sets of remains

³ The classification system is almost completely similar to that devised by Dembo and Imbelloni (1938). In their system, fronto-occipital is referred to as tabular whereas circumferential is called annular modification. The degree of occipital flattening is indicated using the terms oblique and erect.

from the site Paramaribo Waterkant/de Mirandastraat, and four skeletons marked solely as Sa were discovered. The current composition of the Geijskes collection can be seen in Table 1. All skeletal material with a Surinamese origin has been (re)analysed by the author in 2011 with regards to intentional cranial modification and will be discussed in more detail below.

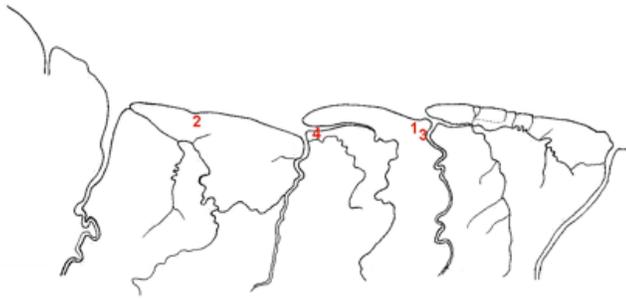


Figure 1. The coastal region of Suriname displaying the location of the sites which compose the Geijskes collection of skeletal material. 1. Kwatta Tingiholo and Okrodam, 2. Hertenrits, 3. Waterkant/de Mirandastraat (Paramaribo), and 4. Saramacca (After Geijskes 1991:9).

Site	Minimum number of Individuals
Kwatta Tingiholo	25
Hertenrits	8
Okrodam	3
Saramacca	4
Waterkant/de Mirandastraat	2
Aruba	1

Table 1. An overview of the composition of the Geijskes collection of skeletal material in 2011.

Kwatta Tingiholo

The ceramic age site of Kwatta Tingiholo is located on a natural shell ridge in the coastal region of central Suriname. The Kwatta ceramics encountered at the site are influenced by the Arauquinoid tradition and share some decorative motives with the Hertenrits ceramic style (Rostain 2008). Radiocarbon dates on charcoal collected during the excavation indicate habitation of the site between 1140 ± 90 BP and 970 ± 50 BP (Tacoma and van Vark 1991:77). This is partially corroborated by two radiocarbon

dates taken from human skeletal material, providing dates of respectively 1025 ± 50 BP and 1510 ± 50 BP (Tacoma and van Vark 1991:77). The first of these dates falls within the period indicated by the charcoal deposits, while the latter seems to suggest that the habitation span was somewhat longer the suggested earlier. The site is not associated with raised fields – unlike other Arauquinoid affiliated sites in the area – since the soil is fertile enough to practice slash-and-burn agriculture (Rostain 2008). Stone artefacts found at the site indicate that the Kwatta population was involved in a trade network with the Brownsberg communities in the interior of Suriname (Boomert and Kroonenberg 1977). Furthermore, a small amount of Koriabo ceramics indicate contact with this group, who settled the inland of Suriname between AD 1200-1350 and inhabited the coastal areas between AD 1350-1600 (Boomert 1977; Rostain 2008).

The mound of Kwatta Tingiholo has been excavated on three separate occasions between 1961 and 1986 by different teams affiliated with the Suriname Museum in Paramaribo. Each of these investigations has yielded a significant amount of human burials. The three skeletal collections and the results of their analyses will be presented here in chronological order. To clarify, only the material from the first excavation was shipped to the Netherlands and currently forms a part of the Geijskes collection. The latter two assemblages have remained in Suriname.

The first excavation was undertaken between November 1961 and January 1962 by a team from the Suriname Museum under the direction of D.C. Geijskes. A total of 18 human burials were recognized during the excavation and a great variety of burial positions were observed: primary flexed and extended burials were reported together with what appears to be a primary urn burial. Geijskes also reported a case in which the skull was covered by an upturned bowl. All skeletons were photographed *in situ*⁴ and the skeletal material was shipped to the Netherlands for analysis. The physical anthropological analysis by

⁴ The 1991 publication on the site of Kwatta Tingiholo featured some of the *in situ* photographs. The author was unable to locate the complete set of field documentation so far. Also, renumbering of the skeletal remains after arrival in the Netherlands means it would be extremely difficult to match the photographs to the individuals currently being curated in Leiden.

Tacoma determined that at least 23 individuals were present. The complete lack of subadults in the collection was remarkable. Furthermore, Tacoma recognized and described the practice of intentional cranial modification (Tacoma 1963, 1991a).

The second excavation of the site, led by A.H. Versteeg, took place between October 1977 and February 1978. A minimum of 15 individuals were represented in the skeletal collection. The burials were all considered primary burials with flexed legs, although the orientation varied. Three cases of inverted bowls over the skull were reported but no other grave goods were found. A single case of intentional cranial modification was observed (Khudabux *et al.* 1991).

The third excavation was executed between 1983 and 1986 by M.R. Khudabux and B. Mitrasingh. This collection consists of 36 individuals: 13 primary burials, 9 secondary burials and in three cases a combination of primary and secondary burial practices. In five cases, skeletal remains were found inside an urn or an urn had been placed close to the skeleton (Khudabux *et al.* 1991). Four of these cases involve the inhumation of one or more children, while the fifth case consists of one child and two adult females interred in and around a large urn. Finally, 5 out of 15 skulls presented intentional cranial modification of the frontal occipital parallel type (Khudabux 1991a,b).

Okrodam

The skeletal material originating from Okrodam consists of three individuals. Skull O-1 was an accidental discovery whereas the skeletal remains of individuals O-2-1 and O-2-2 were excavated by Geijskes in 1959. Both were buried in a manner encountered often among the prehistoric communities of Suriname and the Caribbean archipelago: in a (semi) flexed position with the arms crossed over the chest (Tacoma 1963:64). The burial position suggests the individuals belong to the Amerindian population, but this cannot be corroborated due to the absence of material culture in the graves. Radiocarbon dating of these remains has not been executed. The Okrodam is located in the Kwatta area of Suriname, very close to the site of Kwatta Tingiholo.

Hertenrits

The Hertenrits site is a habitation mound located in the coastal region of Northwest Suriname. The mound is surrounded by raised fields and a system of pathways and channels connecting several creeks and tributaries. Pathways also connect Hertenrits to other contemporaneous mounds with Hertenrits style pottery in the region, suggesting interaction between the inhabitants took place on a regular basis. Archaeological excavations were conducted at Hertenrits in 1957 by Geijskes and 1971 by van de Heide resulting in a chronology dividing the habitation into four phases. The ceramics encountered at the site are of the Hertenrits pottery style, which can be subdivided in Early and Late Hertenrits (Versteeg 1985:708). The latter shows influences by the Arauquinoid series of Venezuela (Boomert 1980). Based on radiocarbon dates from Hertenrits, Early Hertenrits has been dated between AD 700 and 1000, whereas the later phase has been dated between AD 1000 and 1250. Stone artefacts found at the sites of Hertenrits suggest provenances both in Western and Eastern Suriname, which were either obtained by the people of the mound themselves or may have reached the mound by a local exchange network (Boomert and Kroonenberg 1977:33, 37).

Boomert (1980) describes ten primary burials, two secondary urn burials and a single combined primary and secondary inhumation from Hertenrits. Although most burials have a roughly S-N direction, there is some variation in the burial position; some individuals are found in a flexed position while others seem to be extended. The majority of burials are associated with the fourth habitation phase, although one primary extended burial is associated with phase I and the remains of a juvenile in flexed position are associated with phase III. Grave goods are not encountered, other than the occasional ceramic bowl or vessel covering the skull of an individual (Boomert 1980:85).

The Hertenrits site is represented by remains from 8 individuals, but only 4 crania were preserved to such extent that they could be analysed. These crania are marked 0388, 0393, 0394, and 0532 respectively. These burial numbers do not correspond to the descriptions provided by Boomert (1980) and

therefore the only reliable contextual information is provided by Tacoma (1963):

“Skeleton 0394 and 0388 were found lying at full length at a depth of about 50 cm. An east-west orientation was reported in the case of skeleton 0394, the head pointing to the east” (Tacoma 1963:64).

Based on this information, the individual marked 0394 can be tentatively identified as individual number 9 in the description provided by Boomert. Individual 9 is the only burial with an East-West orientation and an extended burial position. Furthermore, the recorded depth of 50 cm corresponds to the phase IV/ raised clay affiliation of the individual. Individual 0394/9 was buried with two rounded bowls with a restricted mouth, one of which contained bird bones (Boomert 1980:85).

Saramacca

Four skulls and sets of post-cranial remains are marked Sa 1 to 4. The box contains a handwritten note with the following contextual information:

Suriname
Saramacca at km 62
Road to Coppename, point Boskamp
February 1960, D.C. Geijskes
District Saramacca in shell ridge near Tambaredjo
Depth 60 cm, legs flexed, head east⁵

In his very thorough inventory of archaeological sites in Suriname, Boomert (1975) does not provide an excavation matching this description exactly. A site with the name of Boskamp is referenced, but the characteristics of the site do not match the known data. The Boskamp site was excavated by van der Heide and Bubberman in 1971 and is a habitation site of the Koriabo style without burials (Boomert 1975:16). Three Tambaredjo sites in the district of Suriname are mentioned by Boomert: Tambaredjo-1 and Tambaredjo-2 are reported as Kwatta affiliated habitation sites with burials, whereas Tambaredjo-3 is a Koriabo site where burials have also been reported. However, the excavation dates reported by Boomert

– 1954 and twice 1957 respectively – do not match the February 1960 date provided by the note.

None of the other sites mentioned by Boomert (1975) containing human remains match the information provided with the Saramacca skeletons. Therefore, the only context regarding these skeletons is the handwritten note accompanying the skeletons. The boxes in which the skeletal material was stored contains colonial artifacts: several clay pipes and ceramics were recovered. Whether this material was encountered during excavation or added to the boxes at a later stage is unfortunately not known. The period to which these skeletons date is therefore difficult to determine with any degree of certainty. The flexed burial position suggest the skeletons are Amerindian, since this position is commonly found among the indigenous communities of Suriname (Geijskes 1991:15).

Waterkant/de Mirandastraat

Two crania were encountered in the Geijskes Collection with the numbers Pa-1 and Pa-2. According to the accompanying note, these were recovered during the excavation of Waterkant/de Mirandastraat in Paramaribo. This site was excavated on two separate occasions, first by de Groot in 1941 and later by Geijskes in 1960-1961 (Boomert 1975:43). It is characterised as a Kwatta affiliated settlement site with human burials. The boxes containing the skeletal remains of Pa-1 and Pa-2 also contain indigenous ceramics, colonial materials and shells, of which the provenance and relation to the skeletons is unknown. No radiocarbon dating of the skeletal material has been undertaken, hence the period to which these skeletons belong is unknown. However, they are very tentatively identified as Kwatta given the fact that the location of excavation is on a known Kwatta affiliated site which has previously yielded human burials.

Results

Kwatta Tingiholo

Although this reanalysis of the Kwatta Tingiholo skeletal material of the Geijskes collection will focus on the practice of intentional cranial modification, a remarkable discovery was made during the inventory

⁵ Translated from Dutch by the author.

of the skeletal material. A small bag marked as animal remains was discovered in which the remains of at least two human infants were encountered. This is of particular importance since the palaeodemographic profile of the Geijskes collection was previously skewed due to the complete absence of subadult remains. Although there is still a clear bias in the Geijskes collection, combining this information with the Versteeg and Khudabux and Mitrasingh collections provides a much more balanced demographic view of the community living at Kwatta Tingiholo in prehistoric times.

The total number of individuals in the Kwatta Tingiholo Geijskes collection is 25, including the newly discovered infants. Of these, 14 were included in the sample for reanalysis, with the remainder either being too poorly preserved or completely lacking cranial remains. Four of these skulls were intentionally modified (see Table 2 for an overview of the sample).

Number	Sex	Age	Modification
Th 2	Female	30-40	-
Th 3	Male	30-40	-
Th 4	Male	30-40	-
Th 4-1	Male	≥50	-
Th 8	Female	≥40	-
Th 9	Female	30-40	-
Th 11	Male	30-40	Fronto-Occipital Parallel
Th 14	Male	30	Fronto-Occipital Parallel
Th 16	Male	≥50	-
Th 17	Male	30-40	Fronto-Occipital Parallel
Th 18	Female	30-40	Positional Plagiocephaly/Fronto-Occipital Parallel*
Th 19-1	Male	≥40	-
Th 20	Male	30	-
Th 21	Female	≥40	-

Table 2. An overview of the skeletal sample for the site of Kwatta Tingiholo, Geijskes collection.* The cranium of individual Th 18 displays a marked asymmetry of the cranial vault, see discussion in text.

Three individuals have altered head shapes of the fronto-occipital parallel type, created by applying boards to the front and back of the skull. This results

in flattened areas on the frontal and occipital bone and a broadening and shortening of the cranial vault (see Figure 2).



Figure 2. Lateral views of individual Th 11 (left) and Th 14 (right) with intentional cranial modification of the fronto-occipital parallel type (Photos by A. van Duijvenbode).

One individual, Th 18, displays moderate asymmetry of the cranial vault (see figure 3). This asymmetry might be caused by an incorrect positioning of the board at the back of the skull or result from an unintentional modification. This specific type of unintentional modification is known as deformational or positional plagiocephaly and creates a distinctive parallelogram shape of the skull. Although a great number of causes, both pre- and postnatally, can contribute to the condition, it is often caused by children spending a prolonged period of time on a firm surface in the same position. Since three other skulls show evidence of intentional cranial modification in the same population, this case is almost certainly intentional in nature and represents a slight misalignment of the board at the back of the skull.



Figure 3. Lateral and superior view of Individual Th 18 from Kwatta Tingiholo, Geijskes Collection. (Photo by A. van Duijvenbode).

Combining the information on head shaping from the three skeletal collections provides a more complete image of the practice in Kwatta Tingiholo. The general prevalence of intentional cranial modification is relatively low at 33,3% (see Table 3).

Collection	Complete Sample	Modified Individuals	Non-Modified Individuals
Geijskes	14	4	10
Versteeg	2	1	1
Khudabuse	14	5	9
Total	30	10	30
	-	33.3%	66.7%

Table 3. Overview of intentional cranial modification in the Geijskes, Versteeg, and Khudabux and Mitrasingh collections.

The division of intentional cranial modification among the skeletal population of Kwatta Tingiholo is skewed towards the males, with 75% of the modified individuals in the sample being of the male sex. However, the general composition of the sample is already inherently skewed towards males, with the male-female ratio of the overall sample at 64 – 36 % (see Table 4). Due to the intrinsic imbalance in males and females in the sample and the very small sample size, the higher rate of cranial modification among males is not considered evidence of a gender based social motivation behind head shaping. Furthermore, the single female individual with cranial modification has the same type of modification as the males, demonstrating that sex or gender based divisions are not expressed through different types of head shape for males and females.

	Overall Sample		Intentional Cranial Modification	
	No. of Individuals	%	No. of Individuals	%
Male	9	64%	3	75%
Female	5	36%	1	25%

Table 4. Division between males and females in the overall sample and in the modified subset of the sample from Kwatta Tingiholo, Geijskes collection.

Okrodam

The reanalysis was limited to a study of crania 0-1, since the other crania were too poorly preserved. Individual 0-1 is an adult male with an altered head shape of the frontal occipital parallel type (see Figure 4). Parietal bulging and a depression of the posterior part of the sagittal suture have created a so-called bilobed appearance (Torres-Rouff 2003).



Figure 4. Individual 0-1, Okrodam, Geijskes Collection (Photo by A. van Duijvenbode).

Hertenrits

The sample of four skulls which were analysed for this research is unfortunately somewhat biased, since they are all adult males (see Table 5 for a sample overview). Of these, a single case of modification is observed. The preservation of the skull is poor and the entire frontal bone is absent. The occipital bone shows signs of flattening. Determining the type of modification is regrettably impossible without the frontal bone. The bias of the sample and the previously explained lack of contextual information make it impossible to determine the social motivations behind the practice of intentional cranial modification for this site. The fact that head shaping is present is of interest, however, since it indicates that head shaping in Suriname was not restricted to the Kwatta affiliated communities of the Arauquinoid.

Number	Sex	Age	Modification
H0338	Male	30-40	Present
H0393	Male	≥50	-
H0394	Male	40-50	-
H0532	Male	40-50	-

Table 5 Overview of the sample from the Hertenrits site, Geijskes Collection.

Saramacca

None of the four Saramacca crania show signs of intentional cranial modification. One of the crania, Sa-3, has a slight asymmetric appearance of the skull. This is likely a very mild case of deformational plagiocephaly: an unintentional form of modification which is often a side effect of other child-rearing practices.

Waterkant/ de Mirandastraat

One of the two skulls from Waterkant/de Mirandastraat in Paramaribo shows signs of head shaping: a slight flattening of the frontal bone and a moderate asymmetry of the cranial vault. Poor preservation of the cranium makes a definitive diagnosis impossible, but since this skull has been tentatively linked to a Kwatta settlement, cranial modification is a distinct possibility.

Discussion and Conclusions

The archaeological evidence from Suriname demonstrates that intentional cranial modification was practiced by at least two distinct Arauquinoid-affiliated societies: Kwatta and Hertenrits. The practice has so far not been reported for groups with Barbakoeba and Thémire ceramic styles, which represent the remainder of the Arauquinoid presence in Suriname and the Guyanas. Currently, no information is available for the earlier Saladoid and Barrancoid populations in the region⁶. The presence or absence of cranial modification in these earlier Ceramic Age societies is of great interest for understanding the introduction and subsequent

⁶ It should be noted that skeletal material from these populations and periods are extremely scarce. Future excavations of human skeletons will be needed to resolve this issue.

spread of the practice, not only in the coastal area of South America but also for the Caribbean archipelago. The first evidence of head shaping among the prehistoric people of the Caribbean can be found among the Early Ceramic Age populations of the Huecoid and Saladoid series⁷ (Crespo Torres 2000, 2005). This has led Crespo Torres to conclude that the practice of intentional cranial modification was introduced to the islands by these Early Ceramic Age populations who moved into the islands from the mainland (Crespo Torres 2005). Knowledge regarding the prevalence and types of modification encountered in the mainland might therefore enhance our understanding of the introduction and subsequent spread of altered head shapes among the inhabitants of the pre-Columbian Caribbean. Furthermore, the Late Ceramic Age ties between the Guyanas and the islands of the Caribbean archipelago, witnessed by the influence of Koriabo and Arauquinoid complexes on the post-Saladoid ceramics of the islands, suggest interaction took place between the two regions (Boomert 2000; Bright 2011). Archaeological reports and colonial accounts provide evidence of head shaping of the same type encountered in this coastal area of South America on the Caribbean islands (van Duijvenbode 2010).

It is clear that head shaping among the Amerindian populations of Suriname continues well into the colonial period as its results are witnessed by Stedman in 1775 (2010[1790]:314). The longevity of this practice suggests that the elements of identity expressed by altered head shapes either survived the initial contact period and subsequent colonial encounters or were flexible enough to adapt to new influences. Based on Ten Kate's (1887 in Tacoma 1963) remark that the practice had long since been abandoned when he travelled through the region, one might speculate the practice might have already been disappearing when witnessed by Stedman or that the decline in the custom was very rapid. Furthermore, the diverse nature of contact with Europeans might have led to a differential preservation of the practice

⁷ The presence of intentional cranial modification among the Huecoid is currently based solely on indirect evidence: depictions of sloping foreheads in green stone amulets (Crespo Torres 2005). Modified Saladoid crania provide direct evidence of the practice during the Early Ceramic Age (Boomert 2000; Crespo Torres 2000, 2010; see van Duijvenbode 2010 for an overview of intentional cranial modification in the Caribbean).

among the Amerindian populations of the South American coastal region, hence producing the varying and sometimes contradictory anthropological reports on head shaping.

The patterns of modification described in the Geijskes collection, and specifically the skeletal material from Kwatta Tingiholo, also provides an insight into the social underpinnings of intentional cranial modification. Although the presence of head shaping at the site of Kwatta Tingiholo is more prevalent among males, this is most likely a reflection of the biased composition of the entire skeletal collection and not an indication of sex or gender-based differentiation in the practice. This conclusion is supported by the fact that both males and females are subjected to the same type of cranial modification: fronto-occipital modification most likely produced by wooden boards or tablets.

The presence of altered head shapes in the contemporaneous Kwatta and Herttenrits societies suggests it was not used to distinguish between the different Arauquinoid groups in the coastal region. Although the altered head shapes could still be used to distinguish between Arauquinoid populations and other inhabitants of Suriname, the Guyanas and the hinterland – for which modification practices are currently unknown - the low prevalence of cranial modification observed in Kwatta Tingiholo (33,3%) suggests large scale group membership is not a likely motivational factor (Torres-Rouff 2003; van Duijvenbode 2010).

The low prevalence and occurrence among multiple Arauquinoid affiliated societies suggests the motivation for head shaping is probably related to differentiation within the group and the two most likely options are social status differentiation or the expression of small scale group identity. The period of Arauquinoid habitation of Suriname and the Guyanas has been linked to an increasing social complexity and stronger hierarchy (Rostain 2008:284), providing the potential for the development of ascribed social status. As discussed earlier, the identity expressed by intentional cranial modification must be present around the time of birth which rules out achieved social status as a motivational factor. The other possible reason is the expression of kinship-based small scale group identity, such as family or clan ties. At this point, it is not possible to differentiate between the two in the skeletal material

from Suriname, since the contextual information of most burials has been lost. Burial position, spatial distribution within the cemetery, and grave goods could provide important information on the social status of individuals which is vital in distinguishing between the two potential reasons for modification, but are unfortunately not available for these populations. Further physical anthropological research, such as ancient DNA analysis or a study of non-metric traits, might yield further information on the biological relatedness of the population.

In all, the reappraisal of intentional cranial modification in the Surinamese coastal area has provided some first insights into the motivations behind permanent body modification in these indigenous communities, especially Kwatta Tingiholo. The research has, however, raised further questions about the presence of and motivation behind intentional cranial modification in both earlier and later periods of prehistory. Future research, requiring the excavation of skeletal material from different periods and regions in Suriname, can further investigate the relations between the inhabitants of the coastal regions of South America and the Caribbean archipelago and shed light on the relation between the use of bodily modifications as a marker of identity and a means of inter-cultural communication.

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